VIRGINIA POLYTECHNIC INSTITUTE
DEPARTMENT OF VOCATIONAL EDUCATION
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# SURVEYING AND ANALYZING THE FARM BUSINESS

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# SURVEYING AND ANALYZING THE FARM BUSINESS

## Foreword

This publication is designed to help teachers of vocational agriculture to teach the fundamental principles of surveying, analyzing, and setting up a readjustment program for the farm business of the home farm. It is equally applicable for use in connection with an evening class group, as a general community farm survey, or by individual high school students in their supervised farming programs.

For the first time in the history of Vocational Education in Agriculture in Virginia, the 1939 Record Book contains a standard but simplified farm survey blank. This is the form which is used throughout this publication except for a few slight modifications. The procedures recommended herein and the tabulated data given as well as the forms used are those recommended or provided by the Agricultural Economics Department of the Virginia Polytechnic Institute.

Heretofore we have done one thing in the Record Book with all day students, and tried to do something else with adults. The result is no progress in teaching farmers to analyze their businesses and little progress in getting them to keep records. In training farm boys we now have an excellent opportunity to follow the same practices that are recommended for adults. In so doing we should make the teaching in this phase of our work so vital and practical that the results will be evidenced in tangible improvements extending over a period of years.

Edmund C. Magill

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# SURVEYING THE HOME FARM

In order to answerrthe question: "How shall I teach surveying the home farm?", the following material has been carefully prepared. Starting with the survey of an actual farm, the method of securing and organizing the data is illustrated and explained. The name of the farmer is fictitious but the information given is from an actual survey taken in 1938, with the exception that a few items are added and certain minor ones changed in order to make the illustration more complete. The reader will readily recognize the application of this material in the use of pages 2, 3, and 4 of the 1939 Record Book. Incidentally, please note the typographical error on page 4. The dollar sign ($) opposite crop index is obviously wrong.

It was originally intended to include this material in a forthcoming revision of Department Mimeograph No. 22, Supervised Farm Practice Planning, but the demand is so urgent and the amount of material so extensive that it was considered desirable to issue it as a separate publication. A lesson plan which will be included in Mimeograph 22 may be used in connection with the material presented here. What to teach seems more essential at this time than how to teach it. The resourceful teacher should find no difficulty in preparing plans for the use of the contents of this mimeograph.

For convenience the teacher may wish to organize his work under several units such as "Surveying the Farm", "Analyzing the Farm Business", and "Setting up a Program for the Improvement of the Farm Business". In certain cases it may be desirable not to attempt to teach any of the units to first year boys. There are cases, however, in which this has been done with excellent results. Merely taking the farm survey has little merit in itself. It must be followed by the analysis and recommendations for improving the business. This takes time. Unless sufficient time is available to complete the entire job, it would be well to wait until the winter months or to divide it into the three units indicated, teaching the first one in the fall and completing the other two as soon as time permits.

Under average conditions the teacher will do well if he has his boys master the contents of this publication in four years. It is not intended that each class be taught everything in it every year. Some of the more advanced problems may be left for the junior and senior years. The ultimate goal is to have every member in organized groups to think intelligently in terms of farm business principles and efficiency factors and to act accordingly. You will be using this bulletin, or one similar to it, for a long time. Study it carefully and keep it where it is readily available.

I

# SPECIMEN FARM BUSINESS SURVEY

(For use in all-day, part-time and evening classes)

Year beginning Jan. 1, 1938, ending Dec. 31, 1938.

Name Thomas Graham  Father's Name J.A. Graham  Owner ____

Address Danton, Va.  Acres: Owned 355  Rented ____  Share cropped ____

Woods: Pastured 10  Not Pastured 25  Other permanent pasture 205

Acres cropped 110  Other land 5  Total acres operated 355

## II FARM CAPITAL

| | Beg. Val. | End. Val. |
|---|---|---|
| Land | $10,290 | $10,290 |
| Buildings | 9,413 | 9,410 |
| Equipment | 2,157 | 2,309 |
| Supplies & feed | 1,344 | 1,709 |
| Livestock | 3,822 | 4,114 |
| Totals | $27,526 | $27,832 |

Average capital $27,679

## III LIVESTOCK PRODUCTS SOLD

| | | | |
|---|---|---|---|
| Milk | 203,397 | lbs. | $ 3378 |
| Cream | ____ | lbs.b.f. | ____ |
| Butter | 294 | lbs. | 81 |
| Eggs | 478 | doz. | 108 |
| Wool | 356 | lb. | 92 |
| Meat | 216 | lb. | 65 |
| Breeding fees collected | | | 21 |
| Total | | | $ 3745 |

## IV CROP RECORD

| Crop | Acres | Yield per A. | Total Yield | Sales Amt. | Sales Value | P.M. & W.I. |
|---|---|---|---|---|---|---|
| Corn, bu. shelled | 15 | 60 | 900 | ____ | $ | 75 |
| Fodder, Tons | (15) | 1.1 | 17 | ____ | ____ | ____ |
| Corn, Silage, Tons | 10 | 12 | 120 | ____ | ____ | 40 |
| Wheat, grain, bu. | 28 | 16 | 434 | ____ | 26(toll) | 56 |
| Straw, Tons | (28) | 0.6 | 16 | ____ | ____ | ____ |
| Soybean hay, Tons | 5 | 2.4 | 12 | ____ | ____ | 10 |
| Oat hay, Tons | 4 | 2 | 8 | ____ | ____ | 3 |
| Clover hay, Tons | 11 | 2 | 22 | ____ | ____ | 9 |
| Alfalfa hay, Tons | 22 | 2.5 | 55 | ____ | ____ | 18 |
| Sweet clover hay, Tons | 10 | 1.5 | 15 | ____ | ____ | 8 |
| Tomatoes, bu. | 5 | 107 | 514 | 514 | 257 | 60 |
| Totals | 110 | xxx | xxx | x | $283 | 272 |

(143 tons of manure were spread on 44 acres of cropland)

## V LIVESTOCK

| Kind | Beginning Inventory No. | Beginning Inventory Value | Purchases No. | Purchases Value | Ending Inventory No. | Ending Inventory Value | Sales No. | Sales Value | A.U. | P.M. & W.U. | Div. of Ki... |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dairy cows | 29 | $1682 | ____ | ____ | 30 | $1800 | 4 | $226 | 29.5 | 531 | 1 |
| Heifers over 1 yr. | 4 | 250 | ____ | ____ | 4 | 280 | ____ | ____ | 3 | 12 | ____ |
| Heifers under 1 yr. | 6 | 130 | ____ | ____ | 3 | 90 | ____ | ____ | 2.2 | 9 | ____ |
| Calves (29) | 0 | ____ | ____ | ____ | 0 | ____ | 26 | 168 | ____ | ____ | ____ |
| Bull | 2 | 115 | 1 | 45 | 1 | 125 | 2 | 86 | 1.5 | 5 | ____ |
| Beef cattle | 1 | 25 | ____ | ____ | 1 | 40 | ____ | ____ | 1 | 2 | ____ |
| Work horses | 6 | 340 | 2 | 400 | 4 | 400 | 2 | 300 | 5 | xxx | 3 |
| Other horses | ____ | ____ | ____ | ____ | ____ | ____ | ____ | ____ | ____ | ____ | ____ |
| Colts (0) | 2 | 150 | ____ | ____ | 2 | 300 | ____ | ____ | 1 | 4 | ____ |
| Brood sows | 3 | 60 | 1 | 18 | 4 | 80 | ____ | ____ | 0.7 | 11 | ____ |
| Other hogs | 6 | 165 | ____ | ____ | 7 | 165 | 3 | 66 | 0.6 | 3 | 3 |
| Pigs weaned (22) (24) | 23 | 69 | 12 | 34 | 22 | 66 | 50 | 250 | 2.2 | 11 | ____ |
| Ewes | 88 | 616 | ____ | ____ | 79 | 553 | 4 | 21 | 11.6 | 42 | 5 |
| Bucks | 4 | 40 | 2 | 80 | 3 | 100 | 2 | 22 | 0.5 | 2 | 1 |
| Lambs (110) | 0 | ____ | ____ | ____ | 5 | 30 | 93 | 743 | 0.3 | 1 | 12 |
| Hens (30) | 30 | 30 | ____ | ____ | 65 | 65 | 35 | 28 | 0.5 | 16 | 5 |
| Baby Chicks (154) | 0 | ____ | 0 | ____ | ____ | ____ | 50 | 46 | ____ | ____ | 29 |
| Total | X | $3822 | X | $577 | X | $4114 | X | $1956 | 59.6 | 647 | X |

