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FEDERAL CROP INSURANCE IN OPERATION

J. C. Clendenin

University of California, Los Angeles

Three years of federal all-risk wheat crop insurance have demonstrated the attractiveness of such insurance to a substantial number of farmers. The insured percentage of the acreage seeded was between 17 and 18 per cent in 1940 and 1941, and will be larger in 1942.

Crop insurance sells with equal facility to rich men, poor men, landlords, owner-operators, tenants, diversified-crop farmers, and one-crop farmers. At present it is less widely utilized in hazardous areas, where premium rates are high, than in low-risk areas. The security it provides is convenient rather than essential to most of those now insured, but general participation would add much to the economic stability of many individuals and communities. The present volume of participation is inadequate to accomplish these ends on a wide scale.

Actuarial data and certain operating procedures are not yet in good order. Despite fair crop years in 1939 and 1940 and a very good one in 1941, loss indemnities have each year greatly exceeded premium receipts. Improvements are being made, and it should be possible to eliminate underwriting losses reasonably soon. In a voluntary program, it is not likely that premium receipts can be made to cover loss indemnities and full operating expenses.

Careful review and appraisal of the experience reveal that the venture still faces problems involving both general policies and operating techniques. Justification for indefinite continuance and expansion awaits the solution of these problems.

STANFORD UNIVERSITY, CALIFORNIA

WHEAT STUDIES
OF THE
FOOD RESEARCH INSTITUTE

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I. A SUMMARY VIEW

The federal crop-insurance program is intended to provide machinery for insuring growing crops against all sorts of damage by natural destructive forces. The objective is true yield insurance—a form of protection which virtually assures that normal farming operations will result in salable crops or equivalent indemnities.

The United States government entered this field in 1939, pursuant to the terms of the Federal Crop Insurance Act of 1938. This act created a corporate agency of the Department of Agriculture termed the Federal Crop Insurance Corporation, to which we shall frequently refer as the FCIC or corporation. Financed by the United States Treasury, the FCIC is given relatively broad authority to sell and administer all-risk crop insurance in the United States. The original act limited operations to wheat, and under this limitation insurance was offered on the 1939, 1940, and 1941 harvests. In 1942 cotton crops are insurable as well, but our review of experience to date necessarily deals only with wheat.

The plan is extremely simple. Insurance is available for voluntary purchase by any "wheat producer"—owner-operator, tenant, or crop-share landlord—to cover his interest in the crop. Both premiums and possible loss payments are calculated in bushels of wheat, in order to keep the yield hazard separate from price movements. The policy is a one-year contract which guarantees to indemnify the insured producer to the extent that his crop falls short of 75 per cent of the computed normal or average yield of his farm. That is, if the farm has an average yield record of 20 bushels per acre, the FCIC will make up in

wheat any shortage below 15 bushels. A cheaper policy, which assures 50 per cent of a normal crop, is chosen by fewer than 6 per cent of the insureds.

The contract obligates the insured producer to use only fields suitable for wheat, to use a proper amount of good seed, to care for the crop in a normal manner, and to notify the corporation before threshing if an insured loss appears likely.

The insurance does not cover either the quality or the value of an insured wheat crop. The actual production on a farm is reckoned in standard 60-pound bushels, disregarding quality factors such as weight per measured bushel, protein content, and presence of foreign matter; and any shortage below the insured produc-

tion is indemnified in wheat of the standard class and grade specified in the contract, or the equivalent in cash which almost all prefer to accept.

The premium for wheat crop insurance is calculated in terms of bushels of standard type and grade, for each farm individually. Fundamentally, it is the simple average of all the losses the corporation would have sustained over a period of years if insurance had been in effect on the farm, calculated on a per acre basis. For example: if the calculation period is ten years, the average yield 20 bushels per acre, and the contract a 75 per cent one, indemnities would be indicated only when the farm yield was below 15 bushels per acre. If this had occurred in three years out of the basic ten, once when the yield was 10 bushels, once when it was 12, and once when it was 13, the indemnity costs would have been 5 bushels, 3 bushels, and 2 bushels per acre respec-

CONTENTS

	PAGE
<i>A Summary View</i>	229
<i>Elements of the Contract</i>	232
<i>Actuarial Features</i>	242
<i>Administration</i>	252
<i>Extent of Participation</i>	255
<i>Other Public Policy Aspects</i> ..	263
<i>Operating Finances</i>	267
<i>Concluding Observations</i> ...	271
<i>Appendix Notes</i>	275
<i>Appendix Tables</i>	282

tively, or a total of 10 bushels per acre for the whole ten years. A proper basic annual premium (farm loss-cost) would therefore be 1 bushel per acre for 75 per cent insurance.

But this annual premium calculation has another phase. The history of an individual farm may be considerably affected by a single nonrecurring disaster such as a fire or a hail-storm. Discretionary adjustments are sometimes made to remove such "spot losses" in whole or part from both the farm-yield and loss-cost data. In addition, the FCIC stabilizes its premiums by averaging the individual farm loss-cost in each instance with the so-called *county loss-cost*, which is an average of the loss-cost figures of a number of representative farms scattered throughout the county. This process gives stability to the quoted rates, though it seems to discriminate unfairly against farms with low loss-costs. These final per acre premium rates are then applied to the exact number of acres seeded.

Premiums thus calculated are based only on loss-costs, exclusive of operating expenses. This is the present intent of the law. The gov-

¹ The major work of the AAA is of course the handling of the agricultural-conservation program, dealing especially with soil conservation, output control, and price control. Like the crop-insurance program, these matters are closely controlled by the Secretary of Agriculture. The Secretary appoints an Administrator of the AAA, whose central organization delegates much of its work to its regional divisions—Northeast, East Central, North Central, Southern, and Western—whose Directors are of course subordinate to the Administrator.

In turn, each divisional Director appoints a State Committee to administer the program under his direction in each state. The State Committee in turn instructs and directs the County Committee, which is elected by the participating farmers in each county but is nevertheless controlled by the State Committee. The County Committee is the local executive body. It is advised and assisted in local work by community committeemen, who are also elective in their home communities. The county and state organizations are termed Agricultural Conservation Associations.

Under the recent grouping of units of the Department of Agriculture, the Soil Conservation Service and Sugar Division are grouped with the AAA and FCIC in the Agricultural Adjustment and Conservation Administration headed by R. M. Evans, formerly AAA Administrator.

² Details given in Tables I, II, and III are based on preliminary data corresponding to the summary figures here designated by footnote ^b. The decline in number of contracts and amount of premiums collected reflects adjustments for belated reports of acreage not actually seeded.

ernment provides for the operating expenses through the regular Department of Agriculture appropriations, leaving only the net loss-costs to be recovered through premiums.

The FCIC operates virtually as one of the bureaus of the Department of Agriculture. Its management is subordinate to the Secretary of Agriculture, and its work is co-ordinated with that of other agencies of the department. It does not have a complete, independent administrative organization. It has executive, statistical, and accounting staffs in Washington, and has divisional offices in Richmond, Chicago, Kansas City, Minneapolis, and Spokane to review contracts, pay losses, and administer the wheat reserves regionally. However, many of its essential functions are exercised by other agencies of the Department of Agriculture. Thus, the research preparatory to the insurance of other crops is conducted by the Bureau of Agricultural Economics (BAE); the FCIC is responsible only for the administration of completed insurance plans. The Agricultural Marketing Service (AMS) supplies county-yield data for the corporation's actuarial calculations. More important still, the Agricultural Adjustment Administration (AAA) acts as sales organization and adjustment department.¹ Its regional and state offices present the insurance program to the county committees, who have the fourfold responsibility of collecting local statistics, computing farm premiums, selling the insurance, and recommending loss settlements. The FCIC has practically no field force of its own.

The first three years of wheat-yield insurance have brought a satisfactory volume of business, but disturbingly large underwriting losses have been incurred. For the nation as a whole the figures are as follows,² using for 1941 three successive preliminary sets of which the latest are semifinal:

Crop year	Number of farms insured	Number of loss claims paid	Premiums collected (bushels)	Loss claims paid (bushels)
1939..	165,777	55,912	6,684,215	10,163,127
1940..	361,586	112,726	13,806,143	22,832,112
1941..	416,954 ^a	127,739 ^a	14,095,181 ^a	18,456,568 ^a
	405,496 ^b	129,703 ^b	13,619,691 ^b	18,751,368 ^b
	391,874 ^c	130,064 ^c	13,223,855 ^c	18,796,191 ^c

^a *Indemnity Report*, Nov. 15, 1941.

^b *Ibid.*, Dec. 15, 1941.

^c *Ibid.*, Dec. 31, 1941.

In 1940 and 1941 from 17 to 18 per cent of the wheat acreage seeded was insured (Table II), and about the same percentage of producers covered.³ It must be recalled, however, that the total number of wheat producers included three partially overlapping groups: (1) the 20-25 per cent who had refused to accept AAA acreage limitations; (2) a large number whose acreages are small; and (3) those located outside commercial wheat areas, who have generally not been urged to insure. Of the acreage effectively eligible for insurance, the third year's coverage may have approached 25 per cent. A considerable increase in volume in future years is both possible and probable.

Expectations that reserves would be accumulated in relatively good crop years have been disappointed. Relatively severe underwriting losses have occurred in three successive years in which national average yields per seeded acre have exceeded the 15-year average by 3, 14, and 32 per cent respectively. Of course, it could not be expected that premium collections and loss indemnities would coincide every year, or even that high and low average yields would coincide closely with low and high indemnity payments, but the relationship over a three-year period surely ought to be closer than that achieved.

The actuarial and other factors responsible for three successive years of losses require

careful elucidation. Other problems with which the corporation is wrestling are to obtain adequate volume, and especially larger participation by wheat growers in hazardous, high-premium areas; to minimize adverse selectivity in such a voluntary insurance scheme; and to reduce operating expenses, which are still high in total, per contract, and per bushel of indemnities paid. Among the broader matters requiring examination are the policy of holding reserves in grain, the desirable degree of independence of the FCIC, the justification for continued public subsidy of crop insurance, the possible desirability of introducing one or another form of compulsion, and the degree to which voluntary or compulsory crop insurance tends to sustain farming operations that are basically uneconomic.

The present federal venture in all-risk crop insurance may be regarded as the culmination of years of effort by various enthusiasts. The adoption of the federal program was not, however, the result of any cumulative demand from prospective beneficiaries. Farmers and agricultural interests seemed generally apathetic on the subject, at least by contrast with their active interest in other phases of the farm program.⁴ The urge came primarily from government agencies and the administration, whose interest had been stirred by the financial disasters to farmers during the Great Depression, intensified by the Great Plains droughts of 1933, 1934, and 1936.⁵ The income-relief effect of benefit payments in 1934 strengthened official interest in a truer form of insurance; and the crop-insurance commodity-reserves idea appealed to administration leaders as fitting nicely into the ever-normal-granary plan.⁶

The history of the present federal crop-insurance program begins in 1936.⁷ The BAE, in which some previous work on the problem had been done (chiefly by V. N. Valgren), then began intensive studies on an actuarial base for wheat crop insurance; this work was directed by W. H. Rowe. On September 19 President Roosevelt appointed an interdepartmental committee to study and report on a plan for federal crop insurance, and in his brief letter of appointment outlined rather clearly the sort of insurance plan that he ex-

³ Data on the number of eligible wheat producers are far from satisfactory. Census data indicate that about 1,400,000 farms thresh wheat annually. When allowance is made for farms seeding wheat but threshing none, for landlord interests, and for the differences in definition of a farm in census and AAA practice, it appears that there are at least 2,300,000 insurable wheat interests on American farms.

⁴ *Report and Recommendations of the President's Committee on Crop Insurance, 1937* (H. Doc. 150, 75th Cong., 1st sess.) [hereafter referred to as *Report of the President's Committee*], section on "Meetings with Farmers and Other Groups."

⁵ *Ibid.*, "Introduction" and President's "Letter of Transmittal."

⁶ Cf. successive annual reports of the Secretary of Agriculture; J. S. Davis, *Wheat and the AAA* (Washington, 1935), pp. 167-69; and E. G. Nourse, J. S. Davis, and J. D. Black, *Three Years of the Agricultural Adjustment Administration* (Washington, 1937), pp. 171-85, 370-74, 502-03.

⁷ Earlier steps in this direction are cited in Appendix Note C.

pected.⁸ The committee comprised Secretary of Agriculture H. A. Wallace, chairman; A. G. Black, Chief of the BAE; H. R. Tolley, Administrator of the AAA; W. C. Taylor, Assistant Secretary of the Treasury; and E. C. Draper, Assistant Secretary of Commerce. This committee reported a detailed plan to the President on December 23, 1936, which the President transmitted to Congress on February 18, 1937.⁹

Committees of both Houses of Congress considered the crop-insurance measure carefully during 1937, hearing witnesses from the Department of Agriculture, from private insurance companies, and from farm groups.¹⁰ Little opposition developed, although a number of witnesses were skeptical of both the actuarial feasibility of the plan and the salability of the insurance. The private companies did not wish to re-enter the all-risk field, and were not particularly opposed to the competition which a government all-risk policy would give their specific covers. The Federal Crop Insurance Act finally passed the Congress as Title V (secs. 501-18) of the Agricultural Adjustment Act of 1938, which was approved by the President on February 16, 1938.¹¹ Contracts were first offered to wheat growers during the following autumn, on the 1939 crop.

The inauguration of all-risk insurance on even one major crop constituted a politico-economic experiment of widespread importance. Previous experience, in this country and elsewhere, had been limited and generally discouraging. Here and abroad, the actual

operation of the new federal crop-insurance system deserves to be clearly understood by a number of interested groups.

The present analytical review was undertaken and carried through with the cordial co-operation of the FCIC and several of its related agencies, whose generous assistance is gratefully acknowledged.¹² Extensive use has been made of the corporation's published reports, regulations, and forms, and also of official data and memoranda as yet unpublished. Personal conferences in Washington and field offices yielded much background and supplementary information. Valuable light on specific points was contributed by two series of postcard questionnaire surveys conducted by the author in the spring of 1940 and in the summer of 1941. Nevertheless, the responsibility for the form, content, and conclusions of the study rests primarily upon the author, and secondarily upon the Food Research Institute, which has sponsored and collaborated in the work.

We have chosen to concentrate on the three to four years of initial experience with crop insurance for wheat. Appendix Notes give supplementary material (A) on private experience with crop insurance in the United States, (B) on crop insurance in foreign countries, (C) on relevant action in Congress and by federal departments prior to 1937, and (D) on the preliminary work on plans for federal insurance of crops other than wheat. Selected data, mostly by states or counties, are given in Appendix Tables I-VII, to which Appendix Note E is prefatory.

II. ELEMENTS OF THE CONTRACT

The nature of the insurance contract is outlined in the latest form of *Application for Wheat Crop Insurance*, which is reproduced on pages 234-35. The 1942 contract includes,

in addition to the application, "the required notice of seeding, and the 1942 Wheat Crop

⁸ Letter to Secretary Wallace, Sept. 19, 1936, in *Report of the President's Committee*, and comment by C. L. Rogers, in "Crop Insurance," *Conference Board Bulletin* (National Industrial Conference Board, New York), Oct. 20, 1936, p. 84.

⁹ *Report of the President's Committee*.

¹⁰ U.S. Congress, Senate, Subcommittee of the Committee on Agriculture and Forestry, *Federal Crop Insurance*, Hearings, 75th Cong., 1st sess., on S. 1397,

Feb. 25-Mar. 9, 1937 (1937); and House, Special Subcommittee of the Committee on Agriculture, *Federal Crop Insurance*, Hearings, 75th Cong., 1st sess., on S. 1397, May 26-June 23, 1937, Serial E (1937).

¹¹ The Federal Crop Insurance Act was amended twice in 1938-41: by Public, No. 691, 75th Cong., 1938; and by Public, No. 118, 77th Cong., 1941. The second of these, among other things, ordered that insurance of cotton yields begin with the 1942 crop year.

¹² L. K. Smith, manager of the FCIC, and D. R. Sabin, crop insurance co-ordinator of the Western Division of the AAA, were outstandingly helpful.

Insurance Regulations issued pursuant to the provisions of the Federal Crop Insurance Act, as amended” An analysis of the principal elements of the contract, as it has evolved, is first in order.

INSURANCE IN KIND

The unfortunate history of several attempts at all-risk crop insurance which guaranteed the ultimate value of the crop, the recovery of cost of production, or some other dollar-measured return,¹³ decided the authorities in this case against dollar-value guarantees. This was unquestionably wise. Price movements in wheat are notoriously violent and prolonged, and an insurer attempting to underwrite against them not only faces aggregate hazards of huge size, but also opens himself to adverse selection in cases where price probabilities are to some extent known to producers. Furthermore, he incurs a serious moral hazard in that insured losses become profitable to the insured in case of price declines.

It must be admitted that the decision not to insure dollar values diminishes the extent of the FCIC's protection of farm incomes. Fluctuations in the price of wheat have been as significant as yield fluctuations to the average wheat farmer (though not to the farmer in high-risk territory) during the past 20 years. But the price risk appears not to be insurable on a sound basis, hence must be borne by the producer—except in so far as he can shift it to speculators by selling futures, or to the federal government by resort to its non-recourse loans.

The purchase of all-risk crop insurance ap-

¹³ See Appendix Note A.

¹⁴ Cf. comment by Rogers, *op. cit.*, p. 87.

¹⁵ By Professor J. B. Canning of Stanford University.

¹⁶ He would have to deliver wheat of marketable grade. If he produced a substantial quantity of poor-quality wheat he would receive no indemnity wheat and his own production might prove inadequate to offset his short position.

¹⁷ The power of the market to absorb heavy post-harvest sales by farmers suggests that substantial sales before harvest could be absorbed also, especially if such sales were scattered over the entire period between seeding time and harvest; but only a test would give proof. The selection of “high spots” in the market by selling farmers might exert a salutary stabilizing influence.

pears to place the farmer in a position comparable to that of the industrialist or merchant who carries modern fire and business-interruption covers. Each is assured of the financial advantages which would flow from the normal *production* of his commodity or service. Neither is guaranteed that his product will sell or that it will bring a remunerative price, unless he has found a buyer who will contract for it in advance of its production.¹⁴

It is theoretically possible for the farmer who wishes at seeding time or during the growing season to assure a present selling price for his next wheat crop to sell futures to the extent of his insured production. In practice, however, such an option is not available to the average farmer. His insured production does not work out in 1,000-bushel lots, he often does not have the margin to cover a short sale, and he is not familiar with the process. Yet there are thousands of farmers, most of them small operators, whose circumstances almost demand a degree of selling-price assurance.

It has been suggested that arrangements might be made with the commodity exchanges to handle crop-year futures, and that the FCIC could contract to purchase farmers' insured yields at market prices, pool them in marketable units, and immediately resell them as crop-year futures.¹⁵ While this idea is intriguing, several possible difficulties appear: (1) the crop-insurance contract does not assure the quality of a farmer's wheat crop, hence his sale might leave him in a short position;¹⁶ (2) the offering of several million additional bushels in futures might result in somewhat cheaper futures;¹⁷ (3) legal difficulties over title to growing crops might arise; and (4) the FCIC might not obtain perfect hedges for all types and locations of proffered grain. However, such difficulties might conceivably be overcome. At present this plan is unnecessary because the government's crop-loan program assures a satisfactory postharvest price for wheat, but its potential utility is such that it deserves further study.

NO INSURANCE OF QUALITY

Quality insurance has thus far been avoided for three reasons: (1) to simplify the adjust-

Form FCI-212-W
UNITED STATES DEPARTMENT OF AGRICULTURE
 FEDERAL CROP INSURANCE CORPORATION

(State and county code and application number)

APPLICATION FOR WHEAT CROP INSURANCE

(Pursuant to the Federal Crop Insurance Act, approved February 16, 1938, as amended)

The Federal Crop Insurance Program for wheat is part of the general agricultural program of the Department of Agriculture administered for the benefit of agriculture.

1. Applicant.....
 (Name of the applicant)

.....
 (Address of the applicant)

2. The undersigned applicant hereby applies to the Federal Crop Insurance Corporation for% insurance on his interest in the wheat crop for the crop year 1942 on each and every farm located in.....county, state of

.....in which he has an interest at the beginning of the seeding of the wheat crop against loss in yield of wheat due to drought, flood, hail, wind, frost, winterkill, lightning, fire, tornado, storm, insect infestation, animal pests, plant diseases, excess or deficient moisture, incursions of animals, and against loss in yield due to other unavoidable causes not specifically mentioned herein. The insurance applied for by the undersigned applicant shall attach only to the interest which an applicant has in the wheat crop on the farm at the time of the beginning of the seeding of the wheat crop on the farm. The insurance hereby applied for shall not cover damage to quality, or loss in yield caused by overpasturage, or by the neglect or malfeasance of the insured or any person in his household or employment or connected with the farm as tenant, sharecropper, or wage hand, or by theft, or by overplanting, use of defective or unadapted seed, failure properly to prepare the land for seeding, or properly to seed, harvest, thresh, or care for the insured crop, or by failure to reseed to wheat in areas and under circumstances where the Corporation determines it is customary to reseed.

3. It is understood and agreed between the applicant and the Corporation that this application, the required notice of seeding, and the 1942 Wheat Crop Insurance Regulations issued pursuant to the provisions of the Federal Crop Insurance Act, as amended, shall constitute the applicant's insurance contract. The Corporation will not be bound by any act or statement made to or by its agents or representatives restricting its rights or powers or waiving the written or printed provisions of the contract.

4. Representations of Applicant:

(A)	(B)	(C)	(D)	(E)	(F)	(G)
1942 wheat listing sheet farm No.	Total acres in farm	Name of owner	Farm name, location of farm, or legal description of farm	Applicant's interest in wheat crop	Average yield per acre	Premium rate

5. It is understood and agreed that the data listed on the attached continuation sheet, if any, is hereby made a part of this application for wheat crop insurance.

6. It is understood and agreed that insurance shall attach to the farm(s) listed in this application, including the attached continuation sheet, if any, as well as any other farm(s) in the county in which the applicant has an interest at the time of the beginning of the seeding of the wheat crop on such farm(s) based on the yields and rates approved by the Corporation for such farm(s).

7. Acceptance of this application by the county committee shall be acceptance on behalf of the Corporation, *provided however*, that the average yield(s) and the premium rate(s) specified in this application or in the accompanying continuation sheet, if any, are in accordance with the average yield(s) and premium rate(s) approved by the Corporation for the farm(s) covered by this application; and provided further, that this application is submitted in accordance with the provisions of the application the 1942 Wheat Crop Insurance Regulations, and any amendments thereto. Acceptance of this application shall be evidenced by the delivery to the applicant of a copy of the application signed by a member of the county committee. Confirmation by the Corporation of the acceptance shall be evidenced by the issuance of a notice to the applicant.

8. Any payment in excess of the premium finally determined shall be refunded to the person making such payment.

9. The applicant hereby warrants that the information, data, and representations submitted herewith are true and correct and are made by him, or by his authority, and shall be taken as his act.

10. Class of wheat to be used as the basis for the payment of premium and indemnity.....
 (Such class of wheat must be a class normally grown in this area)

11. The undersigned applicant does agree to participate in the 1942 Agricultural Conservation Program. In the event that the undersigned applicant is not participating in the 1942 Agricultural Conservation Program payment must be made on the note of that part of the premium in bushels computed on the acreage allotment or permitted acreage, whichever is applicable, on all farms listed in paragraph 4 of Form FCI-212-W (including those listed on Form FCI-212A-W) at the time that Form FCI-212-W is submitted to the office of the county committee.

12. **Note.**—On or before the maturity date shown on the reverse side hereof applicable for the state indicated in paragraph 2 above, the undersigned promises to pay to the Federal Crop Insurance Corporation the premium on the wheat crop insurance application identified by the serial number above. The premium for this application shall be the sum of the premiums in bushels of wheat for the farm(s) covered by this application, and shall be determined in accordance with the 1942 Wheat Crop Insurance Regulations. Such note shall not bear interest either before or after maturity.

If this note is paid prior to maturity, it shall be payable either in wheat or its cash equivalent. After maturity, payment shall be made only in the cash equivalent.

A premium payment in wheat shall be made in the form of a warehouse receipt, or other instrument acceptable to the Corporation, representing salable wheat. The cash equivalent of the premium shall be determined by multiplying the number of bushels of wheat of the applicable class and grade constituting said premium by the price of such wheat at the current basic market designated by said Corporation, less the price differential established by the Corporation pursuant to the 1942 Wheat Crop Insurance Regulations. The price of such wheat at such current basic market shall be the price for the day when this note matures or, in the event this note is paid before the date of maturity, the price for the day when this note is paid.

In the event that a certificate of indemnity is presented to the Corporation for settlement, or to the Commodity Credit Corporation for a loan, before the maturity date shown on the reverse side hereof applicable for the state indicated in paragraph 2, above, the maturity date of this note shall become the day the cash equivalent is established for purposes of settlement or the day application for such loan is made, as the case may be.

And further, if this note be not paid at maturity, the undersigned applicant hereby authorizes:

- (a) The Federal Crop Insurance Corporation to apply any amount which is on deposit with such Corporation for the payment of this note;
- (b) The Federal Crop Insurance Corporation to deduct the unliquidated amount of this note from any indemnity payable to the undersigned under any 1942 wheat crop insurance contract;
- (c) The Commodity Credit Corporation to deduct the amount of the cash equivalent hereunder from any commodity loan made or which may be made to the undersigned on any wheat; and
- (d) The Secretary of Agriculture to deduct the amount of the cash equivalent hereunder from any payment or payments to which the undersigned applicant is now or may hereafter become entitled under Sections 8 to 17 of the Soil Conservation and Domestic Allotment Act, as amended, or any other act or acts of Congress administered by the United States Department of Agriculture.

13. Signature of Applicant.—

(Date)

(Signature of applicant)

14. Certification and acceptance by the county committee.—

The undersigned member of the county committee certifies for the county committee that, after careful examination of representations and data set forth above, such committee has determined that to the best of its knowledge and belief such representations and data are true and correct. It has been determined that the signature appearing above has been affixed by the same person whose name appears in paragraph 1 above or if the signature has been affixed by a person who signs as fiduciary or agent, if any, that such fiduciary or agent has authority to act in the capacity shown.

FOR THE COUNTY COMMITTEE

(Date of acceptance)

(Signature of county committeeman)

REDIFORM-PATD.-AMERICAN SALT'S BOOK CO., INC., NIAGARA FALLS, N.Y.

APPLICANT'S COPY

[On reverse side of form]

MATURITY DATES BY STATES OF THE NOTE SHOWN IN PARAGRAPH 12 OF THIS FORM

July 10	Arizona	July 30	Kansas
	Arkansas	August 11	Colorado
	Oklahoma		Utah
	Texas		Idaho
July 15	Tennessee		Michigan
	Kentucky	August 15	Nebraska
	Missouri	August 18	Washington
July 22	Illinois		Oregon
	Indiana	August 20	California
	Ohio		Minnesota
	Iowa		Wisconsin
July 25	Delaware		Nevada
	Maryland	August 22	South Dakota
	New Jersey		Wyoming
	New York	August 29	North Dakota
	North Carolina		Montana
	Pennsylvania		
	Virginia		
	New Mexico		

ment of losses, (2) to avoid undue complication of premium-rate calculation, and (3) to keep operating expenses at a minimum.

Admittedly, loss adjustment would be made much more difficult if the insured's production had to be graded as well as measured. Determination of grade is a matter of degree, and therefore open to disagreement. Furthermore, the different grades finally agreed upon would have to be equated to a standard grade for purposes of loss adjustment, probably by using price as a common denominator. These two processes would be less objective and definite than the present plan, and might oc-

casion controversy over adjustments and increased administrative costs as well.

With respect to premium rates, it is clear that insurance of quality would require an extra premium almost everywhere. Of course, the frequency and extent of damage vary from place to place, and the financial effects of such damage vary from place to place and from time to time, depending on the local uses available for damaged grain. The computation of the necessary premiums and their application to individual farms could be undertaken only after extended study.

There appears to be no insistent demand

for quality insurance on wheat, but several farmers and county committeemen have called attention to cases in which insureds have had almost unsalable wheat yet no compensable losses. Such situations defeat the purpose of crop insurance. It would seem that experimental offering of a quality rider might be undertaken in areas where the quality hazard is substantial.

COLLECTION OF PREMIUMS

At the inception of the program the FCIC held very firmly to the rule that crop-insurance premiums should be paid before or early in the planting season. Much of the risk involved in raising wheat is over by the time the crop is up and growing, and premium collections at this point would be difficult except on poor stands. Also, it was believed that there were sufficient lending agencies available to permit farmers to pay cash premiums if they so desired.¹⁸

However, the selling effort on 1939 wheat insurance in the fall of 1938 encountered widespread resistance from prospects who either could not or would not pay the advance premiums. Arrangements were completed in March 1939 to permit insureds who were participants in the AAA program to obtain advances on government payments expected in the following summer, to pay insurance premiums.¹⁹ This arrangement substantially lessened the sales resistance to crop insurance, and facilitated extensive participation by spring-wheat growers in the first year. In the next two seasons nearly all insureds used this method of premium payment.

For the 1942 crop year the AAA advance system is not being used. Instead, an applicant for insurance who is participating in the AAA program is permitted to give the FCIC his note for the number of bushels of wheat required; nonparticipants must pay cash or wheat in advance. The note matures shortly after harvest time (p. 235), and thus may be liquidated either by the proceeds of the harvest or out of a loss settlement. The terms of the note are liberal: no crop lien is taken; no interest is charged either before or after maturity; payment may be made at any time in wheat or the cash equivalent before maturity,

or in cash (at maturity-date wheat prices) after maturity; and no security is required except the assignment of moneys which the Department of Agriculture *may* pay to the debtor subsequent to the maturity of the note.