| | |
|---|---|
| Month help (14 mo.) | $280 |
| | |
| Board, mo. help (8 mo.) | 100 |
| Day help (114 days) | 114 |
| Board day help (___ days) | |
| Unpaid labor (8 mo. Man eq.) | 140 |
| Board, unpaid labor (8 mo.) | 120 |
| | |
| New buildings (_____) | |
| Building repairs | 57 |
| Sawing | |
| Insurance, fire | 35 |
| other farm | |
| Commissions, storage | |
| Freight, etc. | |
| New machinery | 505 |
| Auto expense, farm share | 6 |
| Truck expense, farm share | 166 |
| Tractor expense | 49 |
| Machinery repairs | |
| Silo filling | |
| Baling | |
| Threshing (toll) | 26 |
| Coal, oil, gasoline, kerosene | |
| Twine | 8 |
| Milk hauling | |
| Breeding fees | |
| Veterinary | 20 |
| Stock pasturage | |
| Fences, new and repairs | 30 |

| | |
|---|---|
| Feed Purchased: | |
| Cattle | $ 155 |
| Horses | |
| Poultry | 54 |
| Hog | 15 |
| Sheep | 16 |
| Salt | |
| Grinding | |
| Fertilizer | 151 |
| Lime | 152 |
| Seeds and plants | 179 |
| Horse shoeing | |
| Spray or dust materials | |
| Taxes (Farm only) | 99 |
| Stamps, stationery, etc. | |
| Farm share telephone | 2 |
| Electricity, farm share | 3 |
| Barrels, baskets, etc. | |
| Egg cases | |
| Bee supplies | |
| Sheep shearing | 8 |
| Advertising | |
| Cash rent, incl. pasture | 250 |
| Other farm expenses | |
| | |
| | |
| | |
| | |
| | |
| Total current expenses | $2750 |

## VII FARM PRODUCTS FURNISHED THE FAMILY

| | | |
|---|---|---|
| Milk | 105 gal. | $ 15 |
| Butter | 78 lb. | 20 |
| Eggs | 78 doz. | 16 |
| Poultry | 69 lb. | 14 |
| Pork | 1250 lb. | 125 |
| | | |
| Wheat for flour | 30 bu. | 23 |
| Corn for meal | 8 bu. | 6 |
| | | |
| Potatoes | bu. | |
| Apples | 8 bu. | 7 |
| Garden | 0.5 A. | 42 |
| Firewood | 6 crds. | 15 |
| Use of dwelling | | |
| | Total | $283 |

## VIII MISCELLANEOUS RECEIPTS

| P.M.W.U. | | |
|---|---|---|
| 138 | Man labor 138 da. | $415 |
| 7 | Man & Machine 7 da. | 70 |
| 0 | A.A.A. Payments | 185 |
| 1 | Stock pastured(1 calf | 10 |
| 0 | Machinery sold | 135 |
| 146 | Total | $815 |

## IX SUMMARY

| | |
|---|---|
| Receipts: | |
| Crops | $ 233 |
| Livestock products | 3745 |
| Livestock increase | 1671 |
| Supplies & feed increase | |
| Misc. receipts | 815 |
| Real estate & equip. incr. | 141 |
| Total Receipts | $ 6639 |
| Expenses: | |
| Current | $ 2750 |
| Livestock decrease | |
| Supplies & feed decrease | 135 |
| Real estate & equip. dcr. | |
| Total Expenses | $ 2835 |
| Farm income | $ 3718 |
| Interest, 5% of av. cap. | 1384 |
| Labor income | 2334 |
| Value farm privileges | 285 |
| Labor earnings | 2617 |
| Value operator's time, 12 mo. | 1000 |
| Return on capital | 2778 |
| Percent return on capital | 10% |

X

# ANALYSIS OF THE FARMING BUSINESS

In farm management practice the success of a farm business is measured in terms of efficiency factors. Some of the most important items are included in the following list, under six of the most important efficiency factors. Standard texts in Farm Management may be used to provide explanations of terms and procedures to follow in making computations.

A. Labor Income _____ $2394 _____

B. Size

1. Productive man work units (P.M.W.U.) _____ 1072 _____
2. Acres of crops _____ 110 _____
3. Acres of pasture _____ 205 _____
4. Animal Units (A.U.) _____ 59.6 _____
5. Man equivalent _____ 3.2 _____
6. Capital _____ $27,679 _____

C. Balance

1. Pasture acres per animal unit pastured 3.8
2. Acres crops per A.U. _____ 1.8
3. Manure per A. of crops manured 3.3
4. Purchased fert. per A. crops $1.46
5. Percent receipts from crops 4
6. Percent receipts misc. _____ 12
7. Percent receipts from livestock 81

D. PRODUCTION

1. Crop index (U.S.) 134
2. Bu. corn per A. 69
   (Bu. wheat per A. 16)
3. Lbs. milk per cow 7209
4. Eggs per hen 142
5. Pigs per sow 13

E. Capital Efficiency

1. Yrs. req. for receipts to equal capital 4
2. Val. Mach. per crop A. $20
3. % capital in bldgs. 34

F. Labor Efficiency

1. P.M.W.U. per man 335
2. Crops per man 34
3. A.U. per man 17

## Suggestions for Improving the Farm Business

_____

_____

_____

_____

_____

SUGGESTIONS FOR IMPROVING THE FARM BUSINESS *

| Strong Points | Weak Points | Suggestions for Improvement |
|---|---|---|
| Labor Income- High | | |
| Size- Large family sized farm | | |
| Balance- Fertility Maintenance-Good | Balance- Diversity, especially in livestock enterprises, may be too great. | Diversity- Keep cost account records on the three major livestock enterprises. After these have been kept for at least one year determine whether any are not paying. Modify or eliminate the one or ones that are not paying. |
| | Pasture not used so efficiently as possible. | Pasture- Improve to carry at least one animal unit to every three acres. Suggestions for accomplishing this- (1) Have soil tested for pH and potash contents. (2) If tests show deficiencies top dress in spring with 300 lb. 0-14-6 per A. each year until a good sod is established and apply 1 ton ground limestone per acre every fourth year. (3) If there is no potash deficiency use 300 lb. of 20% superphosphate in place of the 0-14-6. |
| Production- Crop index-High Corn yield-Very high Eggs per hen-High Pounds milk per cow- Fair | Production- Tomato yield about 40 bu. per A. below U.S. average for cannery tomatoes. | Production- Pounds milk per cow- Keep daily records of milk production for each cow. Replace the lower producers. Tomato yield- Use good seed or plants from a reliable firm. Be sure variety is adapted to the section. Grow tomatoes in fields where no potatoes, peppers, or egg plants have been grown recently. |

| Strong Points | Weak Points | Suggestions for Improvement |
|---|---|---|
| | | Include clover or some other soil building crop in the tomato rotation. Apply plenty of well rotted manure to soil and use about 400 lbs. of 4-8-4 per acre. Keep the land free of weeds, especially ground cherries and horse nettle. Spray and in other ways keep crop free of pests and diseases. |
| Capital Efficiency- Years for receipts to equal capital- Fair | Capital Efficiency- Value machinery per crop acre- High | Capital Efficiency- Value of Machinery per crop acre----Before purchasing any new machinery be sure it is absolutely necessary. |

*In the record book only the material in the third column above is called for. Including the other two may not be necessary. Note that this is an unusually good farm; hence the suggestions are not so numerous.

# TAKING A FARM BUSINESS RECORD

## General Directions

1. Use pencil (not pen). Take a good eraser with you.

2. Write and make numbers so there will be no question as to what is meant. Legibility is all important. General neatness is also important.

3. Record all values in whole dollars, not in dollars and cents. Do not place zeros after the dollars to indicate no cents. When this is done, figures are often misread - $1 being misread as $100 because people forget the decimal point.

4. Take the record at a time that will not interfere with the farm work, and when the farmer is neither sleepy nor worried. A rainy day shortly after the close of the business year is a good time.

5. Tell the farmer who you are and what you want.

6. Let him know it is confidential information, not for taxation assessment purposes, nor for publication.

7. Do not have anyone else present, especially the neighbors.

8. If the business is a partnership, take the record from one partner, the one acting as manager, if possible.

9. Be sure the farmer is in a comfortable place.

10. Don't let the farmer look on the blank while you are taking the record.

11. Ask questions in such a way that he will understand what you want, but do not suggest answers.

12. Don't ask him for information for which he has no basis of estimation.

13. Your questions and manner determine more than the farmer's reply the accuracy of the information.

14. Don't tell him what the neighbors said about his business, or their business.

## Specific Explanations as to Securing Data Called for on Pages Two and Three of the Record Book

For convenience of reference the sections of pages two and three of the record book, as reproduced in this mimeograph, have been numbered with Roman numerals. The example form, which has been filled in with figures from an actual farm in Virginia, has been used to illustrate as many points as possible. Other illustrative examples are fictitious.

### I HEADING

In the heading fill in all blanks that apply to the farm being surveyed.

### II FARM CAPITAL

Land- The beginning value of land should be the same as the end value except as follows:

1. If more land has been bought during the year, end value will be greater.
2. If permanent improvements such as terracing and drainage have been made during the year, end value will be greater. Applications of manure, fertilizer, and lime are considered as maintenance rather than permanent improvement. Do not increase the end value of real estate because of them.
3. If some of the land has been sold during the year, beginning value will be greater than end value.
4. If timber has been sold during the year, beginning value will be greater.

In each case the difference should be equal to the amount involved in the purchase or sale, and a corresponding amount should be entered in the Expenses (Section VI) in cases of purchases, or in Miscellaneous Receipts (Section VIII) in cases of sales.

Examples:

| | Capital (Section II) | | Corresponding Entry |
|---|---|---|---|
| | Beg. Val. | End Val. | |
| Farm No. 1 | Land $10,290 | $10,290 | |
| Farm No. 2 | Land $ 6,000 | $ 6,500 | Expenses (Section VI) Land bought-- $500 |
| Farm No. 3 | Land $10,000 | $12,000 | Expenses (Section VI) Terracing and Drain--$2000 |
| Farm No. 4 | Land $ 8,500 | $ 8,000 | Miscellaneous Receipts (Section VIII) Land sold--$500 |
| Farm No. 5 | Land $10,000 | $ 8,000 | Miscellaneous Receipts (Section VIII) Timber sold--$2000 |

A good way to arrive at a fair value for the land is to ask the farmer, "If you had no land and wanted some for farming purposes, how much would you be willing to pay for land (buildings not included) just like yours?"

Do not use assessed valuation.

Buildings- Take end value first, then compute beginning value by this formula:

Beg. Val.= (End value + average annual depreciation) minus actual repairs or additions made during the year.

| Example: | End Val. Bldgs. | $9410 | | $9470 | |
|---|---|---|---|---|---|
| | (Add)Av. An. Deprec. | 60 | (Subtract) | 57 | Repairs |
| | | $9470 | | $9413 | Beg. Val. |

Equipment- Include value of all farm machinery, equipment, tractor, and the farm share of value of auto and truck. Purchases, sales, and depreciation have to be considered in the calculations.

Example:

| | Beg. Val. | End Val. |
|---|---|---|
| Machinery and Equipment (New machinery bought during year) | $990 | $1254 |
| Auto. Total Value $350 Beg., $800 End (New one bought). Used 10% of time for farm business | 35 | 80 |
| Truck. Total v lues $590 and $500. Used 75% of time for farm business | 442 | 375 |
| Tractor | 690 | 600 |
| Totals | $2157 | $2309 |

Supplies and Feed- Beginning value equals the total value of all feed, seed, supplies and growing grain on hand at the beginning of the year. End value equals the total value of all these items on hand at end of year.

| Example: | Beg. Val. | End Val. |
|---|---|---|
| Supplies and Feed | $1844 | $1709 |

Livestock - Leave this blank until after you have completed Section V. Then copy the totals from Val. Beg. Inventory and Val. Ending Inventory of Section V.

| Example: | Beg. Val. | End Val. |
|---|---|---|
| Livestock | $3822 | $4114 |

Find the totals of both Beg. Val. and total End Val. columns.

Average Capital- Add total Beg. Val. and total End Val. Divide this sum by two. (This should be only one number. The record book has a mis-print at this place, in that it calls for two numbers for average capital.)

| Example: | Beg. Val. | End Val. | |
|---|---|---|---|
| Totals | $27,526 | $27,832 | $27,526 |
| | | | (Add) 27,832 |
| | | | 2)$55,358 |
| Average Capital | $27,679 | | $27,679 Av.Cap |

III LIVESTOCK PRODUCTS SOID

Enter all livestock products sold. If others not listed on the blank have been sold write the items on the blank lines. Add the value column.

| Example: | | | |
|---|---|---|---|
| | Milk | 203,397 lb. | $3378 |
| | Cream | --- | --- |
| | Butter | 294 lb. | 81 |
| | Eggs | 478 doz. | 108 |
| | Wool | 356 lb. | 92 |
| | Meat | 216 lb. | 65 |
| | Breeding fees | Collected | 21 |
| | Total | | $3745 |

IV CROP RECORD

Enter the names of all the crops produced and the unit in which each is measured in the column headed "Crop". Record the number of acres of each crop. If two crops have been produced on the same acreage draw a circle around the acres for the second crop.

"Yield" refers to yield per acre, and "Production" refers to total yield. Fill in for each crop.

Record all sales. If you have paid threshing, baling, or feed grinding bills in the form of toll, record the value of the part of the crop given as toll in the "Sales, Value" column.

Add "Acres" and "Sales, Value" columns.