Several factors presumably account for this change in practice. The huge accumulation of surplus wheat during the preceding years made the hoarding of wheat grain by the FCIC unnecessary, and the congestion of storage facilities rendered undesirable any competition by the FCIC for storage space. The costs of handling and storing premium wheat in the first three years had been heavy, storage costs alone amounting to 2.19 million dollars (Table V), and no corresponding benefits had accrued to warrant continuation of such expense. The office complications of handling advances against AAA payments for insurance premiums, and the office and field burdens of specialized handling of wheat-insurance reserves, were by no means negligible.

The new practice should help the crop-insurance program reach the maximum possible clientele at a minimum of operating cost. However, the absence of either interest after maturity or penalty for delinquency seems unnecessarily lax, and laxity is one characteristic which the insurance program should avoid. It is too early to speak with confidence regarding the effectiveness of collections under the present plan.

The FCIC contract permits the insured to select one class and grade of wheat grown in his area (from a limited list prepared by the corporation) as the basis for the insurance contract.²⁰ The premium is paid in that class of wheat or in cash at the local-station value of the wheat, at the option of the insured.²¹

¹⁸ See FCIC, *Economic Justification for Certain Satisfactory Provisions of the Regulations, Application, and Policy for Wheat Crop Insurance* (General Information Ser., No. 2, April 1938) [hereafter referred to as FCIC, *Economic Justification*], pp. 14-15.

¹⁹ This was authorized by Public, No. 9, 76th Cong., approved Mar. 25, 1939.

²⁰ Sec. II, par. 10, *1942 County Application Procedure for Wheat Crop Insurance*.

²¹ The local-station value for wheat is defined as the value of that type of wheat at the central shipping point serving the area, minus normal freight charges from local station to central point. The central shipping points and transportation differentials

The same rule applies to any possible indemnities, except that the insured's option to take wheat is limited by the *Regulations* (Pt. VII) to cases in which the FCIC finds wheat to be "available."

ELIGIBILITY FOR INSURANCE

The original drafts of the crop-insurance program excluded from participation any grower who did not co-operate with the AAA control program.²² However, the final 1939 regulations merely stipulated that only farms which followed "soil conservation and other good farming practices" might be insured, and announced that insured farms exceeding allotment or permitted acreage would not "be eligible to obtain insurance for the following year." Anxiety to obtain insurance volume may have led to this decision.

The 1940 and 1941 regulations continued the soil-conservation proviso, but dropped the threat of subsequent exclusion for insured farms which exceed their AAA allotments. Instead, the rules provided that the maximum insured production available on any farm should be the insured percentage of the normal yield on the allotted or permitted acreage; more acres might be seeded, but in case of loss all of the wheat production on the farm would be deducted from the insured production to determine the indemnity. Obviously, this rendered the insurance almost valueless to one who seeded much in excess of his allotted or permitted acreage, for the likelihood that the insured percentage of the normal yield on the limited acreage would exceed the actual production on a much larger seeded

are stipulated in advance, and have in practically all normal situations produced results consistent with local elevator values. However, there have been cases of local crop failures following which local prices were out of line with terminal prices. In such cases the corporation's loss settlements in cash were not sufficient to buy the local-station wheat whose value they nominally represented. This caused considerable complaint among insureds.

²² See *Report of the President's Committee*: President's letter to Secretary Wallace, and comments by the committee.

²³ The material on eligibility will be found scattered through Pts. I-VII of the 1939, 1940, 1941, and 1942 editions of *Wheat Crop Insurance Regulations*.

²⁴ Pt. I, 1942 *Regulations*.

²⁵ See FCIC, *Economic Justification*, pp. 4-5, 19-20.

acreage is not great, even in a poor year. The 1942 regulations contain the same effective rule, but relax it to permit insurance without discrimination on any farm not seeding more than 15 acres.²³

There seems to be little reason for excluding any wheat grower from crop insurance. Even granting the desirability of enticing farmers into the acreage-restriction program, there is no indication that the availability or nonavailability of crop insurance would be a significant factor in their decisions. About the only significant result of discrimination against nonconformists has been to render nearly one-fourth of the nation's seeded acreage effectually ineligible for a form of security whose cost is being paid by *all* the taxpayers. This issue of course may become unimportant if the imposition of marketing quotas forces virtually all operators to accept acreage limits in 1942 and subsequent years.

THE INSURABLE UNIT

The insurable unit for crop-insurance purposes is the single farm, which is defined by the FCIC as "all adjacent or nearby farm land under the same ownership which is operated by one person, including also any field-rented tract . . . which . . . constitutes a unit . . ." for farming operations.²⁴ Such a unit is regarded as one tract for actuarial and underwriting purposes.

Landlord interests and operator interests in each "farm" are regarded as separate insurable interests, unless they are merged in an owner-operator who holds all rights in the crop. Each interest is insurable to the extent of his rights in the crop; that is, a landowner who was entitled to one-third of a crop could ask for an insured yield (to himself) of 75 per cent of one-third of a normal crop. A cash-rent landlord, commercial creditor, or mortgagee would not have an insurable interest.²⁵ Separate contracts are issued to the different insurable interests; combined contracts to landlord and tenant are not issued.

The 1939, 1940, and 1941 contracts each covered a single insurable interest on a single farm. Individuals interested in several farms might insure whichever of them they chose. The 1942 regulations provide that an individ-

ual owner-operator, landlord, or tenant who chooses to insure any of his wheat interests in a county must insure them all.²⁶ This new rule is probably aimed at those who have insured acreage on which the actuarial data erred in their favor, and failed to insure other parcels. Correction of such adverse selection is desirable, and this measure may reach some of it. It may also cause some non-selective business to drop out of the program, or to drop back from 75 per cent to 50 per cent coverage.

THE RISKS COVERED

Examination of the insuring clause contained in the 1942 application form discloses that the insurance covers practically every hazard beyond the control of the insured or those working for him. It does not cover losses due to neglect or malfeasance of the farmer or his representatives, or to theft, fraud, or unsound farming practices. The terms of insurance are deliberately broad, because the objective is the virtual assurance of "a wheat crop to sell" as the end product of every legitimate attempt at farming.²⁷ The *Regulations* (sec. 23) add further that the insurance shall attach when the crop is seeded and terminate when it is threshed (if combined and sacked and left in the field the sacks are covered for 120 hours or until removed earlier), or on October 31 of the harvest year, whichever is earlier.

In an attempt to be more specific on certain points, Part VI of the *Regulations* provides for the scaling down of loss claims in case (1) the wheat was seeded on poorer than average

quality land, (2) the seed wheat chosen was not of an appropriate class, (3) the fertilizer or tillage practices were not standard, or (4) irrigation water available for use was not used in a normal manner. These adjustments on loss claims are within the purview of the county Agricultural Conservation Committee. Such practices seem not to have been resorted to in any wholesale fashion, but committees have reported scaling down loss adjustments because of the following: (1) inadequate preparation of seedbed; (2) use of poor seed, or not enough; (3) seeding alfalfa with the wheat to develop under it, then overwatering (on irrigated land) to nurture the alfalfa; (4) seeding late, after necessary seasonal rains or snow-pack runoffs were over; (5) seeding over known unproductive alkali spots in fields; (6) seeding on fields not suitable for wheat; (7) failure to cut in time; and (8) improper pasturing.

Committees have also reported considering but not imposing penalties in the following cases: (1) wheat was seeded in a rotation sequence which they considered good as a whole, but unlikely to produce a heavy wheat crop; (2) an individual had experimented with untried but well-planned tillage practices and varieties of wheat; (3) on a rotation farm, insurance was purchased only in years when (so the committee suspected) the less productive land came into wheat; and (4) an operator refused to seed barley into a thin stand of wheat in the spring, preferring to gamble on weeds in order to have straight wheat instead of mixed grain.²⁸

The FCIC reserves the right to refuse any business if it feels doubtful about the risk, and to limit risks accepted to 50 per cent coverage.²⁹ Under the *1939 Regulations* (Pt. IV) it might refuse to insure an increase in seeded acreage (over previous years) in any area in which drought conditions prevailed.

The scope and interpretation of the insurance coverage seems to be quite satisfactory. Three complaints have come to attention, however. First, several individuals have reported unindemnified weather or fire damage occurring after the termination date of the policy. These were usually isolated losses in areas in which threshing is done by ambulant rigs

²⁶ See Sec. I, *1942 County Application Procedure for Wheat Crop Insurance*; also application form, above, p. 234.

²⁷ See FCIC, *Economic Justification*, pp. 5-6.

²⁸ The contract requires reseeding of poor stands at the farmer's expense if that is feasible and customary, and normal care of such stands if reseeding to wheat is not feasible. The corporation often demands the seeding of barley into thin wheat to keep down weeds, when reseeding with wheat is not feasible. Only the wheat fraction in the resulting mixture is counted in determining the insurance indemnity. However, the value of a feed mixture is much below that of straight wheat, and farmers often resist the corporation's request.

²⁹ Pt. II, *1942 Regulations*.

serving each farm in turn; in each instance the losers were on the end of the season's schedule, and the rigs had been delayed by the weather. The standard contract has since been changed to terminate later, on October 31, which should minimize this difficulty. It is now the corporation's policy to extend the termination date of the policy generally in a county in which threshing or combining by many operators is unavoidably delayed; it would seem equally just to do it for individuals, perhaps upon the recommendation of their county committees.

A second complaint arises chiefly out of drought experience in the Great Plains. Though insurance is applied for before seeding time, the cover "attaches" only upon seeding. It is alleged that farmers are sometimes compelled to waste time and money seeding in a dry seedbed where adequate germination is impossible, in order to claim the insurance indemnity.³⁰ This complaint is no doubt well founded in some cases; but a careful inquiry leads to the conclusions (1) that farmers generally seed in such cases anyhow, gambling on rain; (2) that such seeding is frequently justified; and (3) that no satisfactory alternative to the FCIC's present procedure is at hand.

The third complaint alleges that much fraud, such as light seeding (especially in dry seedbeds), seeding in poor soil, and other offenses against the corporation, goes undetected. There may be some truth in this allegation, but corporation officials and most of the county committeemen do not think the problem serious. Many more allegations of fraud are reported unsolicited to county committees than their investigations find verifiable; it seems that sharp practices which may add to county loss-costs and thus to everyone's premiums are not countenanced by one's neighbors. Also, it is clear that exploiting a 75 per cent insurance coverage is not ordinarily profitable, for 75 per cent of normal yield brings in little more than cash outlays. These conclusions are strongly supported by a questionnaire survey conducted in 1940, in which farmers, bankers, private insurance agents, and teachers of agriculture indicated their belief that very little such fraud existed

and that the insurance was administered with adequate care to prevent fraud.³¹

ADEQUACY OF COVERAGE

The Federal Crop Insurance Act permits the corporation to offer insurance of any percentage from 50 per cent to 75 per cent inclusive. The FCIC resorted to the higher figure because 75 per cent of normal was regarded as a good enough yield to permit the average farmer to maintain his farm and family until a better season. It was not expected to be good enough to provide a satisfactory profit; that could only be had by raising a good crop and thus avoiding an insured loss. It was also regarded as about the most complete coverage that would sell readily. A better coverage would cost too much.

The 50 per cent contract was offered to meet the demands of the better-financed farmers who were willing to risk their season's work, but wanted to insure the recovery of their working capital. It was also expected to appeal to people who wished some protection but were unwilling to pay for the 75 per cent cover.

The reaction of the farmers to the two contracts was startling. Each year approximately 95 per cent of the insureds have chosen the 75 per cent contract. The common reason was the inadequacy of the 50 per cent guaranty. The election of the 50 per cent contract was little more common, relatively, in high-premium areas than in low-premium areas. Most of the 50 per cent contracts were grouped in a few scattered counties in each state—evidently those in which the county committeemen or other local leaders had emphasized this type of contract.

Many insureds and county committeemen state that they would prefer a 100 or 90 per cent coverage, even if it cost more. Others urge that if the FCIC wishes to limit the extent of its liability to 75 per cent of normal yield it should either pay all shortages below nor-

³⁰ This is said to have occurred widely in Kansas and Nebraska in the fall of 1939, when the 1940 crop was being seeded. For a discussion of the situation, see FCIC, *Second Annual Report, 1940*.

³¹ J. C. Clendenin, "Crop Insurance—An Experiment in Farm-Income Stabilization," *Journal of Land and Public Utility Economics*, August 1940, XVI, 277.

mal until the limit is reached,³² or pay 75 per cent of all shortages below normal. These groups insist that the present assurance of 75 per cent of a normal yield is not enough to assure the producer any net income, under ordinary price conditions. The accompanying table seems to support their contentions.

OUT-OF-POCKET COSTS OF PRODUCING WHEAT ON
DEBT-FREE FARMS OF TYPICAL SIZE
AND FERTILITY*

Item	Eastern Ohio	North Dakota	Eastern Kansas	Western Kansas
Per acre costs				
Hired labor	\$ 1.75	\$.55	\$.90	\$.59
Horse work	.45	.25	.25	.12
Contract threshing....	.86	.50	.50	.13
Commercial fertilizer.	2.35	.00	.00	.00
Sacks and twine.....	.25	.15	.11	.09
Seed, etc.	1.40	.90	.95	.60
Machinery	2.00	2.00	1.80	2.75
Miscellaneous	.80	.40	.60	.70
Taxes	.60	.37	.45	.45
Total per acre costs..	\$10.46	\$5.12	\$5.56	\$5.43
Per bushel costs				
Normal yield.....	\$.55	\$.48	\$.37	\$.54
75 per cent yield	.71	.62	.48	.72
50 per cent yield	1.03	.90	.69	1.05

* Based on data furnished by Division of Farm Management, U.S. Department of Agriculture. The data are based on the assumption of an owner-operated farm of typical diversification. Depreciation, insurance, and maintenance costs on machinery, fences, and barns are included in proper ratio. Temporarily deferrable maintenance and depreciation costs amount to 22-30 per cent of all out-of-pocket costs. Two-thirds of the farm labor is assumed supplied by the operator and his family in the North Dakota illustration, one-half in the other cases. Only hired labor is shown in costs; operator's labor and return on investment must be compensated from excess of selling price over costs. No crop-insurance premium is included in the costs.

On the whole, the corporation's proffered coverages seem well chosen. Any of the changes mentioned above would increase the

premiums, probably more than their sponsors realize, and would also weaken the urgency for insureds to raise a full crop, which is the corporation's best defense against malingering. Most soundly managed farms can stand occasional years of reduced income, though there are no doubt worthy exceptions to this.

ADJUSTMENT OF CLAIMS

Insureds' claims are considered by the county Crop Insurance Supervisor or the County Committee, and settlements are recommended by them to the branch office of the FCIC. In considering claims, the county organization may have the assistance of the State Committee or State Crop Insurance Supervisor if necessary. Appeals from the decisions may be made to corporation officers, and finally to the courts.³³

Wheat crop-insurance adjustments ordinarily take one of three forms.³⁴ (1) During the growing season a farmer may determine that his crop (or a portion of it) is not worth maturing and harvesting. He therefore wishes the prospective yield appraised so that he may claim his indemnity and either plant another crop on his field or use it for pasture. This kind of settlement is quite common, especially in cases of poor germination or winter-killing.³⁵ (2) The farmer may decide that his maturing crop, or a portion of it, is not worth harvesting. He consequently requests an appraisal and adjustment on his standing crop, preparatory to using it for pasture. This case is also common, since it saves the cost and labor of harvesting thin or poor-quality stands. No deduction is made from any preharvest loss adjustment because of lessened expenses or land freed for other use. (3) The crop may have been threshed and found short, a case which simply requires the measurement of the threshed grain and the calculation of the insured shortage.

The regulations require that the FCIC be given adequate notice and an opportunity to inspect the field(s) before any insured wheat is plowed up, pastured off, or otherwise disposed of without normal maturing and threshing. Regardless of damage, normal care looking toward threshing of the crop is required until the corporation gives its consent to an-

³² On this idea, see W. H. Rowe and L. K. Smith, "Crop Insurance," U.S. Dept. Agr., *Yearbook of Agriculture*, 1940, p. 769.

³³ See the 1941 *Loss Adjustment Procedure and Adjuster's Manual*.

³⁴ Pt. VI, 1942 *Regulations*.

³⁵ A portion of the seeded acreage might be abandoned or disposed of before harvest, and the balance threshed normally. In such case the appraised yield of the unharvested fields plus the threshed grain constitute the "production" for purposes of indemnity calculation.

other procedure. Finally, the regulations require that any insured anticipating a loss shall give notice before harvest, so that the corporation may inspect the standing grain.

County committees seem inclined to apply the adjustment rules very literally, thus giving an appearance of accuracy, and very few of their settlements are either appealed or revised when appealed. Most of the complaints regarding adjustments arise either in cases in which yields are estimated without threshing, or in which losses are held due to uninsured causes, or in which arguments develop over what constitutes proper care of damaged crops. The most common single complaint involves the clause in the regulations³⁶ which provides that a crop so heavily damaged that farmers would not ordinarily care for it further may be regarded as a "constructive total loss," and so indemnified. It seems that adjusters have often been reluctant to admit that damage is "constructively total"; they have instead appraised the damaged stands optimistically and offered the insured the option of abandoning the wheat with a partial loss settlement or maturing it and obtaining an accurate postthreshing adjustment. Many insureds have claimed that they were forced to mature and thresh stands which would not yield enough to pay for the work, in order to avoid "stingy" settlements.

Under the present rules a "close" prethreshing adjustment policy is amply justified. But it seems a little unfair to concede a total loss to one operator in early spring, giving him maximum indemnity without subjecting him to care and harvest costs, and permitting him to free his land for other uses, and then to compel a neighbor to mature and thresh a partly damaged stand in order to obtain the same insured wheat yield. Probably some deduction should be made from prethreshing adjustments on account of expenses saved, for the present system makes a heavy loss which justifies abandonment more desirable to the insured than a moderate loss.

The FCIC's adjustments are generally re-

puted to be fair, sometimes verging on severe; and few cases of lavish settlements are reported.³⁷ This is encouraging, for laxity would quickly demoralize the program. It is still possible, however, for adjustment standards to be obliquely responsible for part of the FCIC's underwriting losses. Experienced underwriters state that loss experiences on actual contracts frequently exceed estimates based on accurate preliminary statistics, because subjective conceptions of fairness enter into adjusters' decisions. The resulting adjustments do not appear to be lax, and the standards cannot be made less generous without excessive friction. The only practical remedy in such cases is higher premiums.

Adjustment is undertaken by the county office as soon as possible after damage is reported, in case abandonment of a farm's entire acreage is contemplated. If some wheat remains to be threshed, final adjustment must necessarily be delayed pending completion of that process. Thus settlements often lag behind the occurrence of damage, commonly because of the nature of the contract, though occasionally because numerous simultaneous losses overwhelm the county staff or create congestion in the FCIC branch offices.

Settlements are made within 30 days after adjustment by the issuance of *Certificates of Indemnity* evidencing claims to bushels of wheat. Under the 1941 procedure a certificate was issued only when a claimant did not wish immediate cash settlement. The indemnified farmer could subsequently exchange his certificate for a warehouse receipt if wheat was available, or he could surrender it for cash, or he could post it as collateral for a wheat loan from the Commodity Credit Corporation. Under the 1942 procedure all losses will be adjusted by the issuance of certificates, and, subject to the availability of CCC loans, the subsequent options will be similar to those of 1941. The 1942 certificates will "expire" (i.e., become definitely payable in cash at the current local station values) 90 days after their issuance or 15 days after the final date on which CCC wheat loans on the 1942 crop may be had, whichever is later. Since the certificates represent stored wheat, the holders are charged storage costs on them (after the

³⁶ Pt. VI, 1942 Regulations. This clause has appeared in each annual set of regulations.

³⁷ This conclusion is supported by the questionnaire survey reported in Clendenin, *op. cit.*

first 14 days) until they are presented for settlement.³⁸

TRANSFERENCE, ASSIGNMENT, AND GARNISHMENT

If an insured's interest, or a portion of it, terminates before any loss occurs, the insurance coverage or a pro rata portion of it automatically accompanies the interest to the new owner.³⁹ Any subsequent loss affecting the insured interest would be paid to the owner(s) affected by the loss. In case the insured gives a mortgage on his crop, or a creditor attaches it, or a receiver is given control over it, or some similar legal proceedings involve it, the insurance remains the free property of the insured. Only when his interest is permanently lost beyond any right of redemption does his right to collect insurance indemnities pass from him involuntarily.⁴⁰

An insurance contract may, however, be as-

signed as collateral security under several types of current loan or rent transactions, or to secure farm mortgage or purchase payments. Such assignments are subject to approval by the corporation, and upon approval will result in payment of any losses which occur to the insured and his creditor(s) jointly. In the absence of voluntary assignment and corporation approval thereof, the FCIC will not obey any attempt at attachment, garnishment, trustee process, receivership, or other legal seizure of an insured's rights to protection or indemnity under the contract.⁴¹

These provisions all appear salutary except the sweeping exemption of insurance rights and benefits from legal process. Crop insurance is an ordinary casualty coverage, and its indemnities scarcely deserve the sacrosanct standing of workmen's compensation or social security payments.

III. ACTUARIAL FEATURES

The early decision to sell wheat crop insurance on a voluntary basis clearly posed the problem of actuarial approach. The available evidence indicated that growers could be interested in a plan in which their premium payments roughly equaled their probable periodic losses; but there was reason to doubt the extent of participation if they were charged much more. Charges below a normal loss level would naturally entail underwriting losses. It therefore appeared necessary to offer each farm an insured coverage and a premium rate conforming closely to its own individual probabilities. This pointed to the use of individual farm statistics as the basis for the insurance contracts.

³⁸ Details on this and other technical matters will be found in Pt. VII, *1942 Regulations*.

³⁹ If the new owner declines to pay a proportion of the premium to the old insured, the latter has no recourse. He may not surrender the contract and ask for a return of part of the premium before transferring his interest, for the corporation has no way of prorating risks over the season and hence regards a premium as fully earned as soon as the crop is seeded.

⁴⁰ Pt. VIII, *1942 Regulations*. The *1942 Regulations* on some of these points are slightly different from those of earlier years. Cf. FCIC, *Annual Report, 1941*.

⁴¹ Pt. VIII, *1942 Regulations*, and Federal Crop Insurance Act, sec. 509.

Proposals to guarantee a uniform yield per seeded acre for an entire township or county, or to establish a uniform premium rate for the township or county or state, were ruled out by the decision that each insured should pay his proper share of the net loss-costs. Frequent wide variations in average yields and loss-costs between farms in the same counties showed that uniform rates would be clearly uneconomic, in subsidizing the seeding of poor land by insurance indemnities. A proposal to indemnify all farms in the county when the county average yield dropped below normal was even less acceptable, because the data showed that many farm losses occur when the county average is good and that many farms have good crops when the county average is poor.

LAND RECORDS AS THE ACTUARIAL BASE

The plan to insure the production of 50-75 per cent of normal yield on farms, and to establish normal yields and premium rates on an equitable basis for each farm, raised two fundamental questions of technique. First, should premium rates and insured yields per acre be established on individual fields or on

a farm-average basis? Second, how should the actuarial calculations be made, in view of the fact that the quality of the land, the farming methods employed, and the skill and devotion of the operator are all important determinants of the yield and loss experience?

The answers to both questions were based on statistical expediency. Reasonably good data could be had on farm yields, but not by individual fields, nor with reference to details of farming methods. The skill and devotion of operators was an intangible that defied measurement. A convenient and objective approach could be had by calculating yields and rates on the basis of the farm's yield history or by appraising them on the basis of its appearance and reputation. This approach would give some weight to the operator's habits and farming methods as well as to the quality of the land, if the operator was a long-time occupant and was consistent in his methods. If operators or methods had been changed, the farm yield and rates would still be reasonably valid because the quality of the land is the most important determinant of its production. Only one qualification was placed on this reasoning: if a fundamental change in operating methods took place—for example, a shift from dry-farming to irrigation or from continuous cropping to summer fallowing—an allowance would be made for the difference in practices.

This statistical approach is probably as sound as any which could be devised at present. If it were possible to modify the basic calculations by schedule-rating each applicant's intended operations in the manner of a fire company rating an industrial fire risk, an ideal might be reached. Such a schedule would include allowances for the operator's personal attributes,⁴² the quality of the fields used (relative to the average on the farm), the contemplated tillage practices, and other pertinent data. This process would be expensive but it may in time prove practical, even necessary.

The absence of any check on the fields seeded by insured farmers, except a casual verification that they are "suitable for wheat," is probably one of the causes of the FCIC's poor loss record. Even if schedule-rating of

all operations is impracticable, it would probably be worth while to rate each field in percentages of the yield and premium figures allotted to the farm. It is commonly said that rotation farms are more often insured when their poorer fields are seeded to wheat.

OBTAINING THE BASIC STATISTICS IN 1938⁴³

When the FCIC undertook to collect farm-yield records upon which to base its actuarial work, it found only a small fraction of the farms able to supply authentic yield histories covering significant terms of years.⁴⁴ Many more farms had wheat-sales records or elevator records, but had no data on the number of acres used to produce the wheat. Early records were often of doubtful value because the farmers had guessed at the acreages seeded, not knowing the exact sizes of their fields. Many farms had kept no records for years prior to 1933. The AAA had fairly good data from 1933 on, and had attempted to collect some for prior years, but it had only enough to be helpful. It did have an "average yield per acre" estimate for each farm, but its estimates had generally two faults: (1) they were generously high, and (2) they were relatively higher on low-yielding than on high-yielding farms.⁴⁵

The FCIC determined that best results could

⁴² Many operators move too often to be subject to their own records for crop-insurance purposes. See comments on this in Rogers, *op. cit.*, p. 85. Rogers cites a 1930 census table of which the following is the 1935 counterpart:

FARM OPERATORS GROUPED BY LENGTH OF OCCUPANCY OF THEIR PRESENT FARMS, 1934

Period	(Percentages)		
	All farmers	Owners	Tenants
Less than 1 year.....	24.5	7.1	39.5
1 to 3 years.....	15.7	8.2	21.9
3 to 5 years.....	11.9	9.4	14.0
5 to 10 years.....	15.4	17.9	13.2
10 to 15 years.....	10.0	15.1	5.7
15 years and over.....	22.5	42.3	5.7

⁴³ The descriptions of mathematical processes contained in this and the next section omit mention of many details and of many exceptions to general procedures. These details and exceptions are discussed in the manuals and memoranda to which footnote references are made.

⁴⁴ No general tabulation was made, but it is probable that not more than 15 per cent had as much as 6-year complete records.

⁴⁵ The AAA, it must be observed, did not develop these figures for insurance purposes.

be had from the limited data obtainable in 1938 by using 6-year average yields and loss-costs for each farm, and adjusting them mathematically to reflect 10-year experience.⁴⁶ Farm data were accordingly sought for the years 1930-35 inclusive, to be adjusted to a

⁴⁶ In some cases, notably Dust-Bowl counties where several bad years distorted the 1930-35 experience, a longer period was used. A detailed discussion of the research which led to the choice of the 1926-35 basis and a defense of the methods used to reach it will be found in FCIC, *Economic Justification*. The mechanics of the 10-year adjustment were as follows:

1. Sample data.—In each county a sample of 75 representative farms—carefully chosen to include a normal proportion of all types of lands and locations—was selected. The 6-year average yields and loss-costs per acre were computed for each of these farms. The 6-year average yields per acre on all these sample farms were then averaged, to arrive at a 6-year average yield per acre representing the county as a whole.

2. Yield adjustment.—The Agricultural Marketing Service estimates of average wheat yields per seeded acre in the county for the 10 years 1926-35 were averaged. The excess or shortage of this average over the 6-year county-average yield as determined by the sample data was regarded as the necessary "adjustment to a 10-year basis" and added algebraically to all computed or appraised farm 6-year average yields.

3. Loss-cost adjustment.—The individual farm loss-costs per acre as shown in the sample data were averaged by years, to indicate the annual losses per seeded acre which the corporation would have sustained on a 6-year insurance basis, in the county. These annual per acre losses were then expressed as percentages of the average 6-year yield per acre as computed from the sample data. The annual per acre yields on sample farms were then averaged together by years to give a county-average yield per seeded acre for each year of the basic six. These also were then expressed as percentages of the 6-year county-average yield per acre. It was then possible to construct a correlation diagram and express by fitted curve the normal relationship between (a) county-average yield per acre as a percentage of normal (average), and (b) county-average per acre loss-cost expressed as a percentage of normal (average) yield. Next, the 10 annual county yields per seeded acre reported by the AMS (expressed as percentages of their own average) were applied to this fitted curve, and the related loss-costs determined. These latter (in percentages of normal yield) were then converted back to bushels by application to the 10-year average AMS yield estimates, and the results averaged and regarded as the proper adjusted 10-year county-average loss-cost. The excess or shortage of this 10-year county-average loss-cost over the 6-year county-average loss-cost as determined from sample farm data was then added algebraically to all computed or appraised 6-year average farm loss-costs. This made the adjusted farm loss-costs. These, when averaged with the county adjusted 10-year loss-cost, became the premiums per acre for the respective farms.

⁴⁷ FCIC, *First Annual Report, 1939*, pp. 17-18.

10-year 1926-35 base. When the county committees were unable to find authentic yield data, they were instructed to appraise the 6-year average yield and loss-cost for the farm. If only a portion of the farm's record was missing, those years were appraised and included with the actual records for yield and loss-cost calculations.