Example:

| Crop | Acres | Yield | Production | Sales Amt. | Sales Val. |
|---|---|---|---|---|---|
| Corn, Bu. Sh. | 15 | 60 | 900 | | --- |
| Fodder | (15) | 1.1 | 17 | | --- |
| Wheat, Grain, Bu. | 28 | 16 | 434 | | $26 (toll) |
| Straw | (28) | 0.6 | 16 | | --- |
| Tomatoes, Bu. | 5 | 107 | 514 | 514 , | 257 |
| | 48 | | | | $ 283 |

P.M.W.U. Productive man work units.

A productive man work unit is one 10-hour day of productive work. This is a measure of the size of the farm business. It represents the amoun of productive work which is available to be done on a farm.

Multiply the acres of each crop by the corresponding unit from the list given below and add the column.

Productive Man Work Units on Crops

| P.M.W.U. | Crops |
|---|---|
| 5 | Corn for grain husked from shock |
| 4 | Corn for silage |
| 4 | Corn fodder (whole plant) |
| 8 | Irish potatoes |
| 13 | Sweet potatoes |
| 33 | Fire-cured tobacco |
| 45 | Flue-cured tobacco |
| 7 | Peanuts |
| 13 | Cotton |
| 15 | Sorghum for molasses |
| 18 | Green peas for market |
| 15 | Snap beans, lima beans, cucumbers, watermelons, cantaloupes, and salad crops |
| 8 | Sweet corn |
| 12 | Tomatoes, cabbage and peppers |
| 10 | Turnips, beets, and rutabagas |
| 25 | Strawberries |
| 3 | Cowpeas or soybeans for grain |
| 2 | Small grains threshed, wheat, oats, barley, etc. |
| 2 | Cowpeas or soybeans for hay |
| 0.8 | Hay per cutting, alfalfa, clover, timothy, or mixtures of these |
| 15 | Apples bearing when cared for in a commercial way |
| 3 | Apples bearing when little or no care is given |
| 15 | Other bearing fruit |
| 2 | Fruit not of bearing age |
| 20 | Berries other than strawberries |
| 0.5 | Pasture crops, Lespedeza, clover |

| Example: | Acres | | Standard Man Units per A. | | P.M.W.U. |
|---|---|---|---|---|---|
| Corn, bu. sh | 15 | x | 5 | = | 75 |
| Wheat, grain, bu. | 28 | x | 2 | = | 56 |
| Tomatoes | 5 | x | 12 | = | 60 |
| | | Total | | | 191 |

## V LIVESTOCK

(1) Record in the Beginning Inventory column the number and value of each kind of livestock on hand at the beginning of the year.

Example: 29 dairy cows and 6 heifers on the farm January 1

| | Beginning Inventory | |
|---|---|---|
| | No. | Val. |
| Dairy Cows | 29 | $1682 |
| Heifers | 6 | 350 |

(2) In the parentheses after each kind of young stock record the number of baby animals born on the place during the year. Be sure that these are not included in the beginning inventory, as they could not be on the farm January 1 and be born March 1 of the same year.

Example: 29 calves born during 1938

| | Beginning Inventory | |
|---|---|---|
| | No. | Val. |
| Calves (29) | 0 | 0 |

(3) If any livestock were bought during the year, record number and value of each kind in the Purchases column.

Example: 1 bull purchased during 1938

| | Purchases | |
|---|---|---|
| | No. | Val. |
| Bull | 1 | $45 |

(4) Record in the Ending Inventory Column the number and value of each kind of livestock on hand at the end of the year.

Example: 30 dairy cows and 6 heifers on hand December 31.

| | Ending Inventory | |
|---|---|---|
| | No. | Val. |
| Dairy cows | 30 | $1800 |
| Heifers | 6 | 300 |

(5) Record in the Sales column the number and value of each kind of livestock sold during the year.

Example: 4 dairy cows were sold during 1938.

| | Sales | |
|---|---|---|
| | No. | Val. |
| Dairy cattle | 4 | $226 |

(6) As a reference for checking, record in the margin the number of each kind of livestock that died or were slaughtered during the year. To determine if you have included all the livestock on the place during the year use this method:

To check the number of all kinds of cattle

| Add: | | Add: | |
|---|---|---|---|
| | Number Beg. Inv. Cattle | | Number End. Inv. Cattle |
| | Number Born | | Number Sold |
| | Number Purchased | | Number died or killed |
| | Total | = | Total |

| Example: | Beg. Inv. No. | Purchases No. | End Inv. No: | Sales No: | Died or killed No. |
|---|---|---|---|---|---|
| Dairy Cows | 29 | 0 | 30 | 4 | 1 |
| Heifers over 1 yr. | 6 | 0 | 6 | 0 | 0 |
| Heifers under 1 yr. | 6 | 0 | 3 | 0 | 0 |
| Calves (29) | 0 | 0 | 0 | 26 | 0 |
| Bull | 2 | 1 | 1 | 2 | 0 |
| Beef Cattle | 1 | 0 | 1 | 0 | 0 |

Totals 29 + 44 + 1 = 74 = 41 + 32 + 1 = 74

If these totals do not check, you have omitted some of the cattle from some part of the record, or you have some of them in two places.

Use the same general formula for the other sections. Check all work stock as one section, all hogs as one section, all sheep as one section, and all poultry as one section.

Add all the "Values" columns.

Check Beginning Inventory Value with Beg. Val. Livestock in Section II. Then do the same thing with Ending Inventory.

A.U. = Animal Units

An animal unit is the approximate equivalent of one mature cow, or horse from the standpoint of feed required and manure produced.

For each kind of livestock add the number in the beginning inventory and the number in the ending inventory. Divide the result by two. Multiply this result by the corresponding unit from the list which follows. Carry your result to one decimal place. Find the total of the A.U. column.

## Standard Animal Units

1.0 Cows
0.5 Heifers
0.5 Calves
1.0 Bulls, steers, oxen
0.5 Cattle fattened or only wintered
1.0 Horses, mules, stallions
0.5 Colts
0.14 Ewes and bucks
0.05 Sheep fattened or only wintered
0.2 Brood sows and boars
0.1 Hogs raised
1.0 Mature poultry, per 100
3.0 Pullets raised per 1000
2.0 Broilers sold per 1000

| Example: | Beg. Inv. No. | | End Inv. No. | | | Standard Animal Units | | A.U. |
|---|---|---|---|---|---|---|---|---|
| Cows | 29 | + | 30 = | 59 ÷ 2 = | 29.5 x | 1.0 | = | 29.5 |
| Heifers | 6 | + | 3 = | 9 ÷ 2 = | 4.5 x | 0.5 | = | 2.2 |
| Brood Sows | 3 | + | 4 = | 7 ÷ 2 = | 3.5 x | 0.2 | = | 0.7 |
| Total | | | | | | | | 32.4 |

P.M.W.U.= Productive Man Work Units

Productive man work units for livestock represent the number of 10-hour days required to care for one head of each class of livestock. Work stock are not considered as productive livestock, therefore, no. P.M.W.U. are calculated for work horses or mules.

For each kind of productive livestock, add the number in the beginning and the number in the ending inventory. Divide the result by two. Multiply this result by the corresponding unit from the list which follows. Carry your result in whole numbers. Find the total of the column.