It became apparent in the summer of 1938 that inexperienced county committees were tending to appraise farm yields high and loss-costs low, and that the appraisals were especially high on low-yielding farms.⁴⁷ This tendency was discovered too late to avoid some of its effects in the 1939 insured yields and premium rates, but a corrective called the "key farm system" was instituted for future use. Under this system a representative sample of 50 to 100 farms—assorted as to fertility, yield reliability, location, and other vital characteristics, but all having fairly complete 6-year historical yield data—was selected for each county. Thereafter, the county committeemen in appraising yields and/or loss-costs for a farm were instructed to find a comparable farm on the key-farm list and assign its data, with whatever modifications were justified, as their appraisal of the other farm. This system could not prevent errors, but it did make the appraisal process much more objective.

The underwriting experience of the 1939 crop year indicated that the premiums and insured yields were not satisfactory. Actuarial factors which contributed to the heavy losses were probably as follows: (1) Appraised average yields and appraised yearly yields (where gaps in annual data were filled in by appraisal) tended to be too high, though not uniformly so. (2) Some of the yield histories were inaccurate, commonly on the high side. (3) The appraised loss-costs tended to be irregularly too low, and the errors in historical yield data likewise produced errors in loss-costs. (4) The AMS yields in some counties were of doubtful merit, making the 10-year adjustment factor added to the 6-year farm yields subject to question, and likewise raising doubts regarding the 10-year loss-cost adjustment, which is based on the same AMS yield data. (5) The process of adding the above 10-year adjustments uniformly to all

6-year farm yield and loss-cost data in the county is perhaps closer to the proper method than proportional adjustments would be, but it is not accurate.⁴⁸ (6) The theory that a 6-year correlation between county annual average yields per acre and annual aggregate loss-costs will indicate the normal relationship between average yields and loss-costs, as it would develop over a long period of years, is somewhat strained; yet this is the basis for the 10-year loss-cost adjustment previously mentioned.⁴⁹ (7) The process of averaging adjusted farm loss-costs and adjusted county-average loss-costs to make farm premiums, which was adopted as a means of smoothing out freak variations in farm yield records, gave too low premium rates to some high loss-cost farms and too high premium rates to some low loss-cost farms.⁵⁰

These mathematical factors were not the only causes for 1939 underwriting losses. There were serious summer droughts in South

Dakota, Kansas, Nebraska, Oklahoma, Texas, and Colorado, and other notable losses elsewhere. Furthermore, a bad selection of risks in winter wheat was almost assured by the fact that the contracts could not be completed on time in many states because premium data were not ready. Only 56 per cent of the original applicants responded to premium notices, thus completing their contracts.⁵¹ Presumably a majority of the canceled applications represented crops then in good condition, for insurance on poor stands would no doubt be retained in most instances.

SUBSEQUENT ACTUARIAL REVISIONS

Material changes were made in the methods of computing insured yields and premium rates after the 1939 experience. The FCIC's actuaries concluded that the county-average yields per acre prepared annually by the AMS were more reliable than the available farm yields, and decided to force the individual average farm yields into agreement with an estimated county average, which they termed a "county check yield." Likewise, the actuaries concluded that an average county premium rate computed from their sample farm data and adjusted statistically for various other elements was more reliable than the computed and appraised farm loss-costs; consequently they decided to force the farm premium rates into agreement with a computed average premium rate per acre for the county, which they termed a "county check premium rate."⁵²

Before undertaking any proportioning to bring them into conformity with the check rates, the individual farm yields and loss-cost rates for farms having adequate yield records were carefully recomputed, using individual farm yields for the period 1930-38 inclusive.⁵³ These 1930-38 computations were then adjusted to a 1926-38 basis by substantially the same adjustment methods⁵⁴ used in the previous year to convert 1930-35 data to a 1926-35 basis. The key-farm system was then applied on farms without adequate yield records, to obtain appraisals of both yields and loss-costs. Pressure was brought on the appraising committees to compel them to find a normal distribution of high and low yields and loss-

⁴⁸ Cf. FCIC, *Economic Justification*, pp. 10-12.

⁴⁹ See above, footnote 46. For an elaborate exposition of the method, see Pt. IV of FCIC, *Procedure Used in the Preparation of Actuarial Tables for the 1940 Wheat Crop Insurance Program* (General Procedure No. 3, mimeographed, Sept. 8, 1939).

⁵⁰ In counties in which soil and climatic conditions and farming methods are reasonably uniform, the averaging process probably increases the general reliability of the quoted premiums. However, the characteristically wide range of farm loss-costs in most counties causes us to distrust a process which must reduce this range by 50 per cent.

⁵¹ U.S. Dept. Agr., *Report of the Secretary of Agriculture, 1939*, p. 79.

⁵² Description of the preparation of individual farm data will be found in the 1940 *County Yield and Rate Procedure* (Mar. 29, 1939). Preparation of check yields and rates is described in *Procedure Used in the Preparation of Actuarial Tables for the 1940 Wheat Crop Insurance Program*.

⁵³ The ideal situation for these computations would be found on a farm whose nine annual yield-per-acre records were not only accurate but typical of its probable future performance. However, many such records would contain spectacular losses or bumper crops, so large that the average yield and loss-cost figures would be badly distorted. The county committees were therefore told to make allowances for these "spot" abnormalities by making arbitrary corrections for them. Some committees used this privilege freely, while others used it very little, arguing that actual figures were superior to guesswork. On the whole, the committees were conservative in their departures from actual averages.

⁵⁴ See footnote 46.

cost rates among their appraised farms. The resulting farm-yield and loss-cost data were used as the basis for 1940 insurance. Since then, they have been revised cumulatively each year, as new yield data became available.⁵⁵

For 1941, the 1939 yields were available. The adjusted yield for each farm for 1941 was therefore computed by averaging the adjusted yield as computed for 1940 (based on 1926-38 data) with the actual yield as determined for 1939, giving the former a weight of nine and the latter a weight of one. The adjusted premium rate for 1941 was similarly made, except that in the averaging process the 1940 computed premium rate received a weight of 19 and the 1939 loss per acre (the

shortage of the 1939 actual yield under 75 per cent of the adjusted yield) a weight of one.⁵⁶ For 1942 these 1941 adjusted yields and premium rates were brought forward by averaging in the 1940 actual yields and losses per acre in exactly the manner used to bring in 1939 actuals the year before.⁵⁷ Thus the average yields and premium rates computed for each farm will be brought up to date each year as new yield figures for such farm become available.

However, it is considered necessary to bring these farm yields and rates into alignment with estimated county averages. This is done by "factoring"—i.e., raising or lowering all of the individual farm rates proportionally until their arithmetic average equals the desired check yields (or check premium rates, in that case).⁵⁸

The county check yield for 1940 for any county was theoretically the simple average of the yields per seeded acre for the period 1926-38 inclusive, as reported by the AMS.⁵⁹ The 1941 check yield similarly should have been the simple average of the 1926-39 AMS estimates, and that for 1942 the average of 1926-40 estimates. However, the AAA also has use for an estimate of normal yield per seeded acre, for each county. Its figures are used for a particular purpose, and are compiled to serve that purpose; but in order to avoid having two official yield figures sponsored by the Department of Agriculture, the FCIC and the AAA undertake to arrive at a combined figure acceptable to both. The formula for combination is somewhat elaborate, but the usual effect on crop-insurance county check yields is to make them higher than they would otherwise be, and thus to increase the probability and size of losses. The increase does not exceed 2 per cent in any state as a whole, nor 5 per cent in any county; but there are a number of counties where the combination has not been carried out because the two estimates are too far apart to permit a satisfactory compromise.

The county check premium rates for 1940 were computed⁶⁰ as 13-year (1926-38) average loss-costs by the use of the 6-year sample farm data, the 1926-38 annual AMS county-yield estimates, and the methods used to compute

⁵⁵ See the *County Yield and Rate Procedure* manuals for 1941 and 1942 (published in 1940 and 1941 respectively).

⁵⁶ The new yield figures are more up to date and probably more accurate than the old, hence are given disproportionate weight, subject to statistical limits to keep an unusual year from forcing too much change. The new loss-cost data are given less weight because the county loss-cost figure (which is already incorporated into the 1940 premium rate) would otherwise be obliterated too rapidly, and the somewhat erratic year-to-year loss-costs would cause undesirable fluctuations in premium rates.

⁵⁷ For 1942 the FCIC is increasing or decreasing its adjusted farm premium rates in proportion to the increase or decrease in adjusted average yields for 1942 as compared to 1941. The theory is that the existing premium rates are in large part based on loss-costs computed from the 1926-38 base yield, and that changes now occurring in the average yield should in some manner be reflected in the computed loss-costs. Also, it is pointed out that changes in insured yields arising from bumper crops or very poor ones will magnify or minimize subsequent loss claims. These are sound arguments, but it will not be easy to explain to an insured why his bumper crop, particularly if it follows two or three loss-free years, should be rewarded by an increase of premium rate.

⁵⁸ Details of and exceptions to the general practice will be found in the annual *County Yield and Rate Procedure* manuals.

⁵⁹ Details of and exceptions to the general practice will be found in *Procedure Used in the Preparation of Actuarial Tables for the 1940 Wheat Crop Insurance Program*.

⁶⁰ A thorough explanation of the method is found in *ibid.* (see also footnote 46). The use made of this method and the 1930-35 sample data in preparing actuarial tables for 1940, 1941, and 1942 surely justify some skepticism, unless comprehensive tests of which we are unaware have been made to assure the reliability of the yield-loss correlation curves which are the heart of the process.

1939 loss-cost adjustments, with one additional step: the rate thus computed for each county was "smoothed" by averaging it with those computed for contiguous counties, giving one-third weight in the process to the data from contiguous counties.⁶¹ This completed the 1940 check rates. For 1941 and 1942 the same sample data and methods and the 1926-39 (1926-40 for 1942) AMS yield estimates were used to obtain *preliminary* check premium rates. The preliminary check rates for 1941 and 1942 were then successively

⁶¹ In the 1941 actuarial work the influence of the figures from other counties was statistically limited; for 1942 the process was discontinued.

⁶² This correction and the entire 1942 check premium rate development are reviewed in a memorandum entitled *Procedure Followed in Computing Check Premium Rates for Use in the 1942 Wheat Crop Insurance Program* (mimeographed, Apr. 9, 1941). The correction here noted is apparently designed to raise premium rates to compensate for the higher losses resulting from the raising of check yield rates. See footnote 57.

⁶³ For a thorough explanation, see the document cited in footnote 62 and an earlier one: *Explanation of Increases or Decreases in County Check Premium Rates Due to Losses Paid on 1939 Wheat Crops above or below Expectancy* (mimeographed, May 13, 1940). The general idea is that the correlation diagram of county-average yields and average per acre loss-costs, as shown by sample data for six years 1930-35, will indicate what loss-cost should have accompanied a (for example) 1940 average yield as estimated by the AMS. If the actual 1940 county-average loss-cost per acre was higher or lower than such "expected" loss-cost, the county check premium rates (which are based on this aforementioned correlation) should be raised or lowered accordingly. We are puzzled over the logic of this step. If the process by which the preliminary check premium rate was computed (based on these same statistical charts and data) was correct, the single year's deviation from "expected" loss may be fortuitous and should not be compensated in the next year's premium rate. Or the check premium rate may be correct, with the excess loss caused by adverse selection; this situation cannot be properly corrected by proportional increases on all premiums. If the preliminary check premium rate was truly in error, there is little to be gained by basing the correction on the erroneous process which produced the error; for that matter, if there is error in the process, we have here no objective basis for determining whether the actual losses are really different from those which present premium rates will in the long run pay for.

⁶⁴ Sec. IVB, *County Yield and Rate Procedure (Wheat)*, 1942.

⁶⁵ Sec. 31, *1942 Regulations*.

⁶⁶ Four western Kansas experiment stations report that over a period of 23 years their summer-fallowed plots averaged 70 per cent more wheat per acre than did nonfallowed plots.

revised by (a) a correction to compensate for the change in hazard resulting from the change of check yield to agree with the average yield computed by the AAA,⁶² and (b) a correction to raise or lower this check premium rate in accordance with apparent loss experience.⁶³

The annual changes in insured yields and premium rates which result from the foregoing processes are apparently an unavoidable concomitant of any present attempt to keep the figures entirely up to date. The county records reproduced in Table VI indicate that some of the changes are merely fluctuations, while others are progressive or permanent in nature. Ultimately, the data now accumulating should make possible a more stable actuarial policy than the present one; but for the present, the need for accuracy supports the immediate use of new annual figures as they become available.

The FCIC has established a minimum premium rate of .5 bushel per acre for 75 per cent insurance and .3 bushel per acre for 50 per cent insurance.⁶⁴ There is also a stipulation that no total premium shall be less than 1 bushel.⁶⁵ There is, however, no minimum ratio of premium to insured yield, this being governed entirely by the premium-rate calculation and the average yield per acre on the farm. Where high yields have prevailed without serious losses over a period of 15 years the FCIC consequently takes on a total-loss hazard of considerable proportions.

SPECIAL PRACTICES

A particularly difficult problem is posed for the corporation's actuaries when essentially different farming methods are used on the same land from time to time, and in the same county simultaneously. For example, the typical wheat yield in western Kansas is much heavier on summer-fallowed than on continuously cropped land.⁶⁶ To average several harvests, some on summer fallow and some from continuous cropping, and call the result the average yield of the land, applicable for insurance purposes to subsequent crops regardless of how the soil is prepared, is obviously absurd. It is equally absurd to regard the fluctuations in county-average

yield, occasioned possibly by wet and dry seasons on dry-land wheat, as being significant with respect to irrigated wheat raised in the same county.

To meet this problem the FCIC has established special actuarial categories in which to segregate farms following recognized "special practices." These categories have special check yields and check premium rates of their own, and the farm yields and rates are likewise separately handled.⁶⁷ The same general methods are followed in developing special-practice data as are used on general-practice statistics.

Special-practice categories have been authorized for only three practices thus far: summer fallowing instead of continuous cropping, irrigating instead of dry farming, spring seeding instead of winter seeding (spring wheat is subdivided into "durum wheat" and "other wheat"). These special-practice categories are in use only in authorized counties in South Dakota, Kansas, Nebraska, Oklahoma, Texas, Colorado, Wyoming, Montana, and California. It is probable that more special-practice counties will be recognized, and possible that additional practices will be included in the list. The use of certain fertilizers in some areas and of certain crop rotations in others allegedly merits such recognition.⁶⁸

The entire problem of special practices seems as yet imperfectly explored. An adequate schedule of variations in basic farm statistics to allow credits for several important variants of standard practices, such as time of plowing, rotation, fertilization, use of tested seed, and insect control, may sometime be feasible and worth while. Or it might be that such practices cannot be adequately valued for rate purposes, or that such a system would be too costly. In the meantime the special-prac-

tice system followed by the FCIC seems to do approximate justice in the cases it reaches.

TRENDS

A major problem arises in cases where yield figures are suspected of trending either up or down, to new levels. Averages of yields showing a trend will lag behind the new level of performance. Average loss-costs based on rising or falling yields will be greater than otherwise, since the range of yields in the tabulation will be constantly widening. Both insured yields and premium rates will be in error, therefore, unless some correction is made to control the influence of trend in the data. This is true whether the data be county-average yields or individual-farm yields.

The higher wheat yields per acre in many states during the past five years raise questions as to the possibility of a general upward trend in yields per seeded acre—of the possibility that these good yields are reflecting changed normals, not just good seasons. The acreage allotment program of the AAA has doubtless driven some of the poorer fields out of use, and the yield per acre on the better-than-average fields now being seeded should exceed old marks. Also, the AAA has paid farmers to summer fallow, to plant legumes, to rotate crops, to fertilize their soil, to combat pests, all of which should add something to the subsequent wheat yields. In some areas, new rust-resistant varieties have been more generally planted.⁶⁹

There are also many areas in the United States, especially irrigated areas developed some years ago, where noticeable down-trends in average yields are seemingly occurring.

The actuarial system of the FCIC does not include any established program for searching out and making allowance for trends in yields. Isolated adjustments are no doubt made, especially in relation to special practices, and perhaps this is all that can be done at present. But the problem remains to be solved.

APPLICATION AND PREMIUM-PAYMENT DATES

It is an axiom of sound insurance operation that insurance contracts should be completed and premium payments assured before loss

⁶⁷ *County Yield and Rate Procedure, Supplement for Special Practices, 1942.*

⁶⁸ County committees in several counties reported that wheat yields there could vary as much as 50 per cent in rotation plans which as a whole are equally profitable to the farmers, the wheat yield depending upon the sequence of the rotation and the timing of fertilizer applications.

⁶⁹ Such progress has been more striking in Western Canada. See J. S. Davis, "The World Wheat Situation, 1939-40: A Review of the Crop Year," *WHEAT STUDIES*, December 1940, XVII, 150 n.

prospects are in any way determinable. FCIC officials originally believed that contracts could safely be offered until two to four weeks before seeding time. Evidence now accumulating suggests that this is true except in certain areas: (1) where the success of irrigated spring wheat depends on snow packs which are already in place before seeding begins, as in relatively limited areas in the Dakotas, Montana, Idaho, and Washington; and (2) where dry-farmed wheat is heavily dependent on soil moisture accumulated before seeding time, as in a huge area covering most of the Great Plains and embracing at least one-third of the nation's wheat production.

Extensive studies have been made in the Great Plains area, and particularly in Kansas, on the influence of soil-moisture content at seeding time (and earlier) on wheat crops to be harvested the following season.⁷⁰ Significant results have been obtained and widely discussed throughout the region. Agronomists and farmers generally agree that soil-moisture tests in August will throw some light on the next year's winter-wheat prospects, and some believe that tests made on July 15 are significant. Spring-wheat probabilities may be gauged in similar fashion in February, at least in some areas.

The FCIC has now established uniform "final dates" for the receipt of crop-insurance applications, that for winter wheat being Au-

gust 31 and that for spring wheat February 28.⁷¹ Prior to the 1941 crop year there were varying dates established for different states, but on the whole not differing greatly from these. Except for the first year, when premium rates were not ready in time in several winter-wheat states, the premium collections have been made (for 1942 a premium note is being received) at the time the application was received.⁷² Application is taken covering the largest number of acres the applicant may decide to seed; if he actually seeds less, the excess premium is refunded or the note corrected. (For this reason, data on number of contracts, premium payments, and insured acreage and production are revised downward as final data accumulate.)

The FCIC's underwriting results in the Great Plains states—the states in which soil-moisture conditions permit farmers to judge their crop prospects before the deadline dates for insurance applications—have been unsatisfactory (Tables III and VII). There were serious drought conditions in some of these states in late 1938 and through 1939 which would have produced losses regardless of pre-deadline selectivity by insureds, but state and county committeemen generally agree that the loss ratios were greatly accentuated by adverse selection of insureds. In counties and years (especially in the autumn of 1938 and 1939) when soil moisture was lacking, insurance sold freely. In those same counties the number of contracts dropped as much as 75 per cent when soil-moisture conditions presaged a good crop. This was especially notable in the fall of 1941, in connection with applications for 1942 coverage.

It appears, then, that the FCIC will not get a sound selection of risks in the dry Great Plains area unless the applications on winter wheat are received by July 15, and those on spring wheat by about December 15. Those who are chiefly interested in selling more contracts raise four objections: (1) farmers are not interested in insuring next year's crop before they have finished harvesting the current one; (2) farmers will not have their next season's operations planned so early; (3) collections could not be made so far in advance; and (4) tenants who change farms in late

⁷⁰ H. J. Henney, "Estimation of Future Wheat Production from Rainfall," *Monthly Weather Review* (U.S. Dept. Agr., Weather Bur.), June 1935, LXIII, 185; A. L. Hallsted and O. R. Mathews, *Soil Moisture and Winter Wheat with Suggestions on Abandonment* (Kansas Agr. Exp. Sta. Bull. 273, January 1936); J. S. Cole and O. R. Mathews, *Relation of the Depth to which the Soil Is Wet . . . to the Yield of Spring Wheat on the Great Plains* (U.S. Dept. Agr., Circ. 563, May 1940); J. E. Pallesen and H. H. Laude, *Seasonal Distribution of Rainfall in Relation to Yield of Winter Wheat* (U.S. Dept. Agr., Tech. Bull. 761, January 1941). More conservative findings for Saskatchewan and Alberta are reported by J. W. Hopkins in *Canadian Journal of Research*, May 1936, XIV, 229.

⁷¹ Sec. I, 1942 *County Application Procedure for Wheat Crop Insurance*. The rules also state that no application may be received later than the date of beginning seeding on the farm.

⁷² Premiums on 1940 and 1941 crops were mostly made by means of advances on future AAA payments, but these were actually collected by the FCIC before the deadline.

summer and their landlords would have no opportunity to insure. The county and state committeemen in the Great Plains area admit the weight of these arguments, but most of them believe that the early deadlines would be practical.

A doubtful alternative might be found in selling crop insurance only on three- or five-year contracts. Such plans have been discussed by FCIC actuaries, but held in abeyance because of the possible effect on volume of participation. The best plan provided for the surcharging of the first premium in the series by 25 per cent. This excess charge was to be applied on the last premium in the series, if the contract was duly completed by the insured.

UNDERWRITING EXPERIENCE

The underwriting experience of the FCIC during its first three years of operation was definitely disappointing (see above, p. 230). Each year showed a substantial excess of loss payments over premium collections, despite reasonably good general crop conditions. The third loss, that of 1941, was especially disappointing because of the excellent crop conditions in most parts of the nation. The following percentages are significant:

Harvest year	Ratio of wheat yield per acre to 1926-40 av.	Ratio of losses paid to premiums collected
1939	103	152
1940	114	165
1941	132	142 ^a

^a Based on semifinal data as of Dec. 31, 1941. This ratio is higher than that shown by preliminary data in Table III (see Appendix Note E).

Some encouragement may be found in the fact that out of the 22 states which participate heavily in the program, only 7 paid premiums in excess of losses the first year, whereas 13 did so for 1940 and 13 for 1941 (Chart 1). Only four of the major participating states—Nebraska, Oklahoma, Texas, and California—reported losses in excess of premium collections in each of the three years. However, the fact remains that underwriting losses are persistently large when they should be small or nonexistent. Actuarial imperfections already mentioned seem to have been

important factors in determining each year's loss record to date.

There have been several other outstanding causes of loss. In 1939 these included: (1) the late completion of many contracts, which gave many winter-wheat farmers the opportunity to insure if their seedings were unsuccessful, and to refuse (or cancel applications for) insurance otherwise; (2) serious drought damage in the Southern Great Plains; and (3) a rust epidemic in California. The 1940 experience is traceable to (1) adverse selection based on drought conditions at seeding time in the Southern Great Plains; (2) losses due to the drought itself; and (3) rust in California. The 1941 losses were highly varied in nature, important ones having been (1) autumn frost damage in Illinois, Iowa, Missouri, Nebraska, and Kansas; (2) wind and local droughts in Texas and Oklahoma; and (3) floods and rust in California. For 1942 a peculiar type of adverse selection is already apparent: fewer contracts were sold in the high-premium Great Plains because crop prospects, based on soil-moisture conditions, were good.

No comprehensive study of causes of insured losses has yet been made. The following percentages are based on local studies of crop-insurance claims. They throw no great light on actuarial problems, except to emphasize the fact that drought is the major hazard to be accounted for.

Cause of loss	North Dakota, 1939	U.S., 1939	LaGrange Co., Ind., 1940	Nelson Co., N.D., 1940
Drought	68.8	43.0	28.1	81.0
Winterkilling	 ^a	24.0	37.2	 ^a
Frost, cold, freezing	 ^a	11.0	 ^a	 ^a
Insects	13.4	2.0	 ^a	12.3
Plant diseases	 ^a	1.0	16.9	 ^a
Hail	4.3	7.0	 ^a	 ^a
Heat	7.6	 ^a	 ^a	4.6
All others	5.9	12.0	17.8	2.1

^a Relatively small, included in "All others."

Though some important details need improvement, there is at hand no better basic actuarial approach to crop insurance than the one now in use. Furthermore, it appears possible that the present plan may eventually do reasonable justice between insureds and avoid

large underwriting losses to the corporation.

At the present time there are discrepancies in the actuarial work which give advantages or penalties in yields or rates to certain farms and certain counties. Adverse selection of years for insuring (particularly on account of soil moisture and because of differences in fields) is also possible. Because of the vigilance of wheat farmers in taking advantage

data are improved, as new data are obtained and old errors are corrected. However, due to trends in yields, changes in farming practices, changes in tenancies on farms, development of new varieties of wheat, and other such factors, the insurance statistics can never be made perfect. It is therefore doubtful if the present underwriting plan can ever be so accurate that adverse selection cannot lead to

of discrepancies in the figures or in the insurance rules, these situations require very careful correction. Each individual farmer must be quoted yields and rates and rules which make his individual insurance contract an evenly balanced bargain, if inequities and adverse selection are to be avoided.⁷⁸

Each year the basic yield and premium rate

⁷⁸ We do not make the absurd suggestion that individuals recognize and exploit 2 per cent errors in insured yields or premiums. However, a cost-conscious public would certainly exploit errors amounting to 10 per cent or more, which are common. If the county check figures are in error, the effect will be noticed on the volume of participation, or loss ratios, or both.

small underwriting losses, unless the premiums are deliberately raised to cover this hazard.

There remain the problems of underwriting rules and statistical method. Such assumptions as that all (or most) fields on the same farm are alike, or that all farmers and farming methods on the same farm are alike, do not lead to perfect results. Neither can such devices as combining farm loss-costs with the county average, or using rough statistical approximations in obtaining check premium rates, do perfect justice. These and other aspects of the actuarial process may require some modification if underwriting

losses are to be checked. Extensive studies of the corporation's experience are now being made, and these should indicate the necessary changes.⁷⁴

IV. ADMINISTRATION

The Federal Crop Insurance Corporation was created "an agency of and within the Department of Agriculture" (sec. 503). The management of the FCIC is vested in a "Board of Directors subject to the general supervision of the Secretary of Agriculture," and consists of "three persons employed in the Department of Agriculture who shall be appointed by and hold office at the pleasure of the Secretary of Agriculture" (sec. 505). With the approval of the Secretary, the board is ordered to select a manager "who shall be the executive officer of the Corporation" (sec. 505). The power to appoint employees and to exercise other vital functions is given to the Secretary (sec. 507). He is also authorized to appoint a nonemployee "advisory committee, consisting of not more than five members experienced in agricultural pursuits and appointed with due consideration to their geographical distribution," to give advice to the corporation (sec. 515); but this has not yet been done.

The directors of the corporation have never been a part of its administrative personnel, but have always (thus far) been active divisional executives in other branches of the Department of Agriculture. The average tenure of directors has been rather short, owing to changes in the executive personnel and organization of the department. The original board was composed of M. L. Wilson, then Under Secretary of Agriculture; R. M. Evans, then Assistant to the Secretary of Agriculture; and Jesse W. Tapp, then Assistant Administrator of the Agricultural Adjustment Administration. Subsequently, A. G. Black, then Chief of the Bureau of Agricultural Economics (now Governor of the Farm Credit Administration), served a brief term. In 1941, prior to the departmental reorganization announced on December 13, the board consisted of R. M. Evans,

Administrator of the AAA; C. W. Kitchen, Chief of the Agricultural Marketing Service; and B. R. Stauber, in charge of Land Policy-Credit Co-ordination. The present board consists of Mr. Evans, now Administrator of the Agricultural Adjustment and Conservation Group of agencies (including the FCIC); Fred S. Wallace, Administrator of the AAA (formerly Chairman of the Agricultural Conservation Committee for Nebraska); and F. D. White, Assistant Administrator of the AAA (formerly Assistant Director, Cotton Division, Commodity Credit Corporation).

An effort has been made to keep the board active in the management of the corporation. Regular monthly meetings and occasional special sessions are held. The average length of such meetings is about two hours. However, the effectiveness of the directors is probably similar to that of corporate directors who are primarily executives in other concerns; they can be helpful on general policies but only to a limited extent on technical matters.

The first manager of the corporation was Roy M. Green, who resigned in 1939 and is now President of Colorado State College. The second and present manager is Leroy K. Smith, Nebraska farmer and businessman.

The relatively small personnel of the corporation has handled an extensive pioneering job quite effectively, and has maintained an elaborate co-operative arrangement with other agencies of the Department of Agriculture with considerable success. The organization has been recruited from other agencies of the department, from state agricultural services, and to a substantial extent from private business sources.

One of the noteworthy accomplishments of the corporation management has been the progressive reduction in its own "direct" operating expenses, and the substantial control exercised over the cost of crop-insurance functions carried on by other agencies of the department.

⁷⁴ One survey was made in the summer of 1941 by a field force directed by the manager of the FCIC. A second was begun in the autumn of 1941 by a group of professional insurance analysts.

AFFILIATED AGENCIES AND OFFICES

The work of the FCIC is assisted and partly carried on by the BAE, the AAA, and certain other units of the Department of Agriculture. These delegations of function are extensive and vital; of the 15 million dollars spent in administration in the first three years, 9 million was spent through the co-operating agencies, predominantly the AAA (Table V). The results appear to be satisfactory from the standpoint of the corporation.

The BAE has done the technical work for the corporation in planning actuarial methods and formulas, working out check yields and check premium rates, and testing underwriting results. It has also carried on the research involved in planning cotton crop insurance, and is working on bases for the possible insurance of other crops. (Appendix Note D.)

Several members of the BAE have been assigned for some years to this work. They are in part the men who developed the crop-insurance program from its inception. The members of this group are seldom if ever called upon to do other unrelated work. The resources of the bureau are unreservedly at their command, yet their function is to facilitate the crop-insurance program. The senior men of this group are virtually officers of the FCIC.⁷⁵ They attend its administrative committee meetings and advise on underwriting policy, and some of them take semiadministrative responsibility on technical matters.