Productive Man Work Units on Livestock

Man Units

| | |
|---|---|
| 18 | Cows, ordinary dairy (majority grades) |
| 20 | Cows, purebred dairy (majority purebred) |
| 16 | To be added per cow when milk is retailed |
| 15 | To be added per cow when certified milk is produced |
| 2 | Heifers, calves, bulls, steers and colts |
| 2 | Steers or other cattle fattened or only wintered |
| 2 | Stallion if not worked |
| 0.5 | Breeding ewes and bucks (covers work on lambs) |
| 0.2 | Other sheep or lambs fattened or only wintered |
| 3 | Brood sows (covers work on pigs till weaned) |
| 0.5 | Boars |
| 0.5 | Other hogs raised during the year |
| 33 | Hens and other mature poultry, per 100 birds |
| 5.0 | Pullets raised, per 100 birds (Includes work on cockerels sold as broilers) |
| 0.5 | Bees, per hive |

| Example: | Beg. Inv. No. | | End Inv. No. | | Standard Unit | | P.M.W.U. |
|---|---|---|---|---|---|---|---|
| Cows | 29 | + | 30 = 59 ÷ 2 = 29.5 | x | 18 | = | 531 |
| Heifers | 6 | + | 6 = 12 ÷ 2 = 6.0 | x | 2 | = | 12 |
| Hens | 30 | + | 65 = 95 ÷ 2 = 47.5 | x | 0.33 | = | 16 |
| | Total | | | | | | 559 |

VI FARM BUSINESS EXPENSES

In this section record expenses that were incurred for farm business purposes. Do not include personal or household expenses. If there are expense items on your farm for which no line is provided write the item on one of the blank lines. Use whole dollars only. Don't record items less than 50 cents. Count items of 50 or more cents as one dollar.

Labor Expenses:

Include month help, day help, contract labor, cropper labor, and unpaid family labor. Caution: Do Not include value of operator's time.

Express all labor in terms of adult man equivalent.

Unpaid labor refers to farm work done by the operator's wife and children who are not receiving cash wages. To get this in terms of man equivalent, ask the operator, "How many men would you have to employ, and for how many months would you have to employ them to do the farm work now being done by your wife and children who do not receive cash wages?"

If the answer is, "Two men for four months each," the months of unpaid labor is 8.

Then ask, "How much would you have to pay these two men?"

If the answer is, "$140 and board," record $140 as the value of unpaid labor.

Then ask, "How much would the board for these two men be worth?"

If the answer is, "$120," record this as Board unpaid labor.

New Buildings and Building Repairs: Record your cash expenses for material and labor on new buildings or building repairs. Do not include farm labor or farm material used for these purposes.

Auto and Truck expense,
Farm Share of expense: If the auto or truck has been used only part of the time for farm business purposes, charge only that same fraction of the expenses to the farm.

Example: Auto used only 10% of the time for farm business purposes.

| | | |
|---|---|---|
| Total auto expenses-- | License | $11 |
| | Repairs | 6 |
| | Gasoline | 37 |
| | Oil | 3 |
| | Grease | 2 |
| | | $60 |

$60 x 10% = $6.00 -- farm share of auto expense

Baling, Threshing, Grinding- Indicate if these were paid in the form of toll or cash, by writing the word "toll" or "cash" after the item. If it was in the form of toll, there should be an equal amount recorded in Section IV, Crop Record-Sales-Value

Example:

| EXPENSES(Section VI) | | CROP RECORDS (Section IV) |
|---|---|---|
| Threshing (toll) | $26 | Sales, Val. $26 (toll) |

Coal, oil, gasoline, kerosene- Do not include any of these items used in the home or in the auto, truck or tractor. This item is meant for gasolene used in stationary engines, kerosene or coal used in brooder houses, etc.

Fences-- Include cash expenses for new fences, and fence repairs.

Feed Purchased
Hay, Bedding, etc. Include value of purchased items only. Do not include any of the feed produced on the farm.

Taxes-- Include farm taxes only, such as real estate, livestock and equipment taxes.

When you have listed all the farm expenses, add all the items and record the total as "Total Current Expenses".

Example: Total Current Expenses $2750

VII FARM PRODUCTS FURNISHED THE FAMILY --

Include all the food and fuel that was produced on the farm and used in the house. Do not include any purchased items.

If potatoes were produced in the garden, include their value in value of garden. Do not list them separately.

To find value of use of dwelling, take 10% of average value of operator's home.

Example: Beg. Val. Operator's House $1250
End Val. " " 1200
$2450

$2450 ÷ 2 = $1225 Average Val. Operator's House
10% of $1225 = $122 Value use of dwelling

This could not be worked on the example record since value of operator's house was not given on the original blank.

Find the total of the value column of Farm Products Furnished the Family.

VIII MISCELLANEOUS RECEIPTS --

Include here money received for such items as are listed below:

Man labor off the farm
Man and team work off the farm
Man, machine, and team work off the farm
Jury duty, assessor, etc.
Rent of buildings
Lumber sold
Wood sold
Farm insurance collected
Stock pastured for other people
A.A.A. Payments

P.M.W.U. are calculated for any of these that represent productive work, one P.M.W.U. for each 10-hour day of work.

## Productive Man Work Units for Miscellaneous Receipts

Compute the amount of productive work represented by miscellaneous receipts by multiplying receipts from such sources by the units assigned below:

P.M.W.U.

| | |
|---|---|
| 3.0 | Day-old chicks per 1000 chicks hatched |
| 0.5 | Stallion fees per fee collected |
| 1 | Man for every day worked or $3 - $5 receipts |
| 1 | Man and team for every day worked or $6 - $10 receipts |
| 1 | Man, team and machine for every day worked or $10 to $12 receipts |
| 16 | Maple syrup, per 100 gallons |
| 2 | Lumber, per 1000 feet |
| 1 | Fire wood, per 12 inch cord |
| 0.0 | A.A.A Payments |

Find the totals of the P.M.W.U. and the value columns.

Example: Miscellaneous Receipts

| P.M.W.U. | | |
|---|---|---|
| 138 | Man Labor off farm | $415 |
| 0 | A.A.A. Payments | 185 |
| 1 | Stock Pastured | 10 |
| 139 | | $610 |

## IX SUMMARY

Receipts

(1) Crops-- copy total from Section IV, Sales, Value.

Example: Crop receipts $283

(2) Livestock products-- copy total from Section III

Example: Livestock products $3745

(3) Livestock increase-- From Section V (End. Inventory, Value plus Sales, Value) minus (Beg. Inventory, Value plus Purchases, Value) = Livestock increase.

Example: Livestock

| | | | |
|---|---|---|---|
| End. Inv. | $4114 | Beg. Inv. | $3822 |
| (Add) Sales | 1956 | (Add) Purchases | 577 |
| | $6070 | | $4399 |

$6070
(Subtract) 4399
$1671 Livestock Increase

If the result is negative, this becomes an expense under Livestock decrease.

(4) Supplies and feed increase-- From Section II (End Val. Supplies and feed) Minus (Beg. Val. Supplies and feed) = Supplies and feed increase.

Example: Supplies and feed

| | |
|---|---|
| End Value | $1709 |
| (Subtract)Beg.Value | 1844 |
| | $-135 |

Since this result is negative, leave the Supplies and feed increase line blank, and record $135 in Expenses under Supplies and feed decrease.

(5) Miscellaneous receipts-- From Section VIII copy total of value column.

Example: Miscellaneous receipts $815

(6) Real estate and equipment increase-- (From Section II) Add End value of land, buildings and equipment. Then add Beginning value of these same items. Subtract total Beg. Value from total End Value.

| Example: | End Value | Beg. Value |
|---|---|---|
| Land | $10,290 | $10,290 |
| Buildings | 9,410 | 9,413 |
| Equipment | 2,309 | 2,157 |
| (Add) | $22,009 | (Add) $21,860 |

| | |
|---|---|
| | $22,009 |
| (Subtract) | 21,860 |
| $ | 149 Real estate and equip. increase. |

If the result is negative, this becomes an expense under Real estate and equipment decrease.