In the summer of 1941 a limited number of the bureau's crop-insurance men were transferred to the FCIC to bring into the corporation the actuarial administration of the operating insurance programs, the research on other crops remaining in the BAE. This change will result in minor adjustments of function and personnel, but will have little effect on official viewpoint or methods.

The same close relationship exists between the AAA and the FCIC. Crop insurance is handled by the regional, state, and county organizations of the AAA as one of its programs—not as a side issue, but as a phase of

its own work. Each regional division of the AAA has in its Washington office an executive known as its Crop Insurance Co-ordinator, whose function is to educate and direct the state and county officials in his division on crop-insurance matters. Much of the co-ordinator's time is necessarily spent in supervision of field work. Since such experience is indispensable for policy-making purposes, these men have become informal members of the executive committees of the FCIC. They participate in the planning of the contracts, the sales campaigns, and the development of administrative plans, and are thus able to accomplish the co-ordination of field work and administrative policy.

Each state AAA office likewise has its crop-insurance expert, termed the Crop Insurance Assistant. This officer is an employee of the state committee, chosen with the consent of the division office and the FCIC. His function is the supervision of county work on crop insurance, the settling of appeals and difficulties, and the presenting of state problems to the division co-ordinator. Like the latter, he must spend much of his time in field work.

The central co-ordination and advisory phase of the work seems extremely well done. Some of the state offices seem less interested in crop insurance than in other AAA programs, and the crop-insurance program is more efficiently handled in some than in others; but in general the work in divisional and state offices is handled effectively and economically, and in complete co-operation with the aims of the FCIC.

The Agricultural Marketing Service (through its staff concerned with crop estimates) has done a substantial amount of special work for the FCIC in preparing estimates by counties on yields per seeded acre, abandonment, causes of loss, and other needed data. Methods, reporting districts, and existing data have been revised quite readily as need required.

Only two instances in which co-ordination with other branches of the Department of Agriculture has worked against the best interests of crop insurance have come to our attention. The first was the decision to discriminate against prospective insureds who did not

⁷⁵ This is especially true of W. H. Rowe, who has directed the actuarial work from the inception of the program. Mr. Rowe was transferred to the FCIC staff in 1941.

conform to the acreage-restriction program of the AAA (p. 237). The second was the attempt to combine the corporation's actuarial data with those used by the AAA as the basis for parity and soil-conservation payments (p. 246). If the FCIC had the status of an independent agency, such moves would probably not have been made. However, an independent agency could hardly get the cordial co-operation from Department of Agriculture agencies which the corporation now enjoys.

COUNTY ADMINISTRATION

Nearly every county Agricultural Conservation Association has one staff member whose particular specialty is crop insurance. This person is sometimes a member of the county committee, sometimes an employee. In most counties, however, the work of preparing data and selling crop insurance is widely shared by committeemen and employees, though adjustment negotiations are usually left to one or two individuals.

Crop-insurance activities are reasonably extensive in approximately 1,480 counties in 36 states. To achieve uniformity in crop-insurance practice is therefore a tremendous task. To facilitate this the FCIC has issued detailed forms, manuals, and explanatory pamphlets, most of which have been revised annually.⁷⁶

As might be expected, the caliber and attitudes of county organizations vary considerably. Most of the personnel are sincere and devoted to all of the programs being administered by the AAA, but some are not insurance-minded and others are interested only in direct benefits such as parity payments, conservation payments, and crop loans. A few are incapable and a few are indifferent and laggard.⁷⁷

In the great majority of instances the county organizations take the position that their function is to administer the local Agricultural Conservation offices honestly but in the best interests of their local clientele. They compute crop-insurance yields and premiums honestly and carefully, and notify their state offices if they think the figures are wrong or there are loopholes in the contract;⁷⁸ but if they believe that crop insurance as offered is

a bargain and likely to be profitable to the insureds, they sell it vigorously on that basis.⁷⁹ If they think the rates are too high or for some other reason feel that the odds are against the insureds, they simply do not try to sell insurance.⁸⁰ If they believe that crop insurance on a "net cost" basis is a form of protection which no farmer should be without, they propagandize that idea.⁸¹

The influence of the county offices is extremely great. Where they make determined efforts to sell crop insurance the percentage of participation is seldom noticeably small, and where no selling effort is made the volume of business is usually indifferent.⁸² The sales

⁷⁶ Chief among these are the following, for wheat: (1) *Wheat Crop Insurance Regulations*; (2) *County Yield and Rate Procedure (Wheat)*, also *Supplement for Special Practices*; (3) *County Application Procedure for Wheat Crop Insurance*, also special supplements thereto; (4) *Loss Adjustment Procedure and Adjuster's Manual*; (5) *Application for Wheat Crop Insurance*; (6) *Wheat Farm Listing Sheets*.

⁷⁷ The course of our survey revealed several examples of each kind, as far as insurance matters were concerned; but such counties usually had relatively few insured farms.

⁷⁸ For example, committees in western Kansas and Nebraska repeatedly told of reporting that the application deadline in their areas was too late in the season. Committees in the Northwest had reported that check yields on irrigated lands were too high, and on dry lands too low (or vice versa).

⁷⁹ No better illustration can be found than the strenuous promotion of crop insurance on the 1940 crop on the Southern Great Plains, when they felt that drought had ruined the prospects for successful seeding, by the same committeemen who completely failed to push insurance on the 1942 crop because they thought it a poor bargain when seedbed conditions were good.

⁸⁰ We found this attitude very common, for example, in North Dakota, in counties in which the first reaction (back in 1939) was enthusiastic. In several counties in the Northwest we found committees recommending insurance on irrigated and not on dry land, or vice versa, because of their belief that the figures were favorable to one and not to the other.

⁸¹ About every second county has one such committeeman, who pushes the "security" idea strongly. If crop insurance ever becomes a major feature of American agriculture, it will be because these Benjamin Franklins and Zachariah Allens have leavened the thinking of American farmers.

⁸² For example, 54 per cent of the wheat acreage allotment in Morgan County, Illinois, was insured in 1941, but only 5 per cent in Perry County was insured. The counties are not identical in farm structure, but they are very similar. The contrast is due mostly to the divergent attitudes of the county committees. See Table VII for similar contrasts.

of insurance thus depend greatly on county personnel whose attitudes toward the FCIC vary widely. Despite the fact that the county committeemen are nominally controlled by the state offices, they are elective and actually fairly independent. Probably one-fourth of such county committeemen are not supporters of crop insurance. Another fourth recommend it but carry out their functions in their own way, occasionally in violation of crop-insurance regulations.⁸³ The FCIC thus does not get a consistent and uniform field representation.

Nevertheless, it seems that the present type

of program is best administered through the county Agricultural Conservation offices. Any other administration would cost considerably more, and would lose the sales prestige which association with the AAA now provides. It should be possible in coming years for the state offices to concentrate an educational and promotional effort on the backward committees. The FCIC can win over others by improving the actuarial work and the contract. These two steps would do much to improve an irregular but otherwise passably satisfactory situation.

V. EXTENT OF PARTICIPATION

It may fairly be said that the participation in wheat crop insurance in its first two years was phenomenal. For a number of reasons, including a highly stimulating drought situation on the Great Plains, thousands of farmers welcomed this new type of insurance protection. The third year brought a sharp decline in the rate of growth; though a considerable number of small-farm contracts caused the number of insureds to show an increase, totals of premium collections, acreage insured, and insured production changed but little. The annual totals are as follows:⁸⁴

Harvest year	Number of farms insured	Premium collections (bushels)	Insured production (bushels)	Net acres insured
1939	165,777	6,684,215	60,839,785	5,994,250
1940	361,586	13,806,143	108,255,897	10,919,913
1941	405,496 ^a	13,619,691 ^a	108,282,912 ^a	11,109,538 ^a
1942 indications.	+15%	+8%	+27%	+15%

^a Preliminary, according to source cited in footnote 84.

The 1941 insurance program covered over 17 per cent of the seeded acreage and about the same percentage of the nation's wheat growers. For 1942, preliminary reports in winter-wheat states indicate a considerable increase in insurance volume, as well as another gain in number of contracts.

As shown by Chart 2 (p. 256), crop insurance has made a substantial beginning in all parts of the country, regardless of climate, degree of risk, and crop diversification, except that it is little used where wheat is relatively unimportant. In the low-risk and highly diversified Ohio Valley, for example, insurance is

as highly regarded as it is on the more hazardous and less diversified Southern Great Plains or on Pacific Coast ranches (compare Charts 2 and 3). An exception may perhaps be noted in Montana and the Dakotas, where high premiums, good crops, and seemingly low insured yields have combined to discourage 1941 and 1942 participation, but even there the 1939 and 1940 results indicated the acceptability of the insurance idea.

Insurance participation for 1941 and 1942 has seemed to trend definitely upward in low-risk states, and mainly downward in high-risk states. In the latter case the change is probably a fluctuation rather than a trend, for the declines seem chiefly due to soil-moisture selectivity and recent loss experience.⁸⁵

The distribution of insurance business within the states is not uniform from year to year, particularly in such states as Kansas and Nebraska, in which the wheat lands range from low-risk diversified farming areas to the

⁸³ We found an Illinois committee actively soliciting crop-insurance business 10 days after the deadline, saying "It won't do any harm here." We found a Nebraska committee which made its yield and loss-cost appraisals "in our own way." Other (usually minor) cases of independent spirit are legion. Seldom is there any fraudulent intent, and usually there is little direct adverse effect.

⁸⁴ Details in Tables I, II, III. The 1941 figures, particularly those on acreage, are subject to downward revisions upon completion of the audit on the crop-year's operations. The 1942 indications are our guesses based on FCIC, *Branch Office Progress Report*, Dec. 31, 1941.

⁸⁵ For participation data by states, see Tables I, II, and III.

FEDERAL CROP INSURANCE IN OPERATION

very dry plains. For 1942 there is a great increase in insurance participation in the eastern portions of Kansas and Nebraska, and a decided decline in the western portions. Other states show similar vagaries, caused partly by soil-moisture selectivity, partly by recent crop and loss experience, and partly by other factors. There is also a great variation in average insurance participation between adjacent and similar counties, caused chiefly by variation in the energy with which the insurance program is presented.⁸⁶

EFFECT OF DIFFERENCES IN PREMIUM RATES

Examination of evidence on insurance participation by states yields a first impression that crop insurance sells as readily in high-premium territory as in low-premium territory. However, the more detailed county data sharply emphasize the deterrent effect of high premiums. This is illustrated in Chart 4.⁸⁷ Clearly, the low-premium counties are developing substantial insurance volume more readily than the high-premium ones. Since the high-premium counties are necessarily the high-risk ones, it seems that crop insurance is making the least progress in the areas where it is most needed.

The small number of cases of high participation when premium rates exceed 15 per cent suggests that the majority of growers are reluctant to pay high premium rates for crop insurance. This statistical observation is supported by correspondence and by interviews conducted in these areas.⁸⁸ The farmers know that the wheat crop-insurance premium is a "net cost" figure, but they commonly cal-

culate that the insured yield minus a high premium charge and minus seeding and harvest costs leaves a remainder too small to be worth while. Two or three consecutive good harvests would undoubtedly cause a large number of such reluctant premium payers to cease buying insurance.

CHART 4.—RELATION BETWEEN PREMIUM RATES AND INSURANCE PARTICIPATION, IN 118 SELECTED COUNTIES, 1940, 1941*

* Data in Table VII.

The chart indicates that 40–60 per cent participation has been reached in a significant number of low-premium counties. Since participation is steadily growing in most of these areas, and since most counties are still below the 40–60 per cent level, it appears that the present trend toward increased aggregate participation in low-premium states may continue for some time. This trend might be accelerated if indifferent county committees were replaced by vigorous proponents of the insurance principle.

An examination of 1941 insured acreage by counties indicates that insureds in the low-premium areas are thus far renewing their contracts without much regard for their loss experience, but that insurance volume in high-premium counties tends to decline when losses are moderate.⁸⁹ Witness the following tabulation, indicating changes in insured acre-

⁸⁶ For data on participation by selected counties, see Table VII.

⁸⁷ Chosen from nine states, these counties are important wheat-producing counties in well-scattered sections of their respective states. Counties which have never showed interest in crop insurance are not included, since it seemed best to choose ones in which the farmers were normally familiar with the program.

⁸⁸ In high-risk areas there are more complaints against high premiums than against all other phases of the program combined. Most farmers admit that their premiums are reasonably fair, but seem to find them almost as burdensome as the hazards insured against.

⁸⁹ This is evident from the data in Table VII. Of course no one can yet predict the effect on such counties of several years' experience with crop insurance.

age in 52 high-premium counties from 1940 to 1941, with reference to 1940 losses expressed in terms of premium collections.

1940 loss ratio	Down more than 25 per cent	Less than 25 per cent change	Up more than 25 per cent
Under 50 per cent. . . .	12	1	2
50 to 100 per cent. . . .	9	1	0
100 to 150 per cent. . . .	3	3	4
150 to 200 per cent. . . .	1	2	2
Above 200 per cent. . . .	2	5	5

This is understandable. Crop-insurance premiums amounting to 15–25 per cent of average yields will not be paid long in counties sustaining no losses. Yet this attitude can easily defeat the purpose of crop insurance in the territory where its regular use is vital.

THE INDIVIDUAL WHO INSURES

In the beginning the crop-insurance program was best received on the Great Plains and farther west, in particular where farms average large in size and where wheat production dominates the farm's activities. The average insured wheat plot was probably 35 per cent larger than the average of all seedings the first year, and more productive than the average. Since the first year, the influx of small farmers into the program, especially those east of the Mississippi, has steadily reduced the size of the average insured parcel. The following approximate average wheat acreages and per acre yields on insured farms⁹⁰ may be compared to a national average seeding of about 37 acres and an average check yield of about 12 bushels per acre:

Harvest year	Average acreage insured	Normal yield per insured acre
1939.	50	13.7
1940.	42	13.4
1941.	37	13.3
1942.	36	14.7

Within individual states there appeared to be a consistent trend toward lower average size of insured parcels, reflecting the insurance of a greater proportion of small farms, until 1942. This year a number of states appear to be showing a substantial increase in average size of insured parcels. This is probably attributable to the imposition of wheat

marketing quotas in 1941, which drove thousands of the larger farms into compliance with acreage limitations and thus made them practically eligible for insurance.

While the decline in the average size of the insured parcel undoubtedly indicates an increasing use of insurance by small farmers, there is no proof that many of the small acreages are not insured by owners or operators of more than one farm. Data collected by the FCIC on the 1942 application forms indicate that a minimum of 21 per cent of 1942 insured farms are insured on multiple-farm contracts. However, there is definite indication that multiple insurance is more common in the West, where farms are large, than in the small-farm areas. The corporation reports that at least 35 per cent of its Far West volume is on multiple contracts, while the Ohio Valley shows only 14 per cent.⁹¹

Inquiries conducted in eight widely separated counties in six states indicate that on the whole the smaller farms in each county are more likely to be insurance customers in the future than the larger ones are, if present opinions remain unchanged.⁹² In counties in Illinois and eastern Nebraska, where risks and premiums are low, crop insurance was evenly popular with all sizes of wheat farms. In high-risk counties in North Dakota and western Kansas the larger farms (in the opinions of both owners and operators) indicated about 25 per cent participation in the future, whereas the medium- and small-sized farms promised 35 per cent. In the Palouse country of Washington the large- and medium-sized

⁹⁰ These are approximations based on average net acreage per contract, adjusted for contract duplication —i.e., landlord and tenant contracts covering the same acreage.

⁹¹ FCIC, *Branch Office Progress Report (1942 Wheat Program)*, Oct. 15, 1941. Preliminary data indicate the number of contracts and the number of farms covered. This does not permit an exact estimate of the number of farms insured on multiple contracts.

⁹² This survey was conducted in person and by mail questionnaire, with the co-operation of the FCIC and the AAA, in Morgan County, Ill.; Barnes County, N.D.; Saunders County, Neb.; Clark County, Kan.; Walla Walla and Yakima counties, Wash.; and Butte and Kern counties, Calif. These were chosen as representative of different wheat areas, and because they each had had sufficient experience with crop insurance to be familiar with it. They averaged about 35 per cent participation in 1941.

farms indicated about 60 per cent participation, and the small ones 70 per cent. Two counties in California promised 50 per cent participation on the large farms and 60 per cent on the smaller ones. In all cases the proportion of farms expecting to insure in the future exceeds the proportion insuring now. This may reflect a deficiency in the survey sample; it may augur a future growth in insurance participation; it may indicate that more intensive selling would get more business; or it may merely show that insurance is a subject on which good intentions are only partly translated into action.

In order to test the use of insurance by wheat growers of different financial strength, the same eight-county inquiry was utilized. Local assistance classified the inquirers (the classification was confirmed by the inquirer himself) into three groups according to ability to endure crop loss without financial disaster. The criteria determining the classifications were wealth, nonfarm income, extent of indebtedness, family expenses, and imminent needs for other purposes. The wheat growers thus classified were asked to indicate whether in future seasons they would use crop insurance *usually*, *sometimes*, or *seldom*. The resulting percentages for each group are shown in the accompanying tabulation. The

lords, which may modify these results somewhat if it continues.

A check on the use of crop insurance by owner-operators, tenants, and nonfarming landlords, in the eight counties surveyed, disclosed that tenants expect to insure more often than the other groups, by a small margin. The next tabulation summarizes these results, in percentages of the total reporting in each group:

Expect to insure	Owner-operators	Tenants	Landlords
Usually	42	46	43
Sometimes	18	20	18
Seldom	40	34	39

There are small irregular variations among these groups from one area to another. Tenants were more willing than others to insure in low-risk Illinois and Washington and high-risk North Dakota. Owner-operators were the best users of insurance in low-risk eastern Nebraska and high-risk western Kansas, while absentee landlords were the dominant insured group in California.

Farms heavily dependent on wheat for income are less likely to be insured than diversified farms, if these eight counties are representative. The figures are open to some doubt because the eight counties tested did not have equal proportions of diversified and non-

Expect to insure	Financial strength		
	Best	Medium	Weakest
Usually	40	40	52
Sometimes	18	23	17
Seldom	42	37	31

eight counties showed about the same contrasts between groups throughout, except that the weakest groups were somewhat more willing to insure in the low-risk areas than in high-risk areas where premium rates are an obstacle.⁹³ County committeemen in many areas have this year (1942) noticed a general increase in use of insurance by absentee land-

Expect to insure	Percentage of farm income from wheat		
	0 to 33	33 to 67	67 to 100
Usually	47	41	40
Sometimes	16	21	19
Seldom	37	38	41

diversified farms. However, examination of the county data and the totals indicates that there is nowhere a sharply marked difference between the attitudes of these groups toward insurance, and that the summary tabulation, in percentages, is therefore reasonably representative.

SELLING CROP INSURANCE

Like most other forms of insurance, crop insurance has been most widely used in counties in which it has been vigorously sold. Many enthusiastic county committeemen express the belief that in a few years the pro-

⁹³ County committeemen confirmed these statistics very generally, except that they usually insisted that the insuring members of the "weakest" group were self-reliant people who were trying to "get ahead," not the ones who would be most likely to become charity cases in bad crop years. According to committeemen, crop insurance is not usually elected by the latter group.

gram will "sell itself" so completely that annual sales campaigns will be unnecessary, but few of them believe that sales solicitation could be dropped now without immediate loss of participation. Experienced fire and casualty underwriters doubt that substantial volume can ever be maintained on a voluntary basis without persistent selling effort.

Most county officers report that crop insurance cannot be effectively sold by circulars or form letters. In fact, these are becoming ineffective even for informing farmers about crop insurance, for so much AAA literature has been sent by mail that many farmers have quit reading it carefully. Some circular material is still used, and an annual announcement of wheat acreage allotment, insurable yield, and premium rate is mailed to each prospect. Most selling is done by personal solicitation. Some committees report success with individually typed personal letters, especially to nonfarming landlords, but in most cases the prospect either is solicited when he calls at the county office on other business, or is sought out at his farm or place of business. Since county wheat mailing lists average about 1,000 names each, and commonly range between 400 and 3,000 names, such personal selling is a major task. It is probable that in most counties only a fraction of the prospects are properly solicited.

There appear to be five major considerations which motivate the purchase of wheat crop insurance. In order of importance, as nearly as may be judged, they are: (1) a desire for general security and stability of income; (2) a desire for temporary security while the insured's finances are unstable; (3) a hope for profit at the expense of the FCIC; (4) creditor pressure; and (5) a desire to cooperate with the AAA program.

The first of these considerations is unquestionably the one which impels most of the growing number of well-financed absentee landlords, financial institutions, business corporations, and well-financed farmers who buy insurance. It may mean even more to landlords dependent on their farm income, or to farm operators who budget closely and must protect their working capital. The second consideration appeals to tenants, heavily in-

debted owners, or those subject to heavy temporary expense who cannot at the moment afford a crop loss. The third consideration seems to affect mostly operators, both owners and tenants, though landlords are involved to some extent. Most of the "profit" from insurance is found in the Great Plains, but exploitation of errors in individual farm yields and premiums, and of opportunities to insure relatively poor fields, occurs everywhere.

Creditor pressure is apparently a growing incentive to wheat crop insurance. For the past two years the banks in the wheat belt have been increasingly aware of the working-capital security afforded by crop insurance, and have given it growing support. The Production Credit Associations have urged it, and frequently required it of their wheat-growing debtors. Some mortgagees and instalment sellers of farms have done likewise, though most of the life insurance companies and land banks have not. Lastly, it seems that many farmers are impressed by the fact that crop insurance is "a part of the AAA program." County committeemen report that crop insurance often receives a sympathetic hearing because of this fact.

POINTS OF SALES RESISTANCE

Reasons given for not buying crop insurance vary greatly, and defy any attempt to estimate their relative importance. The principal arguments, for which the background has already been given, may be classified as follows:

1. "Don't need it." This objection often comes from the individual who believes that a loss on the immediate crop is improbable, possibly because of soil-moisture conditions, tillage plans, or other unusually favorable circumstances. Sometimes it reflects unreasoned optimism, and sometimes a well-considered capacity for self-insurance.

2. "Premiums are too high." This is usually heard in high-risk areas where the definite premium cost bulks so large as to outweigh the uncertain hazard of loss. Sometimes the premiums are said to be erroneous. More commonly they are admitted to be actuarially reasonable, but the prospect simply

does not wish to pay so much. The argument is most common when wheat is high in price.

3. "They raised my premiums because other people had losses." This complaint arises because "excess-loss" adjustments are applied proportionally to all premium rates in the county.

4. "I earned lower premiums by raising good crops, without any losses, but they raised my premiums anyhow." This occurred quite commonly in excess-loss counties. In addition, all farms everywhere with rising average yields have been charged higher premiums to cover the alleged greater risk attendant upon a higher insured yield. This increase is frequently greater than the decrease brought about by loss-free years, hence produces a net increase in premium rate.

5. "The insured yield is erroneously low." This complaint is heard very commonly with respect to individual farms, and not infrequently with respect to counties.

6. "Seventy-five per cent of a normal crop is not adequate protection, for it will barely pay expenses in most years."

7. "The policy won't cover the loss if a portion of a bumper crop is destroyed, so hail (and other) insurance is needed whenever the crop looks promising. It is therefore better to buy these other forms, and take a chance on uninsured losses."

8. "The policy does not cover all legitimate losses." This complaint comes from experiences with such cases as winterkilled acreage, which must be reseeded wherever possible, without indemnity, and also late damage, after expiry of the contract.

9. "Prethreshing adjustments are unsatisfactory."

10. "I tried insurance twice, and paid in \$500 and got nothing back. I can't continue such losses."

11. "I don't believe in government interference in private business affairs." This line of resistance comes from farmers who are hostile to the AAA, and from nonfarming landlords who see crop insurance as a "socialistic" invasion of the insurance field. Both groups are fairly numerous.

A particularly unfortunate conjuncture from the standpoint of 1942 participation has

occurred in many counties in Montana, the Dakotas, Nebraska, and Kansas. These counties had limited harvests in 1940 and bumper ones in 1941, and have excellent soil-moisture conditions for 1942. As a result of limited 1940 harvests, their insurance yields were cut and their premium rates raised for 1942. These reduced yields and increased premiums were presented to the farmers when they were finishing a bumper harvest and observing ideal seeding conditions for the next. In many of these counties insurance participation for 1942 will be 50-75 per cent under that of 1941.

NEW AND REPEAT BUSINESS

Studies made by the Texas AAA office and by certain counties in Oklahoma in late 1940 led to the conclusion that most insureds were not well enough satisfied with crop insurance to remain as regular participants. Although the number of contracts in Texas made a satisfactory showing for the third year, the figures indicated that if participants continued to drop out of the program as they were then doing, a decline in volume was inevitable. The Texas figures (which included about 90 per cent of the state's participation) indicate the number of new and holdover participants as follows:

Season	Total	New	Holdover	Returning after 1 year
1939.....	3,691	3,691	....	...
1940.....	9,223	7,651	1,572	...
1941.....	8,384	4,266	3,941	177

These figures indicate that 43 per cent of the 1939 insureds renewed their contracts in 1940, and 43 per cent of the 1940 insureds renewed in 1941. The insureds who collected on loss claims renewed 49 per cent and 46 per cent of their contracts, respectively, whereas those who sustained no losses renewed 31 per cent and 35 per cent of them.

The Texas results are sharply at variance with those obtained by our survey in a sample study of participation in six other states. These data, given below, show a very substantial percentage of renewals except in Kansas and North Dakota, where the sample data were taken in counties showing declines in

participation for 1942. The figures do indicate, however, that the percentage of annual renewals has tended to decline moderately.

Item	Ill.	N.D.	Nebr.	Kans.	Wash.	Calif.	Total	Texas study
Percentage of 1939 insureds also insuring in 1940...	94	72	90	64	87	94	82	43
Percentage of 1940 insureds also insuring in 1941...	83	55	79	56	86	74	74	43
Percentage of 1941 insureds also insuring in 1942...	75	48	97	34	71	70	70	..
Percentage of 1939 or 1940 insureds also insuring in 1941	80	42	76	49	81	72	67	36
Percentage of 1939-and-1940 insureds also insuring in 1941	88	55	77	72	94	89	79	53

The results of our survey were widely confirmed by county committeemen, who report that most of their crop-insurance volume represents repeat business. The contradictory Texas results therefore defy interpretation.

FUTURE PROSPECTS

The progress thus far made in selling crop insurance to American wheat growers justifies four summary conclusions:

1. Only a beginning has been made, and present growth is only moderately satisfactory, in view of the considerable public subsidy now being given the program.

2. Crop insurance is especially difficult to sell in high-risk areas, and at present is not making satisfactory gains there except when stimulated by heavy losses or adverse conditions.

3. Crop insurance can be sold with about equal facility to rich men and poor men, owners and tenants, diversified farmers and one-crop farmers.

4. Crop insurance is being ably presented in a few counties in each state, but more could be sold in most counties if the sales effort were intensified.

The program is not mature enough for confident prediction of future volume of participation, but a generalizing opinion may be ventured. Assuming no change in the contract or in administrative methods, participation in the nonhazardous areas (where premium

rates average 10 per cent of normal yield or less) should slowly increase until 40 per cent of eligible acreage is insured. In the hazardous areas some increase from present levels is possible, but 20 per cent of the available acreage seems as much as can be expected. Even that means a very considerable increase from 1942 levels. These high estimates cannot be reached immediately, particularly if the imposition of wheat marketing quotas brings a substantial number of new prospects into the eligible list for coming years.

It is surely questionable economy to spend \$4,000,000 of public money per year to make a crop-insurance program available, with the idea of promoting the general welfare, and then to fail to spend another \$500,000 of selling expense which might add 50 per cent to the use of the program. In some areas the county offices are not staffed to do a thorough selling job on crop insurance. In such cases, especially in hazardous areas, it might be well to pay private insurance agents to assist.

Various plans have been suggested for making crop-insurance participation more or less compulsory. These include (1) absolute legal compulsion, (2) making crop insurance a condition precedent to AAA payments, (3) using a portion of the AAA "parity" appropriation to subsidize the loss-cost of crop insurance, and (4) making crop insurance automatic on an AAA participant who does not come into the county office and sign a form requesting exemption from it.⁸⁴ The proponents of the last idea believe that crop-insurance participation is now held down by indecision and inertia, and that those forces could be turned to advantage by the plan suggested. Any one of the three latter proposals has merit, assuming that AAA payments are to be a permanent feature of the American economy. The first one seems a little harsh, especially in view of the fact that crop-insurance actuarial data are imperfect.

If crop insurance remains on a purely voluntary basis, it will be well to consider methods of assuring a participant that in the long run he cannot lose—or at least that he cannot

⁸⁴ This procedure was employed in the North Dakota state hail-insurance program, and the suggestion is most often advanced in that region.

lose much. In hazardous areas the premiums frequently take from 20 to 25 per cent of the average yield on insured land. Farmers would be less reluctant to pay such large portions of their gross income if they were sure of recoupment (through losses) within a reasonable time. If it were possible to guarantee each participant the return of all his premiums either in losses or as an endowment at the end of six or seven years, much reluctance would disappear. Unfortunately, such an arrangement would be practical only after a very long period of time, possibly twenty years or more. It might, however, be feasible to institute a dividend plan under which an insured whose premium contributions had been far in excess of his loss claims would receive discounts on his future premiums. Such a system could be used to smooth out the inequities in the premium structure, would recognize the personal factor in the insurance

risk, and might help to obtain continuity in participation.

This dividend suggestion would probably not be practical in low-risk areas. There, crop insurance operates on the casualty-insurance principle: many insureds contribute small sums, so that the few who are damaged may be indemnified; the individual insured pays his small premium for security against an unexpected but possible loss. The attitude in high-risk territory is fundamentally different. There, all operators have losses. Insurance premiums are burdensomely high. The insured wants security when losses occur, and is willing to pay for it; but he feels that in the long run he should pay only for his own losses. An exact application of this idea would preclude the loss-sharing principle of insurance entirely; but a well-planned dividend system might be able to adjust the cost burden fairly without vitiating the insurance principle.

VI. OTHER PUBLIC POLICY ASPECTS

THE NEED FOR INSURANCE

The significance of crop loss is measured by the frequency and severity with which it strikes individuals, as well as by the average losses sustained in the county. Consequently, Chart 5 (p. 264) is useful in showing how often and how severely individuals are affected by wheat-crop loss. The charted data, which are adapted from the key-farm records of the FCIC, indicate the number of high, intermediate, and low yields resulting from 558 farm seedings in each of six representative counties. Nine annual seedings (1930-38 inclusive) on 62 representative farms are used in each case.

The figures indicate that a considerable percentage of wheat seedings in each of these counties results in losses which would be compensable under 75 per cent insurance contracts. However, it may be assumed that only yields below 62½ per cent of normal result in any significant compensation to the farmer, after allowance is made for premium costs. On that basis the number of significantly compensable losses appears very small in the

Washington county, small in the Illinois county, and moderate in the county in eastern Nebraska; but the numbers of such losses are substantial in the other three cases.

Another important test of the significance of crop loss to individuals is found in the probability of successive years of crop loss. If it be assumed that any crop below 62½ per cent of normal represents crop loss, the 648 losses experienced by the 372 farms (62 in each county) during the nine years covered in Chart 5 were grouped in sequences thus:

State	Total losses	Iso- lated year	Successive losses					Seven years
			Two years	Three years	Four years	Five years	Six years	
Kansas.....	227	51	34	57	24	30	24	7
North Dakota	170	48	40	54	28	..	..	..
California ...	132	64	54	9	..	5	..	..
Nebraska	72	64	8	..	..	..	..	..
Illinois.....	37	35	2	..	..	..	..	..
Washington..	10	8	2	..	..	..	..	..
Total.....	648	270	140	120	52	35	24	7

This tabulation again suggests that the availability of crop insurance in the Illinois, Ne-

CHART 5.—FREQUENCY DISTRIBUTION OF WHEAT YIELDS, ANNUALLY 1930–38, ON 62 REPRESENTATIVE FARMS IN EACH OF SIX REPRESENTATIVE COUNTIES*

(Number of actual yields falling in specified groups according to percentages of 9-year average yields)

* Data adapted from key-farm records of the FCIC.

braska, and Washington counties is not vital, even though it is useful; the likelihood

of successive losses is not great. But the Kansas, North Dakota, and California counties operate under conditions which urgently demand insurance protection.

The President's Committee on Crop Insurance was very optimistic about the possibility that a successful system of crop insurance might do much to avert farm impoverishment, pauper migrations, community disasters, and heavy relief costs to the government.⁹⁵ The limited extent of participation in crop insurance in hazardous areas, plus the fact that at least half the contracts sold are sold to well-financed individuals, discourages these hopes for the present.

It is said that 75 per cent crop insurance does not offer the average farmer any substantial net income in case of loss, particularly in hazardous areas. After deducting a 20 or 25 per cent premium from the 75 per cent guaranty, the net value of the indemnity does not far (if at all) exceed his cash expenses; it certainly does not exceed his cash expenses plus depreciation plus interest and mortgage payments.⁹⁶ In this respect the insurance contract is much more attractive in the nonhazardous areas, where the low premium leaves a much larger net indemnity for current use.

Nevertheless, crop insurance does afford substantial working-capital protection to any insured, and adds materially to his ability to procure short-time credit and to meet his obligations. The protection is adequate to prevent most of the calamities mentioned by the President's Committee, if farmers could or would participate. Of course, a farmer who receives AAA payments of 12–28 cents per bushel on his normal wheat yield has a guaranty of some wheat income whether his wheat crop is a success or a failure.⁹⁷ The crop-insurance guaranty is additional.

⁹⁵ *Op. cit.*, pp. 12, 16.

⁹⁶ Cf. table in Sec. II, p. 240.

⁹⁷ The farm whose wheat acreage was kept within the allotment limit prescribed by the AAA, and whose other crops did not incur offsetting AAA penalties, received in 1940–41 a "parity payment" of 10 cents per bushel and a "soil-conservation payment" of 8.1 cents per bushel on the normal yield of the allotted acreage. Since 1938 the total annual payment has ranged between 12 and 28 cents per bushel.

INSURANCE AND UNECONOMICAL LAND USE

Wheat crop insurance is alleged to promote uneconomic farming operations in many different ways, of which the following are the most significant:

1. By requiring farmers to waste time and seed in their fields (so the insurance will "attach") under seedbed conditions which make germination improbable.
2. By encouraging farmers to gamble more time and seed (i.e., to plant more wheat) on poor seedbeds than they would normally do.
3. By encouraging the seeding of the poorest fields on the farm (in order to exploit the insurance).
4. By encouraging the use of rotations which are not the most productive—that is, which sacrifice wheat production to the advantage of other crops in the rotation. The idea is that the insurance will subsidize the wheat crop.
5. By stimulating farmers to turn to wheat, which can at no cost be made substantially risk-free, instead of raising other crops for which the farm is better suited.
6. By helping to maintain submarginal land in wheat.

All of these allegations have truth in them, yet it is probable that no one of them is sufficiently true to be taken seriously, except in scattered cases.

The first and second are closely related. Inquiries made in the Southern Great Plains elicited these comments: (1) farmers usually seed near-normal acreages in dry seedbeds anyhow; (2) there is always a chance for a crop, hence sound insurance practice demands that the land be seeded; (3) supernormal seedings would be physically hard to accomplish and would be limited by allotments anyhow; and (4) little evidence of supernormal insured seedings was discernible in the autumns of 1938 and 1939. Indeed, the real incentive to supernormal seeding would be good seedbeds, suggesting the possibility of a profitable big crop.

The third and fourth of these indictments suggest direct attempts at exploitation of the insurance contracts. Such attempts would of course invoke the hazard of denied or reduced claims, and would quickly reduce the offender's insured yield and increase his premium

rate if they were successful. However, such attempts are doubtless more common than are cases of waste through excessive seeding under drought conditions.

The fifth indictment implies that farmers find wheat insurance security so important that they change their crops in order to get more insurance protection. This idea is not consistent with the small volume of wheat insurance currently sold, nor does it consider the fact that wheat acreage allotments are limited.

Crop insurance may keep submarginal land in wheat when high loss-cost land is subsidized by favorable appraisals or by premiums reduced toward the county average. It is also true that poor lands may be kept from abandonment longer if their bad years are insured. Probably a poor crop gives the *coup de grace* to most unsuccessful farming ventures. But crop insurance in the long run should neither increase nor decrease a farm's income. If the land is uneconomic, it will eventually prove unprofitable and be abandoned. Crop insurance would merely prevent the sporadic crushing disasters which could bankrupt a farmer whether his land were economically productive or not. In so doing, insurance might delay the abandonment of submarginal farm land—perhaps even long enough to permit the using up of buildings and fences mistakenly put upon it. This may constitute "keeping submarginal land in use," but it is not a seriously damaging outcome.

STORAGE OF PREMIUMS

In the early development of the crop-insurance scheme considerable stress was laid on the belief that premium collections would exceed losses in years of bumper crops and that losses would exceed collections in years of poor crops. It was accordingly planned that the FCIC should store its premium wheat in elevators until losses required its release, thus acting as a supply-depleting force in good crop years and a supply-increasing force in bad ones; and early calculations suggested that this supply-stabilization feature might amount to scores of millions of bushels.⁹⁸ Thus far

⁹⁸ See section on "Storage," *Report of the President's Committee*.

adverse loss experience has frustrated these hopes.

The corporation's original plan called for collection of premiums in advance of the seeding date, and thus many months before the season's indemnities were due. The quantity of wheat represented by the premium collections (most of which were in fact, after 1938, paid from AAA advances) was to be regarded as the probable measure of the indemnities on the crop. Consequently, unless the FCIC wished to speculate on the price of wheat when indemnities were due, it had two alternatives: to store its premium wheat, or to sell it and with the proceeds maintain a long position in wheat futures throughout the season. The storage alternative was chosen.

Under this system, in a year in which losses equaled premium payments, the year's stored reserves would reach a maximum approximately equal to the year's premium collections in early March, and the average premium bushel would be held approximately nine months. In deficit years the necessity of acquiring additional wheat reserves to hedge mounting liabilities tends to increase the average storage holdings; and a year of underwriting surplus would of course do likewise. The aggregate storage expenses to June 30, 1941, amounting to 2.19 million dollars, broadly support the above statement as to deficit years.

The average volume of wheat stored by the FCIC will be greatly reduced for the 1942 and subsequent seasons by the change in premium collection methods. Collections on the premium notes and indemnity payments on the crop will occur simultaneously, and the FCIC will be forced to store only prepaid premiums and underwriting profits. This change will produce a gratifying saving in average storage costs without affecting the theoretical likelihood of the impoundment of surplus wheat premiums in bumper years and their release in poor years.

Two relatively minor items regarding premium collections and loss payments also affect the storage problem. The FCIC accepts deposits of wheat (or its cash equivalent) to be used as premium payments in the next succeeding crop year.⁹⁹ These deposits are

held as stored wheat to hedge the price hazard. Such deposits have thus far been small, amounting in 1940 to less than 1 per cent of the total premium collections, but in a year of bumper crops or cheap wheat they might become important. The second problem involves the handling of loss payments. The *Certificates of Indemnity* issued to loss claimants are payable in wheat (if wheat is "available") or its cash equivalent on dates selected by the claimants. The FCIC consequently keeps its outstanding certificates hedged either by unmatured premium notes or by ownership of stored wheat.

In view of the fact that the prices of wheat of different classes and in different locations are not always proportional, the corporation has felt it necessary to shift its wheat holdings from one class to another and from one location to another as its expectations of losses varied, each season. The new plan of simultaneous collection of premiums and disbursement of losses will of course curtail such operations.

In its fiscal year 1939-40 the FCIC made an effort to keep a considerable portion of its reserves at country points, hoping thereby to be able to deliver indemnities in actual wheat when so requested. This proved impossible, and wheat is now held only at terminal and subterminal points. This latter policy enables the FCIC to complete most of its wheat transactions by dealing with the Commodity Credit Corporation.

As a device for hedging the price hazard on its reserves the FCIC's storage program appears sane and conservative. However, it is expensive. The storage costs amount to 6 cents per bushel per year, the FCIC grain division entails salaries and other expenses, and no interest is earned on the money invested in wheat. These items must have totaled at least 8 cents per bushel per year on the wheat inventories thus far carried.

It would appear that over a period of years the FCIC should encounter falling wheat prices about as often as rising markets. If such is the case, the gains and losses on unhedged insurance liabilities would cancel out. If ill fortune

⁹⁹ Pt. III, sec. 37, 1942 Regulations.

should cause a balance of loss, it assuredly would not exceed a cent or two per bushel on the aggregate liabilities carried. It therefore appears that the saving in expenses plus the gain in interest earnings would far outweigh any possible losses on unhedged liabilities, if the commodity-reserves plan were dropped.

Elimination of the grain reserves would of course remove the FCIC as a possible factor in the ever-normal-granary program, but it would in no way imply abandonment of the insurance-in-kind principle. Contracts with the farmers should continue to assure only crop bushels, not crop values.

VII. OPERATING FINANCES

The Federal Crop Insurance Act authorizes the directors of the corporation, with the approval of the Secretary of Agriculture, to obtain capital funds by selling not to exceed \$100,000,000 in stock to the Treasury of the United States (sec. 504). It also authorizes the appropriation of annual sums to cover all of the operating expenses of the program (sec. 516), and indicates that only the indemnity costs need be recovered in premiums (sec. 508).

Pursuant to this plan, the FCIC obtained an initial capital commitment of \$20,000,000 at the beginning of operations in 1939. A second \$20,000,000 was similarly committed in 1940. Of this \$40,000,000 only \$14,000,000 had been drawn to September 1, 1941; the balance remained available if needed. Although no recent statements have been released, it is clear that underwriting losses have absorbed much of the \$14,000,000, for up to December 31, 1941 the aggregate losses on 1939, 1940, and 1941 insurance contracts exceeded 18 million bushels of wheat.

The operating expenses incurred by the FCIC in its first three fiscal years (not including underwriting losses) were as follows:

Fiscal year	Total	Per insurance contract	Per indemnity claim paid	Per bushel of premiums	Per bushel of losses
1938-39	\$4,297,387	\$25.90	\$76.90	\$.64	\$.42
1939-40	5,654,692	15.65	50.10	.41	.25
1940-41	5,288,083	13.05	40.75	.39	.28

These are actual operating expenses, including depreciation but not original outlays on equipment purchased. The contract, premium, and loss-payment figures used are those for the 1939, 1940, and 1941 crop years respectively.¹⁰⁰ The crop years and fiscal years do not

coincide perfectly, but the distortion here is believed to be small.

If the portion (approximately five-sixths) of wheat-storage costs which the FCIC expects to save in the future by means of the wheat-note premium plan are deducted retrospectively from the actual expenses, the adjusted figures appear as follows:

Fiscal year	Total	Per insurance contract	Per indemnity claim paid	Per bushel of premiums	Per bushel of losses
1938-39	\$4,045,000	\$24.40	\$72.40	\$.61	\$.40
1939-40	4,929,000	13.65	43.70	.36	.22
1940-41	4,441,000	10.95	34.20	.33	.24

Even on this basis, the expenses per bushel and per claim paid seem rather high, when compared with the value of the indemnities paid. The average farm price of wheat during the past 10 years was 71 cents per bushel, and during the last three crop years the average was approximately the same figure. This price thus typifies the period of FCIC operations now under review. If it be assumed that premium collections and loss disbursements would be equal over a period of years, the 1940-41 adjusted expenses of 33 cents per bushel of premiums collected indicates that operating expenses amount to 46 per cent of the typical value of indemnities payable.

These figures of course do not take into account the effect of a probable increase in volume of business handled, or of further economies which may be effected by the corporation. The 1941 volume totaled only 17.8 per cent of the seeded wheat acreage (22.8

¹⁰⁰ For 1941 we have used preliminary data as of Dec. 15, 1941. Final figures will be higher per insurance contract and per bushel of premiums, and lower per indemnity claim paid and per bushel of losses.

per cent of fully eligible acreage), and it seems reasonable to expect a greater volume in years to come. Since expenses do not rise proportionally as volume increases, it is possible that operating costs per unit may decline to lower levels. Significant figures may be had by comparing increases in operating expenses with increases in volume of business handled, as follows:

Item	1938-39	1940-41	Increase
Home and branch office expense..	\$1,563,291	\$1,172,012	\$.....
Wheat-storage expense	50,536 ^a	169,349 ^a	+118,813
State and county (AAA) expense..	2,275,596	2,892,640	+617,043
Other expense.....	155,821	207,336	+ 51,515
Total.....	\$4,045,245	\$4,441,337	\$+787,371
Premiums collected (<i>bushels</i>)	6,684,215	13,619,691	+6,935,476

^a Wheat-storage expense reduced to one-sixth of its actual cost, on account of the change to the wheat-note basis.

Since the home and branch office expenses appear likely to be stabilized near present levels regardless of changes in participation volume, the changes in the other expenses are the ones indicative of the cost of future growth. These indicate that the per bushel expense associated with increased volume has thus far approximated 11.3 cents. If this figure is taken as the per bushel expense normally associated with increased volume, and 33 cents (the 1940-41 average) is taken as the cost of insuring 17.8 per cent of the nation's wheat acreage, it would appear that insurance of 30 per cent would cost about 24.2 cents per premium bushel; that insurance of 40 per cent could be done for 21.0 cents per premium bushel; and that 50 per cent coverage would reduce the cost to 19.0 cents per premium bushel. Such expenses are equivalent to 3.09 cents per bushel of normal yield on insured farms, when 17.8 per cent of the nation's acreage is insured. If 30 per cent of acreage were insured, the expense would be 2.27 cents per bushel of normal yield; if 40 per cent were insured, the expense would be 1.97 cents; and if 50 per cent were insured, the expense would be 1.78 cents. These estimates are somewhat crude and possibly high, in view of the fact that the original costs are based on years in which an abnormal number of loss adjustments had to be made, and in which initial

organization expenses were encountered; but they are believed to be usable approximations.

STATE AND LOCAL EXPENSES

Most of the local crop-insurance work—collecting farm statistics, computing farm premiums, selling insurance, inspecting crops, negotiating loss settlements, etc.—is handled by the county AAA committees. For this service the FCIC pays the AAA a fee based on the estimated cost of the services rendered. These fees are estimated and budgeted to each state and county in advance, on a formula which recognizes (1) probable number of contracts, (2) probable number of loss adjustments, (3) nature of the county and cost of serving it, and (4) any unusual crop-insurance project such as an intensive selling campaign.

The state and county Agricultural Conservation Associations thus become service contractors for the FCIC, in a position to profit or to lose on their bargains. For the year ended June 30, 1941, the contracting associations estimated that they expended about 4 per cent more on insurance work than they received from the corporation. However, most county committees report that their associations are adequately compensated in the long run, since their crop-insurance expenses exceed their allowances only when an unusually large number of losses must be adjusted. In loss-free years the arrangement is profitable to them.

It does not seem likely that the FCIC could carry on its field work independently for the amount now paid the Agricultural Conservation Associations. Much of the work of maintaining farm-yield records, measuring acreages, inspecting farming methods, etc., is required for AAA purposes also, and the cost is shared.

EXPENSES BY DISTRICTS

A disconcerting aspect of crop-insurance operating expenses is found in a study of expenses by counties, states, and geographic areas. It appears that in states with large numbers of small farms where the average contract is small, or where low risks make for small premiums and losses, the operating expenses are very high per bushel of premiums

or indemnities. The following tabulation¹⁰¹ is illustrative, using averages of 1940 and 1941 data:

Area	Average premium as percentage of normal yield	Percentage of AAA participating acreage insured	State and local expense per premium bushel	Total expense per premium bushel	Premium bushels per insurance contract
Two Eastern states.....	2.4	10	\$.61	\$.72	10.5
Eight North Central states	6.2	22	.53	.64	12.5
Eight Great Plains states.	17.4	23	.14	.25	70.0
Two Western states.....	4.5	33	.22	.33	90.0

While such averages are not to be taken as highly reliable, the general implications are unmistakable. In the Eastern and North Central regions the operating expenses are almost as great as the total value of the indemnity payments. An increase in insurance volume in the two Eastern states would no doubt reduce their expense ratios, but it may be noted that participation in the North Central region is virtually the same as that in the low-expense Great Plains area, while the expense contrast is marked. Since the present increase in participation is most rapid in nonhazardous areas, the relative situation may soon change somewhat.

The significance of these cost figures would appear more clearly if available data made it possible to segregate low-risk from high-risk counties. Three of the Great Plains states included in the tabulation have substantial "safe" areas which are similar to the North Central area, while two states in the North

¹⁰¹ Expense figures are based on accounting summaries furnished by the FCIC; other data are from the Appendix Tables.

¹⁰² They had slightly less than 60 per cent of the insured production in 1941. These states suffered heavy losses on the 1939 and 1940 crop years, which may account in part for this substantial participation. Incidentally, this participation will not be so heavy in the hazardous areas in 1942, due to lessened 1941 losses and good seedbed conditions in the late summer of 1941. These hazardous areas also present the corporation with its most serious actuarial losses and its most difficult selling (participation) problems at the present time. Because of these situations it is not yet possible to report the program a proved success in such areas.

Central group have high-risk sections comparable to the Great Plains.

These facts indicate that if the FCIC confined its operations to counties in the relatively hazardous portion of the Great Plains, and in certain other areas where wheat is the dominant source of farm income (that is, in nondiversified areas), the total operating expenses per bushel of premiums would be below 25 cents on the present scale of operations, and with a reasonable development in volume might decline materially from that point. It should be noted that two-thirds of the 1941 volume of wheat crop insurance (measured in premium bushels) was written in the eight Great Plains states included in the tabulation.¹⁰²

While operating costs per premium bushel are important in indicating the cost of providing indemnity, another perspective may be equally important. Operating costs *per bushel of protected crop* may be defined as costs per bushel of normal yield on fully insured fields. This figure indicates the increased cost of producing wheat (to the taxpayer in this instance) if FCIC protection is provided. Illustrative estimates of FCIC operating costs, tabulated below, naturally contain a large element of guesswork, but are believed

Area	Assumed percentage of acreage insured					
	17.8	30.0	40.0	17.8	30.0	40.0
	Operating expenses per premium bushel			Operating expenses per protected bushel		
U.S. average.....	\$.33	\$.24	\$.21	\$.031	\$.023	\$.020
Ohio Valley state.....	.67	.49	.42	.036	.026	.022
Northern state.....	.55	.40	.35	.041	.030	.026
Western Great Plains area	.22	.16	.14	.038	.028	.023
Pacific Coast state.....	.33	.24	.21	.019	.014	.012

significant. The variations by states are significant because most of the FCIC's work can be allocated to localities, relatively little being unavoidably fixed overhead. Consequently, operations could be halted in unprofitable areas without seriously cumulating per unit costs on the remaining business.

The differences in per unit costs shown in the above tabulation are largely the result of local conditions. Thus, the Ohio Valley has large clerical expense because of its many

small farms; its premium income is small because of low rates; but its costs per protected bushel are low because of fairly high yields. The Western Great Plains area has low costs per premium bushel because of high premium income, and low clerical costs per unit because of large farms; but its costs per protected bushel are as high as those of the Ohio Valley because of low yields.

The costs per protected bushel seem unrelated to the hazards of farming. In the illustrative tabulation the low-risk Ohio Valley and the high-risk Great Plains show about the same level of costs on this basis, while the medium-risk Northern state exceeds both. These facts indicate a need for a more detailed regional study than is here possible.

POSSIBILITY OF ADDING EXPENSE LOADING TO PREMIUMS

Since no experiments relative to premium loading have been conducted, it is only possible to generalize briefly on the subject. The 1942 operating expenses will probably average a little more than 30 cents per bushel of premiums collected, or about 43 per cent of the 10-year average farm value of the wheat premiums. In view of the fact that fire and automobile insurance policies carry expense loadings approximately equal to their net loss-costs, it might appear that crop insurance should be able to bear a 43 per cent loading.

However, such a loading on the average crop-insurance contract would cost the insured 4.1 per cent of the gross income or about 13 per cent of the net income from the crop, assuming an average level of prices and costs. Such a loading on an Indiana contract would absorb 2.2 per cent of the gross or 7 per cent of the net. In western Kansas it would take 8 per cent of the gross or 25 per cent of the net. These formidable cost burdens suggest that crop-insurance premiums bearing a 43 per cent loading would not be well received, especially where net premiums are high. Nor does it seem possible that attempts to load each state's expenses on its own contracts, or any other proportioning designed to raise the same amount of expense money, could succeed.

The offhand conclusion is that under pres-

ent conditions only a portion of crop-insurance expenses could be recovered by loading the premiums. That portion does not seem likely to exceed one-fifth to possibly one-half of the expenses, for a larger loading would greatly reduce the sale of insurance.¹⁰³ The high-risk areas already bear heavy net premiums and would be sensitive to increases, while the low-loss areas would probably not feel sufficient need of insurance to pay rates high enough to cover their high operating expenses as well as their loss-costs. The situation would be considerably changed if increased participation developed, thus reducing per unit costs, or if farm wheat prices remained well above the 71 cents per bushel average.

THE EXPENSE SUBSIDY

The necessity of a public subsidy during the early years of the experiment was conceded by most proponents of crop insurance when wheat underwriting was begun in 1938. At that time there was no definite understanding as to the permanence of the subsidy; some spoke of increasing premiums to bear the cost of operations as soon as the actuarial basis and the salability of insurance were definitely established, while others apparently regarded that question as one for future consideration solely.¹⁰⁴ At present the personnel of the FCIC seem mostly to regard the arrangement as permanent; the law requires no preparation for any alternative situation, Congress has

¹⁰³ In a radio press release dated Jan. 22, 1937, Secretary Wallace suggested that "local" crop-insurance expenses might be recovered in premiums, leaving only the central overhead to be borne by the government. A question of definition arises here, but if county expenses only are regarded as "local," about half of the 1941-42 wheat-insurance expenses would be involved.

¹⁰⁴ In his veto message of May 4, 1940, disapproving a bill to extend crop insurance to cotton, the President said: ". . . It seems evident, therefore, that we do not have as yet the essential 'backlog of experience' required for the establishments of a sound actuarial base for crop insurance, i.e., for a crop insurance plan that would be fully self-supporting, with premium rates sufficient to cover costs of administration as well as of indemnities . . ." Compare this with the viewpoint of the President's Committee on Crop Insurance, *op. cit.*, p. 12. The President presumably changed his mind, for he later approved a similar cotton-insurance measure.

thus far voted the expense money without undue protest,¹⁰⁵ and Department of Agriculture executives give no indication of interest in any change.

It is clear that the wheat program cannot be made self-supporting on the basis of the present volume of business, and that the present voluntary plan can probably never be self-supporting. The public apparently must choose between (1) a subsidy of three to five million dollars per year, depending on the volume of insurance, to continue the present wheat plan, or (2) a subsidy possibly half as large to operate the plan only in hazardous or one-crop areas, or (3) a system of self-sustaining premium rates and compulsory participation, or (4) abandonment of the program completely. It would of course be possible to change the present system of organization, perhaps to advantage, but the need for a substantial subsidy would almost certainly remain unless a compulsory plan were adopted.

Compulsion would be vigorously protested by a large percentage of the affected farmers, and would almost certainly be impossible of enactment unless presented as a phase of a generously subsidized farm program. In one way or another, therefore, crop insurance must be assisted by subsidy, and the problem becomes one of balancing the social advantages inherent in it against the cost to the taxpayers. The vital factors in the problem are the expenses per bushel of premiums and insured

production, the amount of participation and the economic status of the participants, and the necessity for protection in different areas. The data above presented on these points are not capable of objective valuation, but the following tentative conclusions seem warranted:

1. The present total volume of participation does not justify the necessary operating expense. The per bushel expenses are too great; at least half of the participants are financially able to carry their own risks; and much of the money is spent in areas where insurance is not essential.

2. A material increase—perhaps a doubling—of participation volume might justify permanent retention of the program, provided that at least a proportional part of the increase occurred in hazardous areas, and assuming that the program must be operated in its geographic entirety or not at all.

3. There is greater reason for a crop-insurance expense subsidy in hazardous areas than in safe areas. In case of premium loading, reasonable discrimination would be justified.

4. Withdrawal of the insurance offering in nonhazardous counties which fail to participate substantially would be desirable economy.

These conclusions are predicated on the idea that the purpose of a crop-insurance subsidy is to promote personal and community stability, and to reduce possible need for disaster relief, at a cost not out of proportion to the advantages gained.

VIII. CONCLUDING OBSERVATIONS

Federal crop insurance is being tested on the major crop which is best suited to such a test. The yield statistics on wheat are probably more complete than those on any other crop. The geographic and climatic diversification of the risk is unsurpassed. Many types and sizes of farms are involved. The moral hazard is limited because the crop requires little care during its growing season. The

physical hazards are amply diverse, both in type and degree.

The government has been generous in assuming the entire operating cost of the venture. In addition, insurance has been available on credit to nearly all participants. These circumstances, coupled with the sales prestige afforded by association with the AAA and the impetus arising from payment of heavy losses in the initial years, have given the program an excellent chance to gain participation volume.

The total participation has disappointed the roseate expectations entertained by some, but

¹⁰⁵ See U.S. Congress, House, Subcommittee of the Committee on Appropriations, *Agricultural Department Appropriation Bill for 1942*, Hearings, 77th Cong., 1st sess. (1941), Pt. I, pp. 925-60.

constitutes a satisfactory beginning. Future growth is both possible and probable; a total volume double that of the present may be had within a few years.

All classes of farmers, under all sorts of growing conditions, have participated. Broadly speaking, however, the participation has been relatively greater, and the increase in participation as well, in areas with low or moderate risks and premiums. One of the important unsolved problems is to secure increased participation by farmers in areas where such protection is most needed; a second is to secure increased participation by farmers who are financially least able to bear crop loss.

Another pressing problem at present is the reduction of the losses incurred by the project. In addition to the intentionally assumed operating expenses, which now approximate \$4,400,000 per annum, the underwriting losses have to date averaged at least another \$4,000,000 per annum. These have been incurred in relatively good crop years, in which reserves against future poor years should have been accumulated. These losses are in large part due to imperfections in actuarial data and methods, and to adverse selection of risks. The defects are believed to be remediable.

The general outline of the underwriting plan is sound. The principle of insurance in kind, the use of the farm as the underwriting basis, the coverage of a fraction of normal yield, settlements in grain or local dollar equivalents, are sane and practical ideas. The premium-note plan is sensible and inherently workable, and should give little trouble as long as the pledged AAA payments are continued by the government, provided a firm collection policy is maintained.

The urgent need for a well-patronized crop-insurance program in hazardous areas is shown by the number of severe losses sustained and by the number of farms sustaining losses in several consecutive years. Low-risk areas find insurance attractive if low in cost.