(7) Find the total of all the receipts.

Example: Receipts
Total $6663

Expenses

(1) Current-- Copy total expenses from Section VI

Example: Current expenses $2750

(2) Livestock decrease-- (See explanation of Livestock increase)

(3) Feed and supplies decrease-- (See explanation of Supplies and feed increase)

(4) Real estate and equip. decrease--(See explanation of Real estate and equip. increase)

(5) Find the total of all the expenses.

Example: Expenses
Total $2885

## Farm Income

Total Receipts minus Total Expenses = Farm Income

If expenses are greater than receipts, farm income will be negative.

| Examples: | Farm No. 1 | Farm No. 2 |
|---|---|---|
| Total Receipts | $6663 | $1100 |
| Total Expenses | 2885 | 1200 |
| Farm Income | $3778 | $-100 |

## Interest

Multiply Average Capital (Section II) by 5 percent to find interest.

Example: Av. Capital $27,679
(Multiply) .05
$1383.95 = $1384 Interest

## Labor Income

Farm Income minus Interest = Labor Income

Be careful if the farm income is a negative number or is smaller than the amount of interest. Study the examples carefully.

| Examples: | Farm No. 1 | Farm No. 2 | Farm No. 3 |
|---|---|---|---|
| Farm Income | $3778 | $500 | $-100 |
| Interest | 1384 | 800 | 500 |
| Labor Income | $2394 | $-300 | $-600 |

## Value Farm Privileges

Value farm privileges equals farm products furnished the family. Copy the total value from Section VII.

Example: Value farm privileges $283

## Labor Earnings

Add Labor Income and Value of farm privileges. Be careful if the labor income is a negative number. Study examples carefully.

| Examples: | Farm No. 1 | Farm No. 2 | Farm No. 3 |
|---|---|---|---|
| Labor Income | $2394 | $-300 | $-600 |
| Value Farm Privileges | 283 | 350 | 375 |
| Labor Earnings | $2677 | $ 50 | $-225 |

## Value Operator's Time

Record the number of months during the year the operator has spent working on the farm.

Ask the operator how much he would have to pay someone to manage his farm and do all the farm work he does during the year. Record the value he gives you as value of Operator's time.

Example: Val. Operator's time -- 12 mo. $1000

Return on Capital

Subtract Value of operator's time from Farm Income.

Be careful if farm income is a negative number or smaller than value of operator's time. Study examples carefully.

| Examples: | Farm No. 1 | Farm No. 2 | Farm No. 3 |
|---|---|---|---|
| Farm Income | $3778 | $500 | $-100 |
| (Subt)Value Oper's time | 1000 | 600 | 360 |
| Return on Capital | $2778 | $-100 | $-460 |

Percent Return on Capital

Divide Return on Capital by Average Capital (Section II), and multiply the result by 100.

Example: $\frac{\$2778}{\$27,679} \times 100 = 10\%$ return on capital

X

## EXPLANATION OF ANALYSIS OF THE FARMING BUSINESS

A LABOR INCOME -- Copy from Section IX. This is a measure of farm financial success. It indicates how much the operator has for his work as manager of the farm after he has paid all farm business expenses and 5% interest on his capital investment. In addition to this financial return the operator has had from farm sources, a house to live in and some of the food and fuel for his family. This additional income when added to labor income is called Labor Earnings.

A successful farm should return to the operator a labor income that is higher than hired men's wages in the community.

Example: $2394 Labor Income
($2677 Labor Earnings)

B SIZE -- A farm should be as large or larger than the average farm in the community. However, a large farm must be efficiently managed to be profitable.

1 -Productive Man Work Units-- Add P.M.W.U. for crops (Section IV), for Livestock (Section V), and for Miscellaneous Receipts (Section VIII).

Example:

| | P.M.W.U. |
|---|---|
| Crops | 279 |
| Livestock | 647 |
| Misc. Receipts | 146 |
| Total P.M.W.U. | 1072 |

2 -Acres of Crops-- Copy total of acres column from Section IV.

Example: Acres of Crops 110

3 -Acres of Pasture-- Copy acres of permanent pasture (Section I)

Example: Acres of Pasture 205

4 -Animal Units (A.U.)-- Copy total of A.U. column from Section V.

Example: A.U. 59.6

5 -Man Equivalent-- Add all months of work done on the farm and divide by 12. Carry the result to one decimal place. Count 26 days of day labor as one month. Include operator's time in this item.

Example:

| | |
|---|---|
| Operator's time | 12 mo. |
| Month help | 14 mo. |
| Unpaid labor | 8 mo. |
| Day help 114 days (114÷26) | 4.4 mo. |
| Total | 38.4 mo. |

$$\frac{38.4 \text{ (Total Mo. Labor}}{12 \text{ (Mo. per year)}} = 3.2 \text{ Man Equiv.}$$

6-Capital- Copy average capital from Section II

Example: Capital $27,679

C BALANCE -- The crop and livestock enterprises should be so adjusted that fertility of the soil can be economically maintained, and livestock produced without purchasing much of the feed needed. In most areas some of the receipts should come from crops and some from livestock. Diversity of enterprises without going to the extreme is usually desirable. A farmer can seldom afford to "put all his eggs into one basket."

1- Pasture acres per animal unit pastured--Divide acres of pasture (Section X-B-3) by the number of animal units pastured (Section V). Work animals are usually not included. Three acres of pasture should take care of one animal unit.

Example: Acres of pasture 205

| | |
|---|---|
| Total A.U. | 59.6 |
| (Subt) Work A.U. | 5.0 |
| A.U. Pastured | 54.6 |

$\frac{205}{54.6}$ = 3.8 A. of pasture per A.U. pastured

2- Acres of Crops per A.U.--Divide acres of crops (Section IV) by total animal units (Section V). This is a measure of the possibility of maintaining fertility by the present farm organization, and also of the possibility of producing enough feed for the livestock.

Example: $\frac{110 \text{ (Acres of crops)}}{59.6 \text{ (A.U.)}}$ = 1.8 A.crops per A.U.

3- Manure per acre of crops manured-- Divide the total number of tons of manure spread on cropland by the number of acres on which it was spread (Section IV, note on last line). This is a measure of actual fertility maintenance. One animal unit produces about one ton of manure per month. The amount produced during the period while the animals are housed is the part available for spreading on cropland.

Example: $\frac{143 \text{ (Tons Manure)}}{44 \text{ (A. Crops manured)}}$ = 3.3 Tons manure per acre crops manured.

4- Purchased fertilizer per acre crops-- Divide total value of fertilizer (Section VI) by total acres of crops (Section IV).

Example: $\frac{\$161 \text{ (Val. Fertilizer)}}{110 \text{ (Acres crops)}}$ = $1.46 fertilizer per A.crop

Fertilizer is applied to cropland to increase the crop yields. The value of the INCREASED yield should be at least twice the value of the fertilizer applied in order to make money.

Another method of judging the amount to invest in fertilizer is to keep it within 10 percent of the value of the crop.

5- Percent of Receipts from Crops-- Divide crop receipts (Section IX) by Total Receipts (Section IX) and multiply the result by 100.

Example: $\frac{\$283}{\$6663} \times 100 = 4\%$ receipts from crops

6- Percent Receipts Miscellaneous-- Divide miscellaneous Receipts (Section IX) by Total Receipts (Section IX) and multiply the result by 100.

Example: $\frac{\$815}{\$6663} \times 100 = 12\%$ receipts miscellaneous

7- If livestock enterprises are important on your farm, work percent of receipts from livestock by this formula--

Add receipts from Livestock products and Livestock Increase (Section IX). Divide the sum by Total Receipts and multiply the result by 100.

Example: Livestock Products $3745
Livestock Increase $1671
$5416

$\frac{\$5416}{\$6663} \times 100 = 81\%$ receipts from livestock

D

PRODUCTION: Rates of production should be higher than the average for the community. A farm that has a crop index 15 to 20 percent higher than the average has a much better chance to make money than one that is merely average, or is below average. The same thing is true for other measures of rates of production.

1-¢rop Index-¢U.S.)--(An error appears in the record book at this point. The $ mark should not be there.)

This is a method of comparing the crop yields of the individual farm with the average yields for the United States.* The average for the United States is considered 100%. A crop index of 120 means that the rate of crop production on the individual farm is 20% above the average for the United States.

Use this formula for working crop index. Divide total yield of each crop (Section IV) by the average yield for the United States. Add the quotients and divide by the total acres of these same crops (Section IV). Multiply by 100.

* Crop index means more if based on community average yields. If local averages cannot be secured, district or state averages may be used as a basis of comparison. "Virginia Crops and Livestock", Virginia Department of Agriculture, Richmond, Virginia, publishes lists of average yields by districts. A list of Virginia average yields is found in the appendix, page 32.

## United States Average Yields for Working Crop Index

| Yield per Acre | Crops |
|---|---|
| 15 bus. | Wheat |
| 13 bus. | Rye |
| 26 bus. | Corn for grain, shelled |
| 7 tons | Corn for silage |
| 30 bus. | Oats |
| 23 bus. | Barley |
| 8 bus. | Flaxseed |
| 16 bus. | Buckwheat |
| 167 lbs. | Cotton, lint |
| 306 lbs. | Cottonseed |
| 772 lbs. | Tobacco |
| 111 bus. | White Potatoes |
| 91 bus. | Sweet Potatoes |
| 669 lbs. | Beans, dry edible |
| 1.3 tons | Hay, clover, timothy, or mixtures of these |
| 2.5 tons | Alfalfa hay |
| 697 lbs. | Peanuts |
| 2 tons | Sweet corn for canning factory |
| 0.7 tons | Peas for canning factory |
| 7 tons | Cabbage |
| 61 bus. | Lima beans for market, unshelled, 28# per bushel |
| 89 bus. | Snap beans for market, 24 lbs. per bushel |
| 167 bus. | Beets for market, 56# per bushel |
| 228 bus. | Spinach for market, 20 lbs. per bushel |
| 67 crates | Strawberries, 24 quarts per crate, 36 lbs.per crate |
| 128 crates | Cantaloupes, 60 lbs. per crate |
| 348 bus. | Carrots for market, 50# per bushel |
| 86 bus. | Cucumbers, 48# per bushel |
| 285 bus. | Onions, 57# per bushel |
| 73 bus. | Peas for market, unshelled, 32# per bushel |
| 234 bus. | Peppers for market, 22# per bushel |
| 110 bus. | Tomatoes for market, 56 lbs. per bushel |
| 4 tons | Tomatoes for canning factory |
| 50 bbls. | Apples |

Example:

| Crop | Total Production | | U.S. AV. Yield per A. | | Quotients | Acres |
|---|---|---|---|---|---|---|
| Corn, bu.sh | 900 | ÷ | 26 | = | 34.62 | 15 |
| Corn, silage, T. | 120 | ÷ | 7 | = | 17.14 | 10 |
| Wheat, grain, bu. | 434 | ÷ | 15 | = | 28.93 | 28 |
| Clover hay, T. | 22 | ÷ | 1.3 | = | 16.92 | 11 |
| Alfalfa hay, T. | 55 | ÷ | 2.5 | = | 22.00 | 22 |
| Sweet clover hay, T. | 15 | ÷ | 1.3 | = | 11.54 | 10 |
| Tomatoes, bu. | 514 | ÷ | 110 | = | 4.67 | 5 |
| | | | | | 135.82 | 101 |

$$\frac{135.82}{101} \times 100 = 134 \text{ Crop Index}$$

2- Bu. Corn per A-- Copy corn yield per acre from Section IV. Compare this with the U.S. average. Compare the yields per acre of any other important crops with the U.S. Averages.

Example: Corn 60 bu. per A. (26 bu. U.S. av.)
Wheat 16 bu. per A. (15 bu. U.S. av.)

3- Lbs. milk per cow-- Convert all milk and milk products sold (Section III) used in the house (Section VII) into pounds of milk equivalent. Add and divide by the average number of cows.

Use these equivalents:
1 gal. milk = 8.6 lb. milk
1 qt. milk = 2.15 lb. milk
1 lb. butter = 22.5 lb milk
1 qt. 20% cream = 10.5 lb. milk
1 lb. cheese = 9.43 lb. milk

Example:

| | | |
|---|---|---|
| Milk sold | = | 203,397 lb. milk |
| Butter sold, 294 lb. x 22.5 | = | 6,615 lb. milk |
| Milk used in house, 105 gal. x 8.6 | = | 903 lb. milk |
| Butter used in house, 78 lb. x 22.5 | = | 1,755 lb. milk |
| Total pound milk produced | = | 212,670 |

$$\frac{212{,}670 \text{ lb. milk}}{29.5 \text{ (av. no. cows)}} = 7209 \text{ lb. milk per cow}$$

6000 pounds per cow is the minimum rate of production if the farm is to show profit.

4- Eggs per hen-- Add number of eggs sold (Section III), number eggs used for hatching (Section V), and number of eggs used in the house (Section VII). Divide this sum by the average number of hens (Section V).

On commercial poultry farms, hens must lay 120 to 160 eggs per hen per year for the farm to make profits.

For the ordinary farm flock, 100 eggs per hen is the minimum.

Example: Eggs sold,
478 doz. x 12 = 5736 eggs
Eggs used in house
78 doz. x 12 = 936 eggs
Eggs used for hatching
154 eggs
Total eggs produced 6826

$$\frac{6826 \text{ (eggs produced)}}{48 \text{ (Av. no. hens)}} = 142 \text{ eggs per hen}$$

5- Pigs per Sow-- Divide the number of pigs weaned by the average number of sows, (Section V).

Example: $\frac{46 \text{ (pigs weaned)}}{3.5 \text{ (av. no. sows)}} = 13$ pigs per sow

E CAPITAL EFFICIENCY--

1- Years Required for Receipts to Equal Capital--
Divide average Capital (Section II) by Total Receipts (Section IX)

Example: $\frac{\$27,679 \text{ (Av. Cap)}}{\$6683 \text{ (Total Receipts)}} = 4$ years required for receipts to equal capital

In most sections capital should show turnover once in three years.

(Section II).

2- Value Machinery per Crop A.--Add Beg. Val. and End Val.Equipment and divide by two. Divide this result by the number of crop acres (Section IV).

Example: Beg. Val. Equip. $2157
End. Val. Equip. 2309
2 ) $4466
$2233 Av. Val. Equip.

$\frac{\$2233}{110 \text{ (acres of crops)}} = \$20$ value machinery per crop acre

3- % Capital in Buildings.- Add Beg. Val. and End Val. of Buildings (Section II) and divide by two. Divide this result by average Capital (Section II) and multiply by 100.

Example: Beg. Val. Bldgs. $9413
End Val. Bldgs. 9410
2) $18,823
$ 9,412

$\frac{\$9412 \text{ (Av.Val.Bldgs)}}{\$27,679 \text{ (Av. Cap.)}} \times 100 = 34\%$ of capital invested in buildings.

If too much of the farm capital is tied up in buildings there will not be enough left for investment in productive livestock and fertile land.

F LABOR EFFICIENCY

1- P.M.W.U. per man--Divide Total P.M.W.U. (Section X-B-1) by man equivalent (Section X-B-5)

Example: $\frac{1072 \text{ (P.M.W.U.)}}{3.2 \text{ (Man equiv.)}} = 335$ P.M.W.U. per man

This factor helps answer the question, "Does the farm provide a year of productive work for each man?"

2- Crops per man-- Divide the total acres of Crops (Section IV) by the man equivalent (Section X-B-5)

Example: $\frac{110 \text{ A. Crops}}{3.2 \text{ (Man equiv.)}} = 34$ acres of crops per man

3- A.U. per man-- Subtract the animal units for work horses from total animal units (Section V). Divide the result by man equivalent (Section X-B-5)

Example: Total A.U. 59.6
(Subt) A.U.Work horses 5
Total productive A.U. 54.6

$\frac{54.6 \text{ (Prod.A.U.)}}{3.2 \text{ (Man Equiv)}} = 17$ Productive A.U. per man

# APPENDIX

## MISCELLANEOUS INFORMATION

### QUANTITIES OF MILK USED ON THE FARM

| Quantity per day | Pounds per day | Pounds for 30 days | Pounds for year |
|---|---|---|---|
| 1 pint | 1.08 | 32 | 394 |
| 1 quart | 2.15 | 64 | 785 |
| 1.5 quarts | 3.23 | 96 | 1,179 |
| 2 quarts | 4.30 | 129 | 1,570 |
| 3 quarts | 6.45 | 194 | 2,355 |
| 4 quarts | 8.60 | 258 | 3,140 |
| 5 quarts | 10.75 | 322 | 3,925 |

### QUANTITIES OF MILK FED TO LIVESTOCK

| Quantity per day | 1 week | 2 weeks | 3 weeks | 4 weeks | 5 weeks | 6 weeks | 7 weeks |
|---|---|---|---|---|---|---|---|
| | Pounds for period | | | | | | |
| 1 quart | 15 | 30 | 45 | 60 | 75 | 90 | 105 |
| 2 quarts | 30 | 60 | 90 | 120 | 150 | 180 | 210 |
| 3 quarts | 45 | 90 | 135 | 180 | 225 | 270 | 315 |
| 4 quarts | 60 | 120 | 180 | 240 | 300 | 360 | 420 |
| 5 quarts | 75 | 150 | 225 | 300 | 375 | 450 | 525 |
| 6 quarts | 90 | 180 | 270 | 360 | 450 | 540 | 630 |
| 7 quarts | 105 | 210 | 315 | 420 | 525 | 630 | 735 |
| 8 quarts | 120 | 240 | 360 | 480 | 600 | 720 | 840 |
| 9 quarts | 135 | 270 | 405 | 540 | 675 | 810 | 945 |
| 10 quarts | 150 | 300 | 450 | 600 | 750 | 900 | 1,050 |
| 11 quarts | 165 | 330 | 495 | 660 | 825 | 990 | 1,155 |
| 12 quarts | 180 | 360 | 540 | 720 | 900 | 1,080 | 1,260 |
| 13 quarts | 195 | 390 | 585 | 780 | 975 | 1,170 | 1,365 |
| 14 quarts | 210 | 420 | 630 | 840 | 1,050 | 1,260 | 1,470 |
| 15 quarts | 225 | 450 | 675 | 900 | 1,125 | 1,350 | 1,575 |

### PASTURE SEASON

| May | to Oct. | Days | May | to Oct. | Days |
|---|---|---|---|---|---|
| 1 | 31 | 184 | 16 | 16 | 154 |
| 2 | 30 | 182 | 17 | 15 | 152 |
| 3 | 29 | 180 | 18 | 14 | 150 |
| 4 | 28 | 178 | 19 | 13 | 148 |
| 5 | 27 | 176 | 20 | 12 | 146 |
| 6 | 26 | 174 | 21 | 11 | 144 |
| 7 | 25 | 172 | 22 | 10 | 142 |
| 8 | 24 | 170 | 23 | 9 | 140 |
| 9 | 23 | 168 | 24 | 8 | 138 |
| 10 | 22 | 166 | 25 | 7 | 136 |
| 11 | 21 | 164 | 26 | 6 | 134 |
| 12 | 20 | 162 | 27 | 5 | 132 |
| 13 | 19 | 160 | 28 | 4 | 130 |
| 14 | 18 | 158 | 29 | 3 | 128 |
| 15 | 17 | 156 | 30 | 2 | 126 |
| | | | 31 | 1 | 124 |

### SIZE OF SILO NEEDED FOR HERDS OF DIFFERENT SIZE

| No. of cattle that can be kept 6 mo. on 30 lbs. per Head Daily | No. of tons Needed | Size of silo Diam. | Ht.[2] | No. of acres required to fill silo at 8 tons per acre |
|---|---|---|---|---|
| 8 | 22 | 10 | 24 | 2.7 |
| 10 | 27 | 10 | 27 | 3.4 |
| 12 | 32 | 10 | 29 | 4.0 |
| 14 | 38 | 10 | 33 | 4.7 |
| 16 | 43 | 10 | 35 | 5.4 |
| 20 | 54 | 12 | 33 | 4.7 |
| 25 | 67 | 12 | 38 | 8.4 |
| 30 | 81 | 12 | 43 | 10.0 |
| 35 | 95 | 12 | 48 | 11.9 |
| 40 | 108 | 14 | 43 | 13.5 |
| 45 | 121 | 14 | 46 | 15.1 |
| 50[1] | 135 | 14 | 50 | 16.9 |
| 60 | 162 | 16 | 46 | 20.3 |
| 70 | 189 | 16 | 51 | 23.6 |
| 80 | 216 | 18 | 48 | 27.0 |

[1] When more than this number of cattle are kept, it is desirable in most cases to have more than one silo.

[2] Allows for 20 per cent settling.

## APPROXIMATE CAPACITIES OF CYLINDRICAL SILOS IN TONS

| *Depth of silage (ft.) | Inside diameter of silo in feet | | | | | |
|---|---|---|---|---|---|---|
| | 10 | 12 | 14 | 16 | 18 | 20 |
| | Tons | Tons | Tons | Tons | Tons | Tons |
| 1 | 1 | 1 | 1 | 2 | 2 | 3 |
| 2 | 2 | 2 | 3 | 4 | 5 | 6 |
| 3 | 2 | 3 | 5 | 6 | 8 | 9 |
| 4 | 3 | 5 | 7 | 9 | 11 | 13 |
| 5 | 4 | 6 | 9 | 11 | 14 | 17 |
| 6 | 5 | 8 | 11 | 14 | 17 | 21 |
| 7 | 7 | 9 | 13 | 17 | 21 | 25 |
| 8 | 8 | 11 | 15 | 20 | 25 | 31 |
| 9 | 9 | 13 | 18 | 23 | 29 | 36 |
| 10 | 10 | 15 | 20 | 26 | 33 | 41 |
| 11 | 12 | 17 | 23 | 30 | 38 | 46 |
| 12 | 13 | 19 | 25 | 33 | 42 | 52 |
| 13 | 14 | 21 | 28 | 37 | 47 | 58 |
| 14 | 16 | 23 | 31 | 41 | 52 | 64 |
| 15 | 18 | 25 | 34 | 45 | 57 | 70 |
| 16 | 19 | 28 | 38 | 49 | 62 | 77 |
| 17 | 21 | 