SOME LARGER ISSUES

The FCIC has on occasion appeared to overlook the best interests of its insurance objec-

tives in an effort to co-operate with the AAA. The latest change in the board of directors seems to make the FCIC a virtual subsidiary of the AAA. We feel that this is unfortunate. A successful crop-insurance program should be largely separate from current politically debated agricultural policy. The FCIC should have a major degree of policy-making independence, similar to that formerly enjoyed by the Federal Land Banks, though the need for co-operation with other agencies seems to indicate that it should remain a part of the Department of Agriculture.

Part of the solution may lie in strengthening (as well as stabilizing) the board of directors by including with well-chosen representatives of the Department of Agriculture at least two competent outsiders—possibly a Treasury official and a private insurance expert, perhaps appointed by the Secretary of the Treasury.

The "advisory committee" authorized by the present law (but never appointed) could become a very useful factor in the development of the system, if redefined in membership and functions. An eight-man committee including insurance men, bankers, and economists, as well as farmers, given enough compensation and research assistance to enable them to make effective contributions, might be of major assistance.

The exclusion from the insurance program of farmers who decline to co-operate with AAA policies seems both unfortunate and unfair. Refusal to participate in the AAA is not moral dereliction, nor does it signify the employment of unsound farming practices; in fact, the typical non-AAA farm seems at least as good from moral and technical standpoints as is the typical complying farm. Since all farms are alike entitled to the benevolent interest of the government, and since the propagation of the principle of security through insurance requires the maximum possible participation, it seems to us that the restriction lacks adequate justification.

Federal crop insurance is not yet equitable enough or essential enough to warrant making participation compulsory. Yet the issue of compulsory participation should not be shelved or forgotten. There is no present ground for believing that universal compul-

sion to participate will ever be justified. Small farmers, farmers with only a small acreage in wheat, and farmers whose wheat is only a minor element in their farm operations, might even now advantageously be discouraged from participation because of their lack of need for this insurance and the high expense involved in insuring them. To compel such farmers to participate would be absurd. Compulsion would also be undesirable with respect to a large middle group of farmers in low-risk areas. In high-risk areas, on the other hand, a strong case can be made out for compulsion if the terms of the contract can be more satisfactorily worked out. The government now requires that industrial and commercial employees, with the aid of their employers and the government, make insurance provision against possible unemployment and the needs of their retirement years. Similarly, the federal government may well in time require insurance of all farmers who are certain to experience severe crop losses in the course of a decade or less. As an alternative to absolute legal compulsion, effective pressure might be achieved by making other forms of social assistance—for example, Farm Security Administration loans or AAA parity payments—contingent in whole or in part on insurance participation.

In the first three seasons, wheat crop insurance has entailed a subsidy from the Treasury, for operating expenses and underwriting losses, of at least 28 million dollars. This is greater than the official proponents of the scheme appear to have contemplated. Had the seasons included even one very bad harvest, or had the three-year average yields been below the long-term average instead of above it, underwriting losses and the total subsidy would presumably have been much larger. Premature extension of crop insurance to other crops threatens to add to the subsidy burden, perhaps substantially. Moreover, the wheat system has not yet achieved sufficiently extensive participation in high-risk areas to provide a major safeguard against financial disaster to farmers from widespread failure of the wheat crop. The justification for continuation and possible increase in the present subsidy has yet to be proved.

We believe that the ultimate possibilities of national advantage from the evolution of crop insurance warrant continuation of a subsidy to permit the system to mature, but that vigorous efforts are needed to keep the burden within more reasonable limits. The first aim should be to avoid extending the scheme to other crops until genuine success has been achieved with wheat.¹⁰⁶ The second should be to improve the wheat scheme so as to eliminate underwriting losses in good crop years and to reduce to negligible proportions such losses over a period of years. Indefinite continuation of losses on the scale to date, in such years as the past three, would be inexcusable.

The third aim should be further to reduce operating expenses per protected bushel, by a variety of means which may include cessation of operations in areas where insurance is not essential or is little used. A fourth aim should be to devise effective procedures for eventually loading premiums with local expenses, with the dual object of keeping down these expenses and lessening the Treasury burden. At least for the present, and until the foregoing aims are well-nigh achieved, we see no prospect that the general overhead expenses can be shifted to the insured; but this limited amount of subsidy might not be excessive even if it should continue indefinitely.

Investment of premiums in grain, and its scattered storage until sold to provide cash equivalents for indemnity purposes, have entailed expenses out of proportion to any advantages thus far gained or likely to be gained. This policy was adopted for reasons irrelevant to the insurance program, and has since been greatly modified by resort to premium notes maturing after harvest. The prospective costs of retaining the storage system to hedge prepayments, early payments, obligations under pending claims, and possible underwriting surpluses, are too high to warrant its continuance for these purposes.

The idea of utilizing crop-insurance reserves as part of ever-normal-granary reserves was unfortunate, has proved unnecessary to date, and might well be formally dropped. Even though the FCIC should thereby assume cer-

¹⁰⁶ Cf. Appendix Note D.

tain risks from price change, these could be expected largely to average out over a period of years; and at worst the net loss would almost certainly be less than the sum of handling and storage charges on wheat reserves and interest lost on potential reserves in bonds. If ever-normal-granary reserves are to be maintained, this should be the responsibility of a single federal agency other than the FCIC. Both in retrospect and prospect, it seems to us that holding crop-insurance reserves in grain would be more appropriate in the absence of an ever-normal-granary program than as part of one.

ADDITIONAL SUGGESTIONS

Despite the fact that the present underwriting plan seems basically the best available, a great deal of study and experimentation on its details, and on other ideas as well, is needed. The details of the present plan should not be permitted to crystallize before alternatives are tried out.

Such ideas include (1) the schedule-rating plan for fields and farming practices, (2) the reduction of premiums or payment of dividends to farmers with superior loss records, (3) the improvement of the sales effort, especially in hazardous areas, possibly with the aid of local professional insurance men, and (4) the plan for three- or five-year insurance contracts. All these ideas and others could and should be studied carefully and possibly tried out experimentally. Experiments to determine the capacity of crop insurance to bear a portion of its operating expenses should be tried. Different procedures in hazardous and nonhazardous areas might well be considered.

Actuarial details deserve particular review. Some of the adverse experience thus far encountered may have developed from adjustment standards which are more liberal than

originally contemplated, but the major problems arise from imperfect figures and methods, and from adverse selection. The sensitivity of medium- and high-premium areas to premium costs, and the importance of the tendency to adverse selection where large premium sums are involved, require especial emphasis on exactness. In such areas each farm should be rated exactly in proportion to its chances of loss, bearing no responsibility for sharing the losses of farms having less stable yields, and obtaining no subsidy from those with more stable yields.

We feel that the application deadline dates require reconsideration, and that earlier dates should be chosen for certain areas where adverse selectivity has been prominent.

Attention should be given to methods of administrative organization which may be needed if the facilities of the AAA should become unavailable or assume a less convenient form. For example, it has been suggested that countywide mutual crop-insurance companies could be formed to operate locally, and that these could be reinsured in the FCIC. This plan might be useful in another respect, as a means of relieving the government of some of the local operating costs. It might also serve as a very practical means of attacking the problem of underwriting losses, if the present system fails to bring them under control within a reasonable period.

In final summary, it seems fair to say that federal crop insurance has not yet proved that it can provide enough farm security, on a sufficiently equitable and satisfactory basis, to justify its cost. But it has not yet proved its inability to do these things. The goal of the program is eminently desirable, does not seem improbable of attainment, and justifies experiment with the single crop until the attempt is either successful or proved definitely unlikely to succeed.

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APPENDIX NOTES

A. PRIVATE EXPERIENCE WITH CROP INSURANCE IN THE UNITED STATES*

The idea of insuring growing crops against damage by drought, flood, insects, frost, hail, fire, and other destructive forces which may prevent a normal crop is not a new one. Fire, frost, and hail insurance on crops have long been available as separate coverages in most farming communities, having been developed and sold widely by private insurance carriers, and to a limited extent by four states.¹ Combination all-risk insurance which virtually insures the harvesting of a crop, protecting the farmer against practically all crop hazards beyond his control, has been a topic for discussion and experimentation for half a century, but has not become a successful type of private insurance.

"According to Professor G. Wright Hoffman, the earliest known attempt to write all-risk insurance was made in Minneapolis in 1899 by a company known as the Realty Revenue Guaranty Company.² The policy was in effect an optional sale contract by which the company agreed, if the insured desired, to purchase the entire crop at a specified sum per acre. For this protection the farmer paid a premium of 5% and agreed to cultivate his crops in a husbandlike manner and to deliver the crop to the nearest market. The experience under this contract is not definitely known. The premium, however, was much lower than that charged in later-all-risk insurance policies. It will be noted also that the insurance company, since it insured the monetary value of the crop, was in effect insuring against both subnormal yield and price decline.

"The next attempts to write a blanket policy on growing crops were made in 1917 by two companies, one located in Montana and the other in Pennsylvania. The Montana policy insured to an

amount of \$7 per acre all of the small grain that the farmer had in cultivation 'against loss, damage or failure from hail or any cause excepting fire, floods or failure to properly prepare the ground for seeding and properly seed, care for, harvest, protect and thresh said crop.' In case of partial loss, the liability was determined by multiplying the number of bushels finally harvested by the following prices for each kind of grain: wheat, \$1.00 per bushel; flax, \$1.75 per bushel; rye, \$.75 per bushel; oats, barley, and speltz, \$.50 per bushel; and subtracting the value at these prices from the amount of insurance, the difference representing the company's liability.³ Through the use of fixed prices, the insurance company eliminated the price risk from its contract and covered only those risks attributable to weather, plant diseases, and insect pests.

"The experience of the Montana experiment was extremely poor, with the liabilities of the company exceeding its assets by about \$200,000 at the close of the season. This result was due partly to the fact that the year 1917 was one of the unusual drought and partly to the fact that the company was undercapitalized and that insurance was undertaken too late in the season, at which time the danger of a crop failure was already apparent.

"In the same year, another crop insurance policy was issued by a company located in Pennsylvania, although most of the insurance was written in the spring-wheat section of North Dakota. The contract under this policy was similar to that of the Montana company. For coverage up to the limit of \$7 an acre, a premium of 10% was charged. Heavy losses were sustained again, largely because a considerable proportion of the coverage was written too late in the season.

"Hartford Fire Insurance Company Experience

"No further important developments were made in the marketing of all-risk insurance until 1920. At that time several companies entered the field. The most extensive coverage was written by the Hartford Fire Insurance Company, which in 1920 issued approximately \$14 million of crop insurance, with premiums averaging about 5.75%. The risk was well diversified geographically, with approximately \$4 million in the Southern States, \$4 million in the West Central States, and about \$5 million on the Pacific Coast. Total premiums amounted to approximately \$800,000; losses for the year amounted to \$2.5 million. Losses occurred in each of the three sections mentioned above.⁴

"The 1920 policy issued by the Hartford Fire Insurance Company represented an attempt to insure farmers their total cost of production,

* The quoted passages in this note are reprinted from C. L. Rogers, "Crop Insurance," *Conference Board Bulletin* (National Industrial Conference Board, New York), Oct. 20, 1936, pp. 81-83, by permission of the publishers.

¹ For a description of the availability and nature of such coverages, see V. N. Valgren, "Agricultural Insurance," *Encyclopedia of the Social Sciences*, I (1930), 546-47; also N. A. Olsen and others, "Farm Insurance," U.S. Dept. Agr., *Yearbook*, 1924, pp. 239-56.

² G. Wright Hoffman, 'Crop Insurance—Its Recent Accomplishments and Possibilities,' *Annals of American Academy of Political and Social Science*, January, 1925, p. 99.

³ G. Wright Hoffman, *op. cit.*, p. 100.

⁴ Statement of R. M. Bissell, president of the Hartford Fire Insurance Company. Hearings before a Senate Committee investigating Crop Insurance, Washington, 1923."

based on the applicant's reports covering his expense per acre. The company discovered that it was extremely difficult to determine any normal or average production costs, inasmuch as no two farmers, even though located in the same county, could agree on their costs for any single operation. A more serious defect in this policy, however, was that it guaranteed maintenance of the price level that was in effect at the time the policy was issued. Since the company was guaranteeing a specific return per acre without setting any fixed price at which the harvested crop should be valued, the company was assuming the risk that the price at which an 'average' crop could be sold might be less than sufficient to cover expenses. The loss taken above was due primarily to the large declines which took place in the prices of cereal crops and cotton during 1920. Corn at harvest time averaged about 45% of the price at seeding time. Wheat and oats declined somewhat less drastically; cotton fell from around 41 cents to about 24 cents a pound.

"As the result of the extremely poor experience in 1920, the Hartford Fire Insurance Company revised its crop contract radically the following year in an attempt to free itself from hazards resulting from price fluctuations. A provision was inserted in the contract stating, first, that there should be no recovery if cost of production was equalled by the value of the crop, and secondly, that if a crop of a better quality and quantity than was specified in the policy were raised, there should likewise be no recovery. The amount of insurance was determined by multiplying the average yield over the preceding five years by an average price obtained in those years. In case of total destruction of the crop, the limit of the company's liability was not more than 75% of the total coverage. In case of partial destruction, the company could choose whether it would pay the difference between the market value and the amount of insurance, or pay the amount necessary to bring the yield at *market prices* up to the amount covered by the policy. The effect of this contract, then, was to guarantee a fixed monetary return to the farmer only when the price of the commodity was above average, and to guarantee yield only when the price was below the five-year average.

"Introduction of these new provisions made it practically impossible to sell the insurance to farmers. Consequently, the amount of coverage placed by the Hartford Fire Insurance Company in 1921 declined sharply as compared with the preceding year. Even on this reduced coverage and with a contract much more favorable to the company, however, the experience of the year resulted in a considerable loss. After 1923 the Hartford Company abandoned its attempt to sell insurance on major crops, and confined its efforts to small amounts of crop insurance sold mostly

through cooperative associations as protection against agricultural loans in selected areas.

"Other Post-War Experience"

"The Home Insurance Company of New York also wrote crop insurance in 1920 and 1921. At first the contract of this company was similar to that issued by the Hartford Fire Insurance Company. Experience was unfavorable in the first year of operation, and the Home Insurance Company thereafter restricted its liability to a limit of ten dollars per acre for grain. The experience, however, remained unfavorable.

"The most recent important attempt to provide the farmer with all-risk crop insurance occurred in Kansas in 1931 and 1932. A policy was offered by the Agricultural Protective Mutual Insurance Company, insuring grain farmers their cost of production at premiums ranging from 5% to about 13%. The limit on any single risk was \$2,000. In case of partial loss, the company contracted to pay the insured the difference between the final value of the crop and the face amount of the insurance policy. In case of total loss, it was provided that indemnity was not to be paid in excess of those costs of operation which had been sustained prior to the time of such loss. This Kansas experiment was another that insured price as well as yield. The drastic decline that took place in grain prices in 1931 and 1932 resulted in large losses to the company, and the plan was abandoned.

"At the present time [1936], small amounts of all-risk crop insurance are being written by some of the fire insurance companies. Attempts to insure the farmer a profit on his crops, however, or even to insure that his total cost of operation will be entirely covered, have been abandoned. Some risks are now being written by a few companies on an extremely conservative basis, the contract seldom guaranteeing more than one-third of the normal or average yield over a period of years. Insurance of this type has been referred to as 'calamity insurance,' and is most often written as security for a loan made to the farmer. . . ."

Subsequent to the publication of the above summary, but before the inception of the Federal Crop Insurance Corporation, another mutual company essayed the field in Kansas. This organization, the Sowers Plan Crop Insurance Mutual Insurance Company, operated from May 1937 to September 1938. Despite a policy clause permitting collection of a contingent premium in addition to the original one, the company failed. Its policy covered selling price as well as physical hazards, a feature which entered prominently into its 1938 losses.

The lack of success attending these private ventures in crop underwriting may be attributed in varying degrees to four principal difficulties: (1) lack of adequate actuarial data; (2) adverse

selection, both of individual risks and because of late-season sales of insurance; (3) insurance of dollar values as well as physical yield; and (4) inadequate geographic diversification. Some writers also add (5) inadequate capital and (6) unwillingness to persist after initial losses, but there seems reason to believe that persistence in

any of these ventures would merely have cumulated the losses. Bad luck in initial attempts may have been responsible for the magnitude of the losses sustained in some cases, but the present federal experience confirms the belief that successful operation by a self-sustaining private company in this field is unlikely.

B. CROP INSURANCE IN FOREIGN COUNTRIES

Foreign countries quite generally report the use of hail, windstorm, and other single-risk covers on growing crops. These are written by both public and private carriers.

In the multiple-risk and all-risk field many experiments have been tried by both private and public enterprise. Of these, only ventures sponsored by state or national governments have achieved any significant size and permanence, though a few small-scale private and municipal mutuals may still be operating.⁵

Among the larger enterprises, the USSR has the most elaborate program, administered by a state-owned corporation. Japan and Greece have sponsored mutual crop-insurance associations, and several of the Swiss cantons maintain compulsory (tax) funds which are used to indemnify agricultural losses on virtually an all-risk basis. A similar though more limited plan is operated by some of the French Departments, and a number of governments have contributory funds which are earmarked for agricultural relief following specific types of losses. Other governments, particularly those of France and two Canadian provinces, have in recent years considered new all-risk measures.

It is impossible to state the effect of the present war on these programs. Some have certainly been abandoned, and others may be greatly changed.

Soviet Russia has the most comprehensive system of agricultural insurance.⁶ This system embraces insurance on buildings, equipment, livestock, and most crops. The coverage on buildings, equipment, and livestock seems essentially all-risk, while that on crops protects against selected hazards which vary with the crop involved.

⁵ See two articles by F. Arcoleo, "Crop Insurance," *International Review of Agriculture* (International Institute of Agriculture, Rome), July-August and September 1940, XXXI, 271-76E, 306-16E; and U.S. Dept. Agr., Bur. Agr. Econ., *Crop Insurance in Foreign Countries* (F.S.-71, mimeographed, October 1937).

⁶ V. Katkoff, "How Russia Reduces Risks of Farming," *Land Policy Review* (U.S. Dept. Agr., Bur. Agr. Econ.), January 1941, IV, 22; and Arcoleo, *op. cit.*, p. 312E.

⁷ Before the decree of Apr. 4, 1940 these coverages were partly compulsory and partly voluntary.

⁸ Arcoleo, *op. cit.*, p. 315E.

Most contracts cover against hail, blizzard, storm, freezing, and flood. Damage due to drought and insects is indemnified on certain crops only. Insurance participation is compulsory.⁷ The insurance premiums are established for local zones as stated amounts per 100 rubles of insurance, regardless of the nature of the crop, and the insurable amount is determined by appraisalment. The statistical basis for insurance is established by the State Insurance Agency, but local authorities are permitted some discretion in adjusting the figures as necessary within their districts.

The Soviet insurance program is not designed purely as a risk-distributing mechanism. It makes a profit for the use of the government. It discriminates against the independent peasant in favor of the collective farm. It stimulates production by insuring free any plantings in excess of the official quota.

Crop insurance was introduced in Japan in 1938.⁸ The law requires the establishment of local crop-insurance associations and nation-wide reinsurance federations. These organizations are subsidized from the imperial treasury. Premium and reinsurance rates are established by imperial order. Solvency of the reinsurance federations is partly guaranteed by the treasury, but local associations may prorate claims if their funds prove inadequate. Insurance is effected on rice, mulberry leaves, barley, wheat, oats, and rents in kind on rice lands. These crops are not all insured against the same hazards, but most of the meteorological hazards in each case are covered. Insect damage is not covered.

CANADIAN PROPOSALS

Canada has no system of crop insurance in force. Plans similar to the American wheat program have been advocated in the Dominion Parliament, but no action has been taken. There is, however, one farm-relief measure which has some insurance aspects. This measure, the Prairie Farm Assistance Act, 1939, as amended August 7, 1940 and June 14, 1941, imposes a tax of 1 per cent on elevator receipts of wheat, and orders benefits paid to farmers when (a) wheat sells for less than 80 cents per bushel, or (b) when widespread crop failure occurs. In the latter case the indemnity is paid on a limited-acreage basis to all farmers in the affected area, regardless of the

condition of their individual crops. Farmers sustaining losses in an area in which losses are not extensive are not indemnified.

A limited study of crop insurance was made some years ago by the government of Alberta, which concluded that the proposal was too extensive financially and too difficult technically to justify a provincial experiment.

The province of Saskatchewan undertook an extensive study of crop insurance in 1936.⁹ The preliminary report, submitted to the Saskatchewan Department of Agriculture in 1937, reviewed the recent economic history of the province, examined the possible benefits of a crop-insurance system, summarized the history of all-risk crop insurance, and discussed several suggested plans. The final report (1938) presented an exhaustive economic analysis of the crop-insurance idea, a final plan of procedure for wheat insurance, and a very cautious approval of a provincial venture. The plan selected by the committee is somewhat

like the American plan now in use, except that the first underwriting was to be done on a municipal basis rather than by individual farms. Great care was taken to avoid deficits for the first years, since no underwriting guaranty from the public treasury was contemplated. It was hoped that the Dominion government would grant a subsidy to cover operating expenses. No action was taken on the proposal.

A committee was appointed in Manitoba in 1938 to study the question for that province. Like the Saskatchewan committee, this group confined its attention to wheat. The committee filed an interim report in April 1939, and a final one in February 1940.¹⁰ The Manitoba committee was strongly favorable to the crop-insurance idea, regarding it as both practicable and desirable. The general plan endorsed was similar to the one proposed by the Saskatchewan committee in its final report. No action has been taken by the province of Manitoba.

C. ACTION IN CONGRESS AND FEDERAL DEPARTMENTS PRIOR TO 1937*

WHAT CONGRESS HAS DONE TO DATE

1922—Senator Morris Sheppard of Texas, and Senator Charles A. McNary of Oregon, introduced resolutions for the investigation of the practicability of crop insurance. The Sheppard resolution was designed to discover the advisability of creating a bureau of crop insurance in the U.S. Department of Agriculture. Senator McNary's resolution provided for the appointment of a special Senate Committee to investigate the general subject of crop insurance. The McNary resolution was passed and a committee was appointed, composed of Senator McNary, chairman, and Senator Keyes of New Hampshire, and Senator Ellison D. Smith of South Carolina.

1923—The McNary Committee held hearings and made a report but no further action was taken.

Representative King of Illinois, introduced in the House a bill, similar to that of Senator Sheppard.

1925-1927—Various crop insurance resolutions, similar to those quoted above, were introduced in the Senate and House but no action was taken.

⁹ Canada, Saskatchewan Dept. Agr., *Preliminary Report of Committee on Crop Insurance* (mimeographed, n.d.), and *The Feasibility of Crop Insurance in Saskatchewan* (mimeographed, Jan. 18, 1938).

¹⁰ "Interim Report, Manitoba Crop Insurance Committee," and *Crop Insurance in Manitoba* (published by Manitoba Economic Survey Board, mimeographed, February 1940).

* Reprinted from the *Congressional Digest* (Washington, D.C.), December 1936, XV, 292-93, by permission of the publishers.

1928—Senator McNary and Senator Bruce of Maryland, introduced resolutions calling on the Secretary of Agriculture to report to the Senate upon "the extent to which crop insurance would be consistent with sound governmental and economic policy."

This resolution was passed by the Senate.

Report of the Secretary of Agriculture

The Secretary's report, in response to the resolution, which was printed as Senate Document No. 190, 70th Congress, 2nd Session, entitled "Crop Insurance."

After reviewing various experiences by cooperative and private insurance organizations to write crop insurance, the report concluded:

"It is not possible on the basis of existing information to say whether such insurance is practicable or under what conditions it should be issued. Therefore, the first function of the Government with respect to insurance of this character is to secure the necessary factual basis. This, however, would call for more extensive research than the Department has been in a position to make."

1929-1935—During this period bills and resolutions on the subject of crop insurance were introduced every year. Among them were measures by Senator McNary and Representative Sinclair (1929); Senator McNary and Representative Hope of Kansas (1930); Senator McNary and Representative Sinclair (1931); Senator Sheppard (1932), Representative Sinclair (1933), and Senator Sheppard (1935).

1936—Senator Pope of Idaho introduced in the Senate a bill to create a Federal Crop Insurance Corporation.

STEPS TAKEN BY THE U.S. DEPARTMENT
OF AGRICULTURE

1920—The Department of Agriculture began the study of crop insurance.

1922—The Department issued Bulletin No. 1043; "Crop Insurance: Risks, Losses, and Principles of Protection," by Dr. V. N. Valgren.

1934—Henry A. Wallace, Secretary of Agriculture, began to investigate the possibility of using wheat data collected by the AAA to determine the probable cost of crop insurance.

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D. FEDERAL INSURANCE ON CROPS OTHER THAN WHEAT*

COTTON

Pursuant to a 1941 amendment to the Federal Crop Insurance Act,¹¹ cotton crop insurance is being offered by the FCIC beginning with the 1942 crop. Under the regulations adopted, the cotton plan differs from the wheat plan only in details having to do with the physical aspects of the crop and the methods of cultivation. The program is to be administered through the Agricultural Conservation Associations; premiums and insured yields are payable in kind, with cash alternatives; 75 per cent and 50 per cent insurance will be available; a "cotton-note" plan of premium payment is to be used; the individual farm is the underwriting basis; and "county check" yields and premium rates will be used.

Both cotton and cottonseed are to be covered by insurance. Since actuarial data on cottonseed are not available, the premiums and indemnities based on lint yields will both be surcharged by 19 per cent, a figure considered to represent the "normal" value relationship between lint and seed.

Compilation of a preliminary county rate structure for about 900 cotton-growing counties in 16 states was completed in 1941. This involved the use of 70,000 sample farms on which AAA yield data from 1933 to date were available. County yield estimates from 1928 to date were provided by the AMS. An unpublished report on this actuarial work refers to difficulties occasioned by trends in yields and risks in some areas, and by the recent spread of certain risks into areas where historical data do not reflect them.

Premiums for farms under the 75 per cent plan are expected to range from the minimum of about 10 pounds of lint cotton per acre on the low-risk farms to 30 pounds or more on high-risk farms. These rates (which cover lint only) might be as high as 30-40 per cent of the coverage (75 per cent of normal) on some high-risk farms. A typical farm in South Carolina might be insured for 265 pounds per acre at a premium cost of 15 pounds per acre, while a typical farm of north-

west Texas might be insured for 150 pounds per acre at a cost of 30 pounds per acre. The accompanying tabulation indicates approximate average per acre yields and premium rates for 75 per cent insurance in selected areas. These figures do not include the surcharge for cottonseed insurance, nor do they consider the effect of minimum premium rates on non-hazardous farms.

State and county	Average yield (pounds of lint)	Average premium (pounds of lint)
Georgia		
An Eastern county . . .	226	12.5
A Western county	254	4.7
A Central county	203	14.3
Mississippi		
A Northeastern county	207	9.6
A North Delta county .	298	18.9
A Central county	182	8.6
Arkansas		
A Northeastern county	223	18.2
A Western county	142	14.3
A Southeastern county	182	13.3
Texas		
A Northern county . . .	172	10.3
A Northwestern county	124	19.6
A Western county	161	25.4
A Central county	147	5.8
A Southern county . . .	208	9.6

When the cotton-insurance plan was being developed, there was some discussion of the desirability of establishing rates above the level indicated by the actuarial data, in order to counterbalance adverse selection of risks and errors in the initial data. This was not done. The actuarial data for cotton are probably better than those with which the wheat experiment was begun, and the administrative organization is more experienced. However, several of the factors which cause adverse underwriting experience in wheat appear to be present in the cotton program also.

The operating expenses of the cotton-insurance program should not be as great as those experienced on wheat. Fewer than 60 per cent as many counties are involved, proportionately fewer farms are to be covered, and the central-office overhead will not be increased in proportion to the scope of the new offering. The extent of participation is, of course, impossible to forecast.

* Most of the information contained in this note is drawn from an unpublished memorandum prepared in the Bureau of Agricultural Economics in 1941. Cf. FCIC, *Annual Report, 1941*.

¹¹ Public, No. 118, 77th Cong., 1st sess., approved June 21, 1941.

OTHER CROPS

Research looking toward the offering of insurance on corn, tobacco, citrus fruit, and rice is now under way.

The corn crop is sufficiently speculative in most of the Corn Belt to arouse considerable interest in the possibility of insuring it. However, plans for corn crop insurance have been complicated by the absence of satisfactory farm-yield records and because much corn is not used for grain. The AAA data on corn are less adequate than those on wheat and cotton. Farmers have seldom measured their corn yields accurately because most of it was used in whole or part for feed, and accurate measurement was unnecessary. Elevator records are fragmentary. Corn cut for silage or green fodder defies appraisalment, and the gambles which corn farmers frequently make on unseasonably late seedings render all data questionable.

Present actuarial experiments are based on 28,000 five-year and six-year farm-yield records, of which about 18,000 are being kept up to date. These are supplemented by AMS estimates of county-average corn yields in the important corn areas from 1928 to date.

The work being done by the BAE contemplates a corn-insurance program patterned closely after the present wheat plan. The bureau has three tentative suggestions to make: (1) The program should be limited to the "principal corn area," which might be defined to include 2,000,000 growers in 795 counties in 21 states. (2) Insurance should be limited to corn grown for grain. (3) Hybrid corn should be insured under a "special-practice" procedure. Thus far corn-insurance research has apparently not arrived at a point from which an operating program can be projected. There seems to be no great pressure in Congress or the administration for such insurance, and many of the AAA county committeemen are definitely fearful of the problems involved.

Tobacco production presents certain peculiarities which might require departure from the basic insurance plan now used on wheat. In the first place, tobacco crops are characterized by stability of yield and wide fluctuation in quality. Insurance of quantity alone would be unsatisfactory. Second, the post-harvest curing process is an es-

sential farm operation which conceivably might be covered, and which must probably be completed before adjustments are made.

The necessary statistical data for a tobacco-insurance program are apparently available. Preliminary data are being assembled from each of the important producing districts, and a program will be outlined within a reasonable time. No action has been taken by Congress, nor has the administration recommended any.

Research on crop insurance for citrus fruit is substantially under way. The present wheat program is being used as a general pattern, but some complications have been encountered. Important among them is the necessity for an adjustment to allow for the age, size, and condition of the orchard. Second, there is a tendency for the trees to bear more heavily in alternate years, or in other cycles. Third, there is a question of insurance on trees as well as on fruit; frost damage sometimes affects several years' crops. Fourth, citrus yields vary importantly in quality, and quantity insurance would not be wholly satisfactory. Fifth, since storage of underwriting surpluses would be impossible, some other plan for hedging the price hazard would be needed.

It seems probable that good production records on enough individual groves to establish a "key-farm" system, can be had. Data from 1,200 groves in Florida, Texas, and California are already collected. However, there are no AAA data on individual groves, nor are there county data for check-yield purposes. Possibilities along these lines are not fully explored. Furthermore, there may be difficulty in obtaining any data on yields by quality grades.

The hazards of citrus raising are such that premiums for 75 per cent insurance would probably range from 5 to 12 per cent of the average crop, in important producing areas. These suggest hazards sufficient to justify insurance protection. Since citrus production is to a large extent a one-crop venture on family-size farms, with substantial use of mortgage and working-capital credit, there might be considerable use for a sound citrus-insurance program, if one could be devised.

The study of data on rice production has not progressed beyond preliminary stages.

E. PREFATORY REMARKS ON TABLES I-IV

GROUPS AND ARRAYS

Arrangement and grouping of data by states present difficulties, in this instance as in others. An alphabetical order is not serviceable unless one is interested solely in finding data for a particular state. Geographical groups and orders are arbitrary, and those most commonly used are unsuitable here. Only administrative officials of the FCIC need groupings according to states serviced

by each of its branch offices. The choice we have made requires brief explanation.

In Tables I-IV the states are grouped as follows:

- A. States producing chiefly hard winter wheat.
- B. States producing chiefly hard red spring and durum wheats.
- C. Western states producing chiefly white wheats.
- D. Midwestern states producing chiefly soft red winter wheat.

E. Other states producing chiefly soft winter wheats.

Within each group the states are arranged in descending order of average wheat production in 1928-32, a fairly normal period. If the corresponding average for 1930-39 were used, the order of the following pairs of states would be reversed: Nebraska-Oklahoma; South Dakota-Minnesota; Illinois-Ohio; North Carolina-Kentucky; Delaware-West Virginia.

Wyoming is included in Group A (although her production of winter and spring wheat averaged the same in 1930-39), because in each of the three years 1939-41, as well as on the average in 1928-32, more than half of her production was winter wheat.

With one exception, all of the states in which any wheat was insured in any of the first three seasons are separately shown. Included in the totals for Group E are 38 Arkansas farms insured in 1941 with a total seeded area between 500 and 1,499 acres and an insured production of roughly 7,000 bushels.

REVISIONS OF DATA

The data given for 1941 (and 1942) are not fully comparable with those for 1939 and 1940. Since

audited figures for 1941 were not available when the Appendix Tables went to press, preliminary figures had to be used. Subsequent revisions available up to March 1, 1942 show or imply *lower figures* for number of farms insured, net acreage insured, percentages of acreage insured, insured production, and premium collections. This is mainly, we infer, because of belated adjustments for farms on which no wheat was seeded as had been expected, and for farms on which the seeded acreage was less than had been shown in applications for insurance. On the other hand, revisions up to March 1 show *higher figures* for number of contracts giving rise to claims, number of losses indemnified, and volume of indemnities paid. This is primarily because of accumulating information as adjustments are completed. In consequence, between preliminary and final figures there are material increases in percentages of contracts becoming claims and in percentages of losses paid to premiums collected.

In text tabulations on pages 230, 250, and 255 we have included summary figures based on the latest data available to us when page proof was corrected; but interested readers are advised to correct all the tabulated and charted figures after audited data for 1941 have been released.

APPENDIX TABLES

TABLE I.—GROWTH OF THE WHEAT CROP INSURANCE PROGRAM, 1939–42*

Group and state	Number of farms insured ^a				Gross acreage insured ^b (thousand acres)				Insured production ^c (thousand bushels)			
	1939	1940	1941 ^d	1942 ^d	1939	1940	1941 ^d	1942 ^d	1939	1940	1941 ^d	1942 ^d
United States ..	165,777	361,586	405,496	.....	7,235	12,705	11,110	.....	60,840	108,256	108,283	.....
Group A.....	42,257	150,461	159,701	177,110	2,223	6,572	5,894	6,401	18,657	52,669	48,106	61,210
Group B.....	54,145	74,549	49,775	.....	3,377	3,384	1,840	.....	21,730	20,707	14,061	.....
Group C.....	5,194	14,513	26,878	.....	535	1,049	1,165	.....	7,762	14,607	17,912	.....
Group D.....	59,220	111,093	154,525	215,684	1,020	1,539	1,992	2,847	11,585	18,165	25,286	36,777
Group E.....	4,961	10,970	14,617	19,449	79	163	218	276	1,107	2,108	2,920	3,747
Group A												
Kansas.....	14,886	58,443	55,472	58,835	883	3,068	2,604	2,318	7,327	23,907	19,770	23,272
Nebraska.....	13,197	53,906	63,231	73,646	427	1,385	1,459	1,793	3,924	13,169	14,401	19,489
Oklahoma.....	8,635	22,518	24,061	28,241	464	1,067	889	1,304	4,017	8,589	7,588	11,678
Texas.....	3,677	10,860	9,409	11,446	347	809	612	725	2,528	5,184	4,083	4,946
Colorado.....	1,430	3,490	5,878	3,739	71	159	221	180	582	1,222	1,612	1,329
New Mexico....	111	57	234	411	8	7	19	31	72	37	113	189
Wyoming.....	321	1,187	1,416	.....	23	77	90	.....	207	561	539	.....
Group B												
North Dakota..	28,091	30,484	19,348	.....	2,081	1,937	883	.....	12,309	11,280	6,910	.....
Montana.....	5,200	3,903	3,099	.....	536	352	232	.....	4,426	2,410	1,980	.....
South Dakota..	10,643	19,388	13,229	.....	510	717	458	.....	2,796	3,742	2,680	.....
Minnesota.....	10,211	20,774	14,099	.....	250	378	267	.....	2,199	3,275	2,491	.....
Group C												
Washington....	1,332	3,460	4,449	.....	168	379	354	.....	2,263	5,322	5,492	.....
Idaho.....	1,708	6,342	10,888	.....	129	178	281	.....	2,042	2,900	4,826	.....
Oregon.....	662	1,973	5,145	5,587	93	294	269	336	1,369	3,653	4,120	5,727
California.....	1,002	1,987	2,628	.....	111	164	186	.....	1,559	2,272	2,433	.....
Utah.....	452	647	3,507	5,724	33	32	68	170	514	423	923	2,487
Arizona.....	0	0	159	89	0	0	5	1	0	0	85	14
Nevada.....	38	104	102	.....	1	2	2	.....	15	37	33	.....
Group D												
Illinois.....	12,190	14,242	37,782	45,369	267	290	570	844	2,912	3,221	7,293	11,053
Ohio.....	10,253	27,660	33,745	43,216	123	314	353	422	1,738	4,229	5,055	6,115
Indiana.....	11,157	26,867	35,134	36,690	164	332	395	402	2,020	4,047	5,137	5,294
Missouri.....	15,735	20,121	24,758	42,174	343	365	424	755	3,265	3,503	4,351	8,141
Michigan.....	5,057	15,163	15,253	35,068	49	134	145	267	740	1,900	2,150	4,076
Iowa.....	4,645	6,503	7,210	10,264	73	101	101	140	894	1,228	1,259	1,886
Wisconsin.....	183	537	643	2,903	1	3	4	17	16	37	41	212
Group E												
Pennsylvania...	2,299	5,784	7,262	7,406	30	68	86	88	449	980	1,299	1,338
Virginia.....	916	1,163	2,521	2,803	15	20	45	45	189	244	548	555
Maryland.....	985	1,256	1,695	2,466	23	33	39	59	291	410	502	830
New York.....	652	878	999	1,776	9	9	11	21	150	133	181	331
North Carolina..	0	197	450	352	0	2	6	3	0	19	60	32
Kentucky.....	0	895	615	943	0	16	11	14	0	158	116	141
Tennessee.....	0	238	210	2,016	0	5	4	20	0	44	31	175
Delaware.....	79	450	583	804	2	9	11	15	22	102	128	194
West Virginia..	1	0	88	567	..°	0	2	8	..°	0	17	101
New Jersey.....	29	109	156	269	..°	1	2	3	6	18	31	47

* Data for 1939 from FCIC, *Second Annual Report, 1940*; the balance furnished by the FCIC. The 1939 and 1940 figures are audited and final. Those for 1941 are preliminary, as of Dec. 15, 1941; and those for 1942 cover mainly winter-wheat contracts, as reported to Dec. 31, 1941.

^a A contract insuring a landlord's interest and another insuring a tenant's interest in the same crop are enumerated as covering separate (two) farms. When a contract covers several farms, each farm is counted individually.

^b The gross acreage figures for 1939 and 1940 were obtained by totaling the acres covered by the contracts, without duplicating the acreage when both landlord and tenant insured. However, insurance by either landlord or tenant separately resulted in including the full acreage. For 1941 the acreages were estimated by counties by dividing the county check-premium rate per acre (for 75 per cent insurance) into total premiums collected. This may have resulted in slightly more conservative figures than those for 1939 and 1940. The 1942 estimates were made (by counties) by

multiplying the number of insured farms by the 1940 average gross acreage per farm.

^c "Insured production" means the 75 per cent or 50 per cent of normal guaranteed by the contract. It does not duplicate landlord and tenant assurances. The 1939 and 1940 figures are added from the contracts. The 1941 figures are estimated by counties by multiplying estimated acreage insured by county check-yield by 75 per cent. The 1942 estimates are made (by counties) by multiplying the number of farms insured by the 1940 average insured production per farm.

^d Preliminary and possibly subject to significant revision.

° Less than .5 thousand.

TABLE II.—EXTENT OF PARTICIPATION IN THE WHEAT CROP INSURANCE PROGRAM, ACREAGE BASIS, 1939-41*

Group and state	Net acreage insured ^a (thousand acres)			Percentage of seeded acreage insured ^b			Percentage of acreage allotment insured ^c			Percentage of complying acreage insured ^d		
	1939	1940	1941 ^e	1939	1940	1941 ^e	1939	1940	1941 ^e	1939	1940	1941 ^e
United States ..	5,994	10,920	11,110	9.4	17.6	17.8	10.9	17.6	17.9	14.3	23.0	22.8
Group A.....	1,903	5,686	5,894	6.5	21.1	21.2	8.1	20.9	21.6	11.2	26.8	27.2
Group B.....	2,637	2,763	1,840	15.9	16.0	10.9	16.8	15.6	10.4	18.3	17.5	11.5
Group C.....	470	947	1,165	9.9	18.1	22.5	11.1	20.2	24.9	14.7	28.7	34.9
Group D.....	852	1,373	1,992	9.7	16.4	23.6	10.9	15.9	23.1	15.8	23.9	34.1
Group E.....	72	151	218	1.7	3.5	5.1	2.1	4.0	5.8	4.9	9.8	12.3
Group A												
Kansas	696	2,604	2,604	5.0	20.8	19.9	6.3	20.3	20.3	9.3	27.0	26.6
Nebraska	427	1,191	1,459	10.7	37.1	41.5	14.0	33.4	41.1	18.1	40.3	45.7
Oklahoma	394	967	889	8.1	20.8	17.7	10.4	21.4	19.7	16.2	30.5	28.3
Texas	299	715	612	7.6	16.9	15.6	8.1	16.9	14.4	9.2	18.9	15.9
Colorado	57	133	221	3.4	8.7	14.3	4.4	9.0	15.0	5.7	11.8	19.1
New Mexico	8	6	19	2.1	1.8	5.3	2.5	1.8	5.3	3.4	2.4	6.7
Wyoming.....	22	70	90	5.7	20.0	25.2	7.1	20.7	26.6	8.4	27.2	34.6
Group B												
North Dakota ..	1,615	1,575	883	19.3	18.7	10.5	19.5	17.6	9.9	20.8	18.8	10.6
Montana	451	295	232	11.2	7.1	6.1	13.2	7.8	6.2	15.1	9.6	7.2
South Dakota ..	424	565	458	14.1	18.3	14.9	14.4	17.4	14.1	15.2	18.5	15.0
Minnesota	207	328	267	12.9	20.1	17.3	14.6	19.7	16.1	17.3	25.1	19.2
Group C												
Washington	145	338	354	7.4	15.9	16.5	8.6	18.2	19.1	13.5	30.9	33.8
Idaho.....	114	161	281	11.9	15.1	27.6	12.7	16.3	28.3	14.9	20.9	33.9
Oregon	80	263	269	9.5	30.5	30.2	10.4	30.9	31.7	11.6	35.4	36.0
California	99	152	186	14.0	18.2	23.3	15.8	21.7	26.6	21.0	32.1	37.6
Utah	31	31	68	11.9	11.7	24.5	14.9	13.2	28.7	18.5	16.9	37.2
Arizona	0	0	5	0	0	15.8	0	0	14.1	0	0	17.5
Nevada.....	1	2	2	3.7	10.9	9.8	6.1	12.6	9.9	8.1	17.5	15.3
Group D												
Illinois	214	243	570	11.0	13.6	30.8	12.0	12.5	29.4	17.3	18.6	44.0
Ohio.....	109	286	353	5.4	14.5	17.6	6.6	15.6	19.1	9.8	24.9	29.7
Indiana.....	140	300	395	8.5	19.0	26.6	9.5	18.7	24.6	13.8	30.0	38.7
Missouri.....	282	326	424	15.0	18.1	22.9	16.6	16.6	21.7	25.8	24.3	31.3
Michigan.....	43	125	145	5.6	16.3	18.9	6.4	16.9	19.6	8.4	23.1	26.4
Iowa	63	90	101	14.1	24.6	27.4	16.2	19.7	22.2	18.6	25.4	28.1
Wisconsin	1	3	4	1.3	3.6	5.4	1.4	3.1	4.3	1.7	4.7	6.0
Group E												
Pennsylvania...	28	64	86	3.0	6.8	9.6	3.7	7.5	10.1	7.6	16.8	19.4
Virginia.....	14	19	45	2.6	3.3	8.0	2.9	3.6	8.5	7.1	9.0	17.5
Maryland.....	19	28	39	4.7	7.0	10.5	5.3	7.4	10.1	7.9	10.3	11.8
New York.....	9	9	11	3.1	2.8	3.7	3.9	3.7	4.8	8.7	11.1	11.9
North Carolina..	0	2	6	0	.4	1.1	0	.5	1.4	0	2.4	5.9
Kentucky.....	0	15	11	0	3.4	2.6	0	3.7	2.8	0	7.1	4.8
Tennessee.....	0	5	4	0	1.1	.9	0	1.2	.9	0	3.3	2.1
Delaware.....	2	8	11	2.1	10.2	16.7	2.4	10.5	15.4	2.6	11.4	16.0
West Virginia ..	.. ^f	0	2	..	0	1.4	..	0	1.4	.1	0	4.5
New Jersey	.. ^f	1	2	.5	1.7	3.2	.8	2.2	4.3	3.3	10.3	21.8

* Data for insured acreage were furnished by the FCIC, seeded acreage estimates by the AMS, and acreage allotment data by the AAA. Complying acreage is estimated on the basis of AAA data.

^a "Net acreage insured" means the acreage whose production is all covered by insurance plus the appropriate fraction of each parcel whose production is insured by only one of two (landlord and tenant) interested parties. The 1939 and 1940 data were tabulated by the FCIC. Use of the 1941 data in this connection is our responsibility. The 1941 figures are estimated by counties, by dividing the county check-premium rate per acre (for 75 per cent insurance) into total premiums collected.

^b Total acreage seeded as estimated by the AMS includes all acreage seeded to wheat, whether ultimately threshed, pastured off, or abandoned.

^c The state acreage allotment is the total permitted to the state under the AAA program, not merely the acreage allotted to participating farms.

^d These percentages are based on our estimates of the wheat acreage fully eligible for crop insurance—that is, wheat seeded on farms staying within allotment or "permitted acreage" limits. The AAA has two figures which are in point: (1) the percentage of total available "parity payments" claimed by the state's farmers, and (2) acreage seeded to wheat by farms participating in the soil-conservation program. For each state the larger of the two indicated acreage figures has been used. The estimate is believed to be within 5 per cent of the proper figure in each case.

^e The 1941 estimates of insured acreage are possibly overstated by as much as 8 per cent because they are based on the insurance applications, not on the later reports of actual seedings. The percentage data would be correspondingly affected.

^f Less than .5 thousand.

FEDERAL CROP INSURANCE IN OPERATION

TABLE III.—LOSS EXPERIENCE ON FCIC WHEAT CONTRACTS, 1939-41*

Group and state	Premiums collected and losses paid (thousand bushels)						Percentage of losses paid to premiums collected			Percentage of contracts becoming claims		
	1939		1940		1941 ^a		1939	1940	1941 ^a	1939	1940	1941 ^a
	Premiums	Losses	Premiums	Losses	Premiums	Losses						
United States ..	6,684	10,163	13,806	22,832	13,620	18,751	152	165	138	33.7	31.3	32.0
Group A.....	2,058	4,821	8,012	17,064	8,141	13,052	234	213	160	49.4	47.8	51.1
Group B.....	3,521	4,081	3,704	4,144	2,664	1,164	116	112	44	41.1	33.4	21.1
Group C.....	322	584	769	1,075	953	1,430	181	140	150	23.7	23.0	17.5
Group D.....	744	652	1,232	485	1,746	3,003	88	39	172	18.8	10.4	19.9
Group E.....	40	25	90	63	118	102	63	70	86	9.2	11.8	13.9
Group A												
Kansas	777	1,746	3,700	8,244	3,151	2,791	225	223	89	38.6	42.8	37.5
Nebraska	496	1,278	1,981	5,132	2,648	7,073	258	259	267	66.0	57.9	70.1
Oklahoma	270	477	880	1,273	786	1,234	177	145	157	34.7	33.9	42.0
Texas	396	1,018	1,070	1,666	972	1,785	257	156	184	64.3	49.5	59.1
Colorado	78	187	248	458	413	98	239	185	24	53.1	56.1	11.7
New Mexico	12	31	12	22	32	55	252	186	172	64.8	77.2	35.5
Wyoming	29	84	121	269	139	16	285	223	12	73.2	72.0	7.3
Group B												
North Dakota ..	1,954	1,653	1,833	2,035	1,110	181	85	111	16	36.5	36.3	4.4
Montana	664	681	511	367	435	54	103	72	12	33.6	31.2	8.3
South Dakota ..	730	1,592	1,045	1,615	881	529	218	155	60	71.7	52.2	28.6
Minnesota	173	155	315	127	238	400	90	40	168	25.6	10.3	39.6
Group C												
Washington	87	87	226	187	241	139	100	82	58	17.9	22.4	10.7
Idaho	77	77	133	99	235	370	100	74	157	13.8	12.8	11.4
Oregon	62	101	228	144	224	137	163	63	61	28.4	23.3	24.8
California	73	252	154	625	180	732	343	405	407	38.8	54.5	49.5
Utah	22	63	26	15	68	20	282	57	30	35.3	21.2	7.8
Arizona	0	0	0	0	3	30	...	...	1,030	....	....	62.2
Nevada	1	4	2	5	2	2	644	283	84	50.0	51.9	21.6
Group D												
Illinois	185	58	215	36	491	442	31	17	90	8.0	5.6	14.6
Ohio	131	101	305	77	332	110	77	25	33	18.6	8.7	9.4
Indiana	142	149	280	124	366	35	105	44	10	23.0	11.5	3.1
Missouri	197	171	245	140	334	1,638	87	57	491	18.0	14.7	54.6
Michigan	31	39	87	57	112	79	129	66	71	18.5	10.1	13.3
Iowa	57	127	97	48	107	688	223	49	543	38.4	10.8	71.2
Wisconsin	1	7	3	3	4	11	529	106	292	65.0	17.9	51.6
Group E												
Pennsylvania...	16	8	36	31	47	55	49	84	118	6.6	11.5	15.3
Virginia	7	4	10	5	23	20	52	51	86	8.5	10.7	17.8
Maryland	11	7	15	10	18	9	65	67	46	15.3	12.7	7.8
New York	5	5	6	2	8	9	103	37	113	8.6	4.8	14.6
North Carolina ..	0	0	1	.. ^b	3	1	...	39	45	....	11.7	7.3
Kentucky	0	0	14	8	10	1	...	61	9	....	17.8	4.6
Tennessee	0	0	3	1	2	.. ^b	...	48	23	....	14.3	8.1
Delaware	1	1	4	6	5	4	78	149	82	17.7	18.4	11.8
West Virginia ..	.. ^b	0	0	0	1	1	0	...	101	0	....	17.0
New Jersey	.. ^b	.. ^b	1	.. ^b	1	1	90	44	128	10.3	3.7	14.1

* Data for 1939 from FCIC, *Second Annual Report, 1940*; the balance furnished by the FCIC. The percentage calculations are ours. The 1939 and 1940 figures are audited, the others are preliminary, as of Dec. 15, 1941.

^a Preliminary and possibly subject to significant revision.

^b Less than .5 thousand.

TABLE IV.—AVERAGE WHEAT YIELDS, 1928-40, AND AVERAGE PREMIUM RATES, 1942*

(Bushels per seeded acre, except as indicated)

State	Average yield, 1928-40 ^a	Average check yield, 1942	Average premium, 1942	Percent- age of premium to check yield
Group A				
Kansas	9.8	10.4	1.61	15.5
Nebraska	11.5	12.7	1.91	15.0
Oklahoma	10.3	10.8	1.22	11.3
Texas	7.4	8.7	1.74	20.0
Colorado	7.7	9.3	1.80	19.4
New Mexico	6.5	7.7	2.02	26.2
Wyoming	7.9	9.4	1.63	17.3
Group B				
North Dakota	7.5	8.8	1.62	18.4
Montana	9.4	10.4	1.91	18.4
South Dakota	6.5	8.3	1.90	22.9
Minnesota	13.4	13.6	1.23	9.0
Group C				
Washington	19.1	20.6	.80	3.9
Idaho	21.7	22.1	.95	4.3
Oregon	18.3	19.7	.98	5.0
California	15.7	16.4	1.23	7.5
Utah	18.8	19.5	1.06	5.4
Arizona	21.7	 ^b	 ^b	 ^b
Nevada	24.9	24.9	1.29	5.2
Group D				
Illinois	16.5	17.3	.93	5.4
Ohio	18.3	19.5	.98	5.0
Indiana	15.9	17.0	.98	5.8
Missouri	13.3	13.9	.88	6.3
Michigan	19.7	20.3	.86	4.2
Iowa	16.6	17.3	1.42	8.2
Wisconsin	16.4	16.8	1.23	7.3
Group E				
Pennsylvania	18.7	19.1	.58	3.0
Virginia	14.0	14.5	.33	2.3
Maryland	18.4	18.9	.48	2.5
New York	20.3	21.1	.61	2.9
North Carolina ...	10.7	11.1	.16	1.4
Kentucky	12.0	12.9	.84	6.5
Tennessee	10.5	11.1	.47	4.2
Delaware	17.2	17.7	.49	2.8
West Virginia	14.0	15.0	.55	3.7
New Jersey	20.2	21.1	.39	1.8

* Yields per acre, furnished by the AAA and the FCIC, are based on AMS data; check yields and check premiums furnished by the FCIC. Averages of 1928-40 yields calculated by us.

^a A 15-year yield would average .3 bushel higher than these figures, for the country as a whole. We note that the average check yield exceeds our 13-year average yield in every state except Nevada.

^b Data not available.

TABLE V.—FCIC ADMINISTRATIVE EXPENSES FOR FISCAL YEARS ENDED JUNE 30, 1939-41*

Classification	1939	1940	1941
Direct expenses except wheat storage			
Personal services ...	\$1,260,731	\$1,101,429	\$ 964,040
Supplies and materials	93,033	41,586	41,125
Communication service	21,549	21,434	22,594
Travel expense	51,919	56,268	60,579
Transportation of things	12,556	10,686	20,052
Printing and binding	56,286	300	0
Advertising and publications	115	0	0
Heat, light, power, etc.	347	3,311	3,351
Rents	45,367	50,081	42,380
Repairs and alterations	364	1,494	2,027
Special and miscellaneous expense	21,024	13,158	15,864
Total	\$1,563,291	\$1,299,747	\$1,172,012
Wheat storage ^a	302,678	871,274	1,016,095
Total direct expense	\$1,865,969	\$2,171,021	\$2,188,107
Expense of co-operating agencies			
Office of the Secretary	27,745	33,282	40,937
Bureau of Agricultural Economics ..	51,300	71,150	82,100
Office of Information	0	5,000	4,772
Office of the Solicitor	48,786	45,215	45,922
Agricultural Marketing Service	24,693	28,338	21,605
Agricultural Adjustment Admin.	2,275,597	3,291,850	2,892,640
Division of Disbursements (Treasury) ..	3,297	8,836	12,000
Total of co-operating agencies.....	\$2,431,418	\$3,483,671	\$3,099,976
Total expenses ...	\$4,297,387	\$5,654,692	\$5,288,083
Equipment purchased..	85,101	21,205	19,369
Total expenditures	\$4,382,488	\$5,675,897	\$5,307,452

* Data supplied by the FCIC.

^a Officials of the FCIC estimate that 75-90 per cent of these items could have been saved had the 1942 wheat-note premium plan been adopted at the beginning of operations.

FEDERAL CROP INSURANCE IN OPERATION

TABLE VI.—FLUCTUATIONS OF FCIC YIELDS AND PREMIUM RATES IN 20 SELECTED COUNTIES IN KANSAS*

County	Wheat yield per seeded acre (bushels)				FCIC county check yield (bushels per acre)				Average premium rate (ratio of county check premium to county check yield)			
	Av. 1920- 38 incl.	1939	1939	1940	1939	1940	1941	1942	1939	1940	1941	1942
Brown	18.0	15.2	18.2	25.8	18.0	17.8	18.5	19.2	2.8	3.9	4.3	4.7
Cherokee.....	12.0	12.5	13.8	17.3	11.9	11.7	12.2	12.7	7.6	6.0	5.3	5.9
Labette	12.2	11.7	11.7	10.8	12.3	12.4	12.4	12.2	6.5	5.6	5.7	6.3
Harper	12.3	7.4	19.0	9.7	12.7	12.2	12.8	12.5	6.3	6.6	6.5	7.2
Miami	13.6	12.7	18.5	16.2	13.8	13.6	14.1	14.3	7.2	6.6	6.5	7.7
Kingman	12.3	7.5	14.8	10.2	12.5	12.3	12.4	12.2	7.2	6.5	7.4	7.7
Reno	13.8	9.1	12.9	16.3	13.9	13.4	13.6	13.9	6.5	6.7	7.4	7.4
Jefferson	15.8	18.4	16.6	21.5	14.9	15.4	15.9	16.5	8.1	7.8	7.9	7.9
Lincoln	11.3	8.3	4.3	3.1	11.5	11.3	10.8	10.5	13.0	11.5	13.7	15.5
Mitchell	12.0	9.0	3.8	11.9	11.7	12.0	11.5	11.7	14.5	11.7	14.3	14.6
Rawlins	8.5	15.8	3.7	5.5	8.2	9.5	9.5	9.1	18.3	18.9	20.8	22.0
Norton	7.2	9.9	1.4	2.2	7.1	8.1	7.8	7.5	25.4	21.0	24.1	24.0
Clark	8.3	6.3	3.6	4.7	9.5	8.4	8.4	8.2	23.2	22.6	24.9	24.9
Trego	7.5	6.5	1.4	3.5	8.0	7.9	7.7	7.4	22.5	22.8	25.8	26.6
Ness	7.6	4.9	1.3	3.7	8.5	7.8	7.7	7.4	25.9	23.1	26.0	26.1
Ford	8.6	4.3	2.3	3.0	10.2	8.4	8.3	8.1	26.5	23.8	26.5	26.8
Kearny	6.8	6.6	3.2	2.3	7.8	8.1	7.8	7.5	29.5	27.2	28.6	30.0
Thomas	5.9	5.7	3.6	4.9	6.5	7.2	6.9	6.8	30.8	26.4	30.3	30.2
Stanton	6.2	2.0	3.1	5.6	7.8	7.1	6.8	6.8	28.2	29.6	32.4	30.8
Grant	7.3	3.2	2.1	4.8	9.0	8.3	7.6	7.2	28.9	28.9	32.9	32.6

* Yields per seeded acre were provided by the AMS; check-yield and check-premium data by the FCIC. The check-yield and check-premium system was not used in 1939, but the figures are comparable. The counties are arranged in order of 1941 premium rate, from lowest to highest.

TABLE VII.—FCIC EXPERIENCE IN 120 SELECTED COUNTIES, 1939-41*

State and county	Net acreage insured ^a			Percentage of acreage allotment insured ^b			Premi- um rate, 1941, as percentage of normal yield	Percentage of complying acreage insured ^d			Percentage of losses paid to premiums collected		
	1939	1940	1941 ^e	1939	1940	1941 ^e		1939	1940	1941 ^e	1939	1940	1941 ^f
Kansas													
Brown.....	14,884	34,443	30,796	28.7	55.5	49.5	4.3	39.3	76.0	67.8	153	13	390
Cherokee	510	3,742	9,786	1.0	6.1	15.1	5.3	2.6	16.0	39.8	45	59	258
Labette.....	5,174	13,153	18,049	10.1	21.7	29.9	5.7	16.8	36.2	49.8	79	377	185
Harper.....	10,989	41,199	56,055	6.4	20.7	28.1	6.5	12.8	41.4	56.2	15	285	88
Miami.....	2,896	16,783	16,949	10.3	48.8	49.2	6.5	12.7	60.3	60.8	11	142	419
Kingman	8,268	43,817	51,251	4.8	22.2	26.0	7.4	8.3	38.3	44.8	135	398	52
Reno.....	15,534	41,074	46,361	5.4	12.6	14.2	7.4	10.8	25.7	29.0	132	202	120
Jefferson.....	3,693	14,609	10,466	11.0	29.3	21.0	7.9	16.9	45.1	32.3	77	18	410
Lincoln.....	8,781	51,668	57,580	7.4	37.5	41.8	13.7	9.0	45.8	51.0	321	518	8
Mitchell	2,414	52,203	16,670	1.6	30.2	9.7	14.3	2.2	47.4	13.3	363	115	11
Rawlins	10,571	74,378	72,889	6.3	40.5	39.6	20.8	6.7	43.1	42.1	331	229	24
Norton.....	8,374	21,140	24,862	10.4	20.2	23.7	24.1	11.1	21.5	25.2	391	285	12
Clark.....	22,682	35,174	48,529	16.0	24.2	33.3	24.9	16.2	24.5	33.7	216	226	6
Trego.....	16,278	37,458	35,071	9.1	20.6	19.3	25.8	10.5	21.9	20.5	355	260	5
Ness.....	3,491	39,897	21,639	1.5	16.0	8.6	26.0	1.5	16.0	8.6	278	201	2
Ford.....	29,692	61,479	68,803	8.9	17.9	20.0	26.5	9.1	18.1	20.4	236	218	1
Kearny.....	153	22,110	23,705	.2	21.2	22.7	28.6	.2	22.3	23.9	131	233	57
Thomas.....	29,457	14,609	17,284	12.2	5.7	6.8	30.3	12.7	5.9	7.1	226	177	15
Stanton.....	2,082	33,323	12,367	1.2	19.4	7.2	32.4	1.2	20.0	7.4	246	75	70
Grant	157	9,069	6,703	.1	5.7	4.2	32.9	.1	5.8	4.2	204	140	154

* Data on insured acreages, premium rates, and all 1941 and some 1940 loss ratios, were furnished by the FCIC. Acreage allotments are from the *Federal Register*, and data required for our estimates of complying acreage came from the AAA. Loss ratios for 1939 and 1940 are taken mainly from the annual reports of the respective state Agricultural Conservation Associations. The counties within each state are arranged in order of premium rate, from lowest to highest.

^a, ^b, ^d, ^e See correspondingly numbered notes to Table II.

^f Preliminary (as of Dec. 1, 1941), incomplete, and subject to significant increase, especially in spring-wheat counties.

TABLE VII (Continued)

State and county	Net acreage insured ^a			Percentage of acreage allotment insured ^b			Preliminary rate, 1941, as percentage of normal yield	Percentage of complying acreage insured ^d			Percentage of losses paid to premiums collected		
	1939	1940	1941 ^e	1939	1940	1941 ^e		1939	1940	1941 ^e	1939	1940	1941 ^f
Colorado													
Larimer	3,428	4,552	9,000	13.3	13.9	27.8	14.1	19.5	20.4	40.8	208	504	17
Weld	6,328	28,192	30,957	4.2	16.4	18.0	18.7	5.2	20.3	22.2	267	172	22
Arapahoe	1,239	9,996	10,071	2.8	19.8	20.0	20.9	4.5	31.8	32.4	375	113	10
Phillips	6,472	17,568	54,380	5.8	14.0	43.3	22.0	6.8	16.4	50.6	89	121	23
Prowers	1,346	2,917	4,059	4.4	9.4	12.5	23.3	4.9	10.6	14.0	264	131	57
Sedgwick	5,364	5,898	12,771	9.5	9.1	19.6	23.6	11.3	10.8	23.4	65	128	5
Logan	3,283	9,433	20,418	2.8	6.8	14.8	23.9	3.6	8.7	18.8	280	296	8
Morgan	4,479	13,398	9,555	12.1	32.0	23.0	24.4	13.3	35.1	25.2	546	269	26
Yuma	1,317	10,967	13,774	1.2	8.9	10.9	25.1	1.4	10.4	12.7	180	157	14
Washington	876	4,986	11,326	.9	4.5	10.3	31.2	1.1	5.5	12.5	376	233	23
North Dakota													
Trall	52,644	58,116	45,399	37.5	36.6	28.5	8.3	41.2	40.2	31.3	79	41	48
Walsh	53,476	96,865	49,682	27.6	46.3	23.0	8.6	34.5	57.9	28.7	142	170	4
Cass	80,421	122,997	59,013	33.0	45.5	21.4	9.0	36.3	50.0	23.5	129	74	29
Grand Forks	53,738	90,793	72,176	26.3	40.1	31.2	9.6	30.6	46.6	36.3	81	167	0
Richland	8,757	20,562	12,081	5.9	12.8	7.5	13.6	6.5	14.1	8.2	16	0	4
Towner	47,629	59,942	12,671	25.0	29.0	6.1	13.7	26.3	30.5	6.4	26	73	0
Benson	28,765	31,416	9,757	12.2	12.4	3.8	16.9	12.7	12.9	4.0	30	72	0
Stutsman	74,914	71,205	50,892	27.1	24.4	17.4	18.5	27.4	24.6	17.6	56	120	7
Wells	42,591	17,874	10,409	18.9	7.4	4.3	19.0	19.5	7.6	4.4	26	33	6
La Moure	43,292	36,729	25,567	31.7	24.9	17.3	20.0	32.0	25.1	17.5	121	99	7
McLean	9,190	14,565	4,595	3.0	4.4	1.4	21.1	3.1	4.6	1.5	20	14	0
Renville	1,734	4,892	3,593	1.2	3.2	2.3	21.7	1.2	3.3	2.4	11	3	0
Morton	41,236	33,572	12,328	22.7	17.5	6.4	22.0	25.0	19.2	7.0	50	31	0
Slope	16,813	6,930	9,324	17.9	6.7	9.0	23.6	18.6	7.0	9.4	5	34	3
Ward	5,731	18,092	10,468	2.0	5.7	3.3	24.1	2.1	6.1	3.5	44	20	0
Grant	27,616	14,860	4,260	18.4	9.4	2.7	25.3	20.2	10.2	3.0	70	40	32
Dunn	28,208	13,998	2,729	17.2	8.1	1.7	26.1	17.8	8.4	1.8	100	64	0
McKenzie	37,217	13,493	1,896	20.6	7.1	1.0	26.5	21.4	7.4	1.0	116	19	11
Divide	3,108	5,805	1,616	1.8	3.1	.8	27.7	1.9	3.2	.8	149	82	0
Bowman	13,906	6,098	3,796	16.3	6.5	4.1	28.1	17.3	6.9	4.4	70	38	4
Montana													
Pondera	34,634	23,267	22,866	33.1	19.9	19.2	11.8	66.2	39.8	38.4	317	109	2
Teton	35,198	22,500	30,791	28.6	16.4	22.4	14.4	40.9	23.4	32.0	219	161	0
Yellowstone	9,292	9,426	11,050	13.6	12.0	13.5	14.8	14.0	12.4	13.9	25	36	20
Chouteau	32,557	32,126	30,553	12.8	11.7	10.9	17.4	17.1	15.6	14.5	78	106	7
Fergus	30,247	13,351	11,176	14.5	5.8	5.0	17.7	15.6	6.2	5.4	86	55	0
Toole	8,190	6,098	2,006	12.1	7.6	2.4	18.5	16.0	10.1	3.2	86	70	0
Hill	27,042	42,818	7,351	11.9	17.2	2.9	21.0	13.1	18.9	3.2	73	81	0
Sheridan	33,021	16,303	5,476	15.9	6.7	2.2	23.1	16.2	6.8	2.2	57	21	1
McCone	22,977	9,890	1,497	23.0	9.0	1.4	27.7	24.8	9.7	1.5	175	4	24
Valley	12,154	15,152	3,892	6.0	7.0	1.8	28.7	6.5	7.5	1.9	64	17	6
Washington													
Garfield	5,438	9,476	10,054	9.6	15.7	16.5	1.4	13.9	22.8	23.9	0	29	23
Walla Walla	12,934	57,022	48,920	8.2	32.9	28.7	1.7	11.3	45.5	39.7	30	18	67
Columbia	3,866	23,180	24,075	6.1	34.5	35.0	1.9	7.2	40.9	41.5	35	68	138
Whitman	34,824	58,696	61,216	10.3	16.3	17.1	2.2	15.7	24.9	26.1	54	45	24
Spokane	13,701	33,138	37,180	13.2	29.0	32.5	2.5	17.2	37.9	42.5	104	154	53
Lincoln	15,975	15,823	41,826	5.9	5.4	14.2	4.5	15.9	14.5	38.3	2	75	3
Franklin	4,055	47,178	36,561	5.3	54.0	42.8	4.7	7.1	72.6	57.6	69	49	10
Adams	7,886	30,250	15,921	3.4	11.9	6.3	6.3	7.9	27.7	14.6	0	8	2
Douglas	14,327	8,857	13,510	11.6	6.8	9.9	7.2	19.3	11.3	16.5	185	155	0
Grant	7,110	11,416	18,657	7.8	11.1	17.9	7.7	14.2	20.2	32.6	0	63	2

^{a, c, d, e} See correspondingly numbered notes to Table II.^f Preliminary (as of Dec. 1, 1941), incomplete, and subject to significant increase, especially in spring-wheat counties.

TABLE VII (Concluded)

State and county	Net acreage insured ^a			Percentage of acreage allotment insured ^a			Preliminary rate, 1941, as percentage of normal yield	Percentage of complying acreage insured ^a			Percentage of losses paid to premiums collected		
	1939	1940	1941 ^c	1939	1940	1941 ^c		1939	1940	1941 ^c	1939	1940	1941 ^f
Idaho													
Canyon	278	5,283	6,007	1.2	22.8	25.9	1.6	1.3	25.0	28.5	3,550	154	105
Latah	8,315	8,665	32,638	12.6	12.2	45.7	1.8	14.5	14.0	52.5	16	91	82
Twin Falls	767	4,069	3,490	3.1	16.1	13.3	2.3	4.4	23.0	19.0	146	113	12
Bingham	109	3,554	3,727	.8	24.8	25.8	2.4	1.1	33.3	34.7	0	78	8
Lewis	7,393	14,267	29,856	14.6	26.4	55.1	2.5	15.7	28.2	59.3	7	68	62
Idaho	18,392	11,072	19,118	30.7	17.0	29.0	4.2	37.6	20.8	35.5	73	38	39
Boundary	5,722	7,445	9,075	42.3	50.2	61.2	4.6	42.6	50.6	61.7	49	48	18
Bonneville	6,822	7,345	11,441	14.6	14.0	21.9	5.3	25.0	24.0	37.6	80	3	0
Power	10,221	10,592	11,878	14.3	13.8	15.4	7.1	17.6	17.0	19.0	51	36	13
Teton	6,121	10,438	8,588	24.5	39.5	32.4	7.2	25.1	40.5	33.3	138	12	0
Oregon													
Umatilla	42,816	70,521	93,616	23.0	34.7	46.0	2.6	25.8	39.0	51.7	73	73	28
Union	3,620	6,673	15,941	9.4	15.8	37.8	3.7	11.5	19.4	46.5	398	162	48
Wasco	5,696	19,012	6,986	11.1	33.0	12.1	3.9	14.0	41.6	15.2	161	81	15
Wallowa	2,006	1,547	4,960	9.6	6.8	21.8	4.1	11.3	8.0	25.6	84	69	18
Baker	1,871	4,229	5,227	16.5	34.2	42.3	4.8	17.4	36.1	44.6	571	234	16
Klamath	1,598	3,063	3,494	21.8	33.9	35.9	6.6	26.3	40.8	43.2	403	223	23
Sherman	5,868	53,991	36,673	6.0	49.4	33.5	6.6	6.3	51.8	35.1	173	59	4
Gilliam	4,670	31,585	19,170	5.2	31.5	19.1	8.3	6.1	36.9	22.4	129	23	0
Morrow	10,651	64,485	48,934	11.4	61.7	46.8	9.6	12.0	64.6	49.0	213	43	4
Jefferson	494	6,089	1,375	1.5	17.3	4.3	16.3	2.4	27.3	6.8	344	13	0
California													
Madera	215	3,108	6,525	.8	10.8	22.5	3.6	.9	12.6	26.2	0	322	112
Sutter	24,075	13,512	13,869	67.9	33.2	33.3	3.7	 ^g	 ^g	 ^g	451	1,037	727
Kings	0	22,206	22,890	0	50.2	53.2	4.0	0	53.0	56.2	...	92	696
Fresno	7,875	7,966	6,802	24.4	22.5	19.5	5.3	27.2	25.1	21.8	403	544	120
Butte	4,181	13,073	16,352	16.1	47.8	56.7	5.9	20.0	59.5	70.5	72	575	499
San Joaquin	496	2,734	5,743	1.6	8.3	17.6	6.6	2.7	13.8	29.2	104	315	277
Glenn	875	6,211	7,872	5.7	37.7	47.8	6.7	7.0	46.1	58.4	431	355	173
Kern	1,918	5,986	5,066	6.3	16.4	14.3	6.8	10.3	27.0	23.5	143	323	275
San Luis Obispo.	9,086	7,533	12,657	11.6	8.4	13.9	10.5	 ^g	 ^g	 ^g	159	124	33
Tulare	1,523	4,297	7,655	2.9	7.6	13.7	13.7	4.9	12.9	23.4	13	9	21
Illinois													
Morgan	14,131	17,585	25,079	32.1	37.1	53.8	2.5	41.2	47.6	69.0	12	1	24
Menard	9,497	4,171	12,190	31.9	13.2	38.6	2.6	40.4	16.7	48.9	6	0	21
Sangamon	14,762	14,552	22,286	24.9	22.1	33.8	3.3	32.8	29.1	44.5	8	1	33
Mason	7,860	5,149	26,848	14.3	8.9	46.7	3.7	16.4	10.1	53.6	7	2	54
Greene	6,198	8,828	15,602	19.2	25.1	44.2	4.1	27.0	35.4	62.2	17	19	29
McDonough	7,714	6,264	14,235	30.7	22.1	50.2	4.3	46.5	33.5	76.0	11	12	176
Fulton	10,381	9,261	16,639	26.2	21.4	38.4	4.6	36.9	30.1	54.1	114	19	119
Pike	4,525	5,851	18,670	9.8	11.6	37.0	4.7	18.1	21.5	68.5	0	27	94
Madison	2,037	3,576	9,021	2.8	4.5	11.4	5.5	6.1	9.8	24.8	11	0	245
St. Clair	2,849	8,957	11,711	3.8	11.2	14.7	5.5	6.7	19.7	25.8	5	1	11
Jackson	154	3,433	8,164	.5	11.1	26.4	5.8	.7	15.9	37.7	63	13	0
Hancock	8,598	6,366	12,182	28.6	17.8	33.9	6.0	39.2	24.4	46.5	34	12	364
Monroe	1,765	4,681	8,182	3.7	9.4	16.4	6.0	6.6	16.8	29.3	0	3	2
Randolph	3,497	5,865	10,067	6.2	9.8	16.7	6.1	9.0	14.2	24.2	65	7	24
Adams	6,488	4,072	16,615	15.0	8.4	34.4	6.4	22.7	12.7	52.1	44	15	212
Wabash	540	1,607	4,137	3.0	8.5	22.0	6.6	4.0	11.3	29.3	98	81	0
Edgar	1,949	2,070	6,350	6.3	6.2	18.9	6.8	9.7	9.5	29.1	36	50	12
Clark	1,845	1,580	4,249	12.8	10.1	27.1	7.0	22.1	17.4	46.7	157	54	35
Lawrence	957	1,714	5,469	4.7	8.1	25.6	7.1	7.6	13.1	41.3	349	124	11
Vermilion	2,893	2,751	10,347	12.2	10.7	40.3	7.4	14.7	12.9	48.6	24	15	25

^a, ^c, ^d, ^e See correspondingly numbered notes to Table II.^f Preliminary (as of Dec. 1, 1941), incomplete, and subject to significant increase, especially in spring-wheat counties.^g Accurate estimate impossible.

ANALYTICAL INDEX

TEXT AND APPENDIX NOTES

- Acreage, wheat: AAA allotments, 231, 237, 248, 254, 258, 265; average size of insured, 258; percentage eligible for insurance, 231, 237, 268; percentage insured, 231, 255, 267, 281
- Actuarial calculations and data: BAE work on, 230, 231, 253, 279-80; basic, in 1938, 243-44; imperfections in, 244-45, 250, 251, 262, 272, 274; land records as base for, 242-43; problems, 247-50; revisions after 1939, 245-47, 251
- Adjustments: complaints concerning, 241; fairness of, 241; forms of, 240
- Administration, FCIC, 230, 252-55, 272, 274
- Agricultural Adjustment Act (1938), 232
- Agricultural Adjustment Administration (AAA): advances from, for insurance premiums, 236, 249 n.; data on acreage and yields, from 1933, 243; major work of, 230 n.; relation to FCIC and insurance program, 230, 253, 254, 260, 266, 268, 271, 272; *see also* County committees; Soil Conservation
- Agricultural Marketing Service (AMS), 230, 244, 245, 253
- Agricultural practices, consideration of special, in actuarial calculations, 238, 243, 247-48, 274
- Agricultural Protective Mutual Insurance Company, 276
- Agriculture, U.S. Department of, 229, 230, 232, 236, 252, 253-54, 271, 272
- Application for insurance: date, 249-50, 274; form, 234-35; *see also* Contract; Regulations
- Black, A. G., 232, 252
- Bureau of Agricultural Economics (BAE): actuarial research of, 230, 231, 253, 279-80; relation of, to FCIC, 253
- Canada, crop insurance in, 277-78
- Canning, J. B., 233 n.
- Certificate of indemnity, 241-42, 266
- "Check premium rate": county, 245, 246-47; for special practices, 248
- "Check yield": county, 245, 246; for special practices, 248
- Citrus fruit, as subject for crop insurance, 280
- Claims, *see* Loss claims
- Clendenin, J. C., 229, 239 n., 241 n.
- Commodity Credit Corporation, 241, 266
- Conclusions, 271-74
- Contract: changes in, 236, 237-38, 239; elements of, 232-42; multiple, 258; obligations imposed by, 229, 232-33; problem of extension of term of, 250, 274; separate, for various interests, 237; term of, 229; *see also* Application; Coverage; Premiums; Regulations
- Corn, as subject for crop insurance, 280
- Costs of production, wheat, 240
- Cotton to be insured in 1942, 229, 232 n., 253, 270 n., 279
- County committees: attitudes of, toward crop insurance, 236, 254-55, 259-60; duties of, 230, 238, 254, 268; yield and loss-cost appraisals of, 238, 244, 245
- Coverage: adequacy of, 239-40; complaints concerning, 238-39, 261; nature of, 229, 233-36, 238, 239; period of, 238-39; *see also* Contract
- Data: explanation of grouping of, by states, 280-81; revisions of, 230, 249, 281
- Davis, J. S., 231 n., 248 n., 274
- Disasters, 230, 238
- Draper, E. C., 232
- Droughts, 231, 238, 239, 250, 255
- Eligibility, *see* Growers
- Evans, R. M., 230 n., 252
- Ever-normal granary, 231, 267, 273-74
- Farm: change in size of insured, 255, 258; single, defined by FCIC, 237; single, as insurable unit, 237-38; as unit for establishing actuarial data, 242-43, 251
- Farming practices, *see* Agricultural practices
- Farms: number and percentage insured, 230-31, 255, 281; relation of operating expenses to size of insured, 268-69, 269-70; size of, as affecting participation, 258-59
- Federal Crop Insurance Act (1938), 229, 232, 239, 267; amendments of, 232 n., 270 n., 279
- Federal Crop Insurance Corporation (FCIC): accomplishments, 252; agencies affiliated with, 230, 253-54, 268, 272; authority, 229, 239; board of directors, 252, 272; county administration, 253, 254-55; creation, 229, 252; difficulties to be encountered in selling futures by, 233; divisional offices, 230; fairness of adjustments by, 241; finance, 229, 230, 267; organization and personnel, 230, 252-55, 272; problems, 231, 271-74; rights reserved, 238; storage of wheat premiums by, 265-67; underwriting experience, 250-52; underwriting losses, 230, 231, 267, 272, 273; *see also* Actuarial calculations; Contract; Coverage; Farm; Operating expenses; Premiums; Regulations
- Fertilizer, use of, 238, 248
- Fields: absence of check on, 243; schedule-rating of individual, 243, 274; *see also* Soil
- Food Research Institute, 232, 274
- Fraud, 238, 239
- Grades, wheat, difficulties of insuring and contractual provision concerning, 236
- Green, Roy M., 252
- Growers, wheat: attitude toward complete coverage, 239-40; attitude toward crop insurance, 231, 242, 259; attitude toward high premium rates, 257, 258; attitude toward insurance of quality, 235-36; demand of, for crop insurance, 231, 235-36; eligibility for crop insurance, 231, 237, 258; factors affecting tendency to insure, 258-59, 262; futures selling by, 233; percentage insured, 231, 255; reaction to contracts available, 239, 261; *see also* Interests; Operators
- Hail insurance, 262 n., 275
- Hartford Fire Insurance Company, 275-76
- Hedging by FCIC, 266
- History of crop insurance, 231-32, 275-79
- Hoffman, G. Wright, 275
- Home Insurance Company, 276
- Income, farm: effect of crop insurance on, 264, 265; protection to, 233
- Indemnities, *see* Loss payments
- Insurable unit, *see* Farm
- Insurance companies: attitude of, toward crop insurance, 233; experience of, with crop insurance, 275-77
- Interests, insurable, 229, 231 n., 237-38; transference, assignment, and garnishment of, 242
- Irrigation, 238, 248, 249
- Japan, crop insurance in, 277
- "Key farm system," 244, 254
- Kitchen, C. W., 252
- Land use, crop insurance and uneconomical, 265
- Landlords: insurable interests of, 229, 237; percentage insured, 259
- Loss claims: adjustment of, 240-42; effect of collection of, on renewals, 261; number paid, 230; regulations concerning, 238
- "Loss-cost": as basis for premium, 230, 242, 244-45, 246-47, 267; effect of yield trend on average, 248; *see also* Operating expenses
- Loss payments: calculation of, 229; nature of, 236-37; problem of handling, 266; ratio of, to premiums collected, 250; *see also* Loss claims; Settlements
- Losses, crop: adjustment of, 233-35; causes of, 250; covered, 238;

- in 1939, 244-45; successive, on 62 farms in each of 6 states (1930-38), 263-64
- Marketing quotas, 237, 258
- Need for crop insurance, 263-64
- Operating expenses: distribution of, 268; by districts, 268-70; possibility of loading premiums for, 270, 274; provision for, 230, 267, 268, 270, 271; relation of, to volume of insurance, 267-68, 269; state and local, 268; total, and classified, 267; *see also* Federal Crop Insurance Corporation; Storage
- Operators: consideration of practices of, in actuarial calculations, 243; insurable interests, 237; term of occupancy, 243 n.
- Owner-operators, percentage insured, 259
- Parity payments, 254, 264 n., 273
- Participation: compulsory *vs.* voluntary, 262-63, 271, 272; effect of differences in premium rates on, 242, 255, 257-58, 260-61, 270, 272; effect of good crops on, 255, 257, 261; effect of sales campaigns on, 254-55, 259-60; extent of, 255-63; factors influencing, 258-59; future prospects for, 262-63, 271; geographical distribution of, 255-57, 269; holdover, new, and repeat, 261-62; in low- and high-risk states and areas, 255, 262, 264, 269; reasons for and against, 260-61
- Penalties, 236, 238
- Premium notes, 234-36, 266, 273
- Premiums: adjusted rates (1941), 246; calculation of, 229-30, 235; collected, in terms of wheat, 255, 268, 281; date and method of collection, 236-37, 249, 266, 272; effect of rates for, on participation, 242, 257-58, 260-61, 270, 272; farm as unit for determining, 242-43; minimum rates for, 247; normal "loss level" basis for, 242; number collected, 230; possibility of adding expense load to, 270, 273; ratio of, collected to loss payments, 250; relation of, to operating expenses, 267, 269-70; storage of, by FCIC, 265-67; *see also* Actuarial calculations; "Check premium rate"
- President's Committee: appointment of, 231-32; report of, 231 n., 232 n., 237 n., 264, 265 n., 270 n.
- Prices, wheat: average farm, 267; difficulties of insuring against fluctuations in, 233
- Producers, wheat, *see* Growers
- Production, insured wheat, 255, 281
- Production Credit Associations, attitude of, toward crop insurance, 260
- Quality, non-insurance of wheat, 229, 233, 235-36
- Realty Revenue Guaranty Company, 275
- Regulations, 237-38, 240-41, 272; violations, 255; *see also* Application; Contract; Coverage; Premiums
- Reserves, wheat-insurance, 231, 266-67; *see also* Ever-normal granary; Storage
- Rice, as subject for crop insurance, 280
- Risks covered, *see* Coverage
- Rogers, C. L., 232 n., 233 n., 243 n., 275 n.
- Roosevelt, President, 231, 270 n.; *see also* President's Committee
- Rotation of crops, 238, 248, 265
- Rowe, W. H., 231, 240 n., 253 n.
- Rust, 248, 250
- Sale of crop insurance: improvement of, 274; methods of, 259-60, 268; possibilities for, 262; resistance to, 260-61; responsibility for, 230, 254-55; *see also* Participation
- Schedule-rating of operations, 243, 274
- Seed, regulations regarding, 229, 238
- Selectivity, adverse, 251, 274
- Settlements, 241-42; *see also* Loss payments
- Smith, Leroy K., 232 n., 240 n., 252
- Soil, regulations regarding, 229, 238
- Soil conservation: payments, 254, 264 n.; program, 231 n., 236, 237
- Sowers Plan Crop Insurance Mutual Insurance Company, 276
- Special practices, *see* Agricultural practices
- Stauber, B. R., 252
- Storage, wheat: charges to holders, 241-42; congestion of, 236; costs of, to FCIC, 236, 266, 267, 268, 273; of insurance premiums by FCIC, 265-66
- Subsidy, problem and permanence of, 270-71
- Surveys: by author, 232, 239, 258; by or for FCIC, 252 n.
- Tapp, Jesse W., 252
- Taylor, W. C., 232
- Tenancy, term of, 243 n.
- Tenants, percentage insured, 259
- Threshing, 229, 238-39
- Tobacco, as subject for crop insurance, 280
- Tolley, H. R., 232
- USSR, crop insurance in, 277
- Valgren, V. N., 231, 275 n., 279
- Wallace, Fred S., 252
- Wallace, Henry A., 232, 237 n., 270 n.
- Weather conditions, 238-39, 250
- White, F. P., 252
- Wilson, M. L., 252
- Winterkilling, 240, 261
- Yields per acre, wheat: AAA records on, 243; estimated, by AMS, 253; normal, as basis for actuarial calculations, 242-44; "normal," per seeded acre, 258; problem of unit for insured, 242-43; ratio of, for 1939, 1940, and 1941 to 1926-40 average, 250; trends in, 248; *see also* "Check yield"

TABLES AND CHARTS

- Acreage, insured wheat: gross, total and by states (1939-42), 282; net, and as percentage of acreage allotment and complying acreage in 120 selected counties (1939-41), 286-88; net, total and by states (1939-41), 283; as percentage of acreage allotment and complying acreage, total and by states (1939-41), 283; as percentage of seeded acreage, total and by states (1939-41), 256, 283
- Administrative expenses (1938-41), FCIC, 285
- Contracts, percentage of, becoming claims, total and by states (1939-40), 284
- Farms, number insured, total and by states (1939-42), 282
- Indemnities, *see* Losses paid
- Losses paid: percentages of, to premiums collected in 120 selected counties (1939-41), 286-88; percentages of, to premiums collected, total and by states (1939-41), 251, 284; total, and by states (1939-41), 284
- Participation, indications of extent of insurance, related to premium rates and insurance participation in 118 selected counties (1940, 1941), 257
- Premium rates: average, as percentage of average check yields, by states (1942), 256, 285; average, by states (1942), 285; average, in 20 Kansas counties (1939-42), 286; 1941, as percentage of normal yields in 120 counties (1939-41), 286-88; relation between, and insurance participation, in 118 selected counties (1940, 1941), 257; *see also* Losses paid
- Premiums collected, total and by states (1939-41), 284
- Production, insured wheat, total and by states (1939-42), 282
- Storage costs, for wheat held by FCIC, 285
- Yields per seeded acre, wheat: average, by states (1928-40), 285; FCIC average check, by states (1942), 256, 285; FCIC county check yield, in 20 Kansas counties (1939-42), 286; frequency distribution of, annually 1930-38, on 62 farms in each of 6 counties, 264; in 20 Kansas counties, 1926-38 average and 1938-40, 286

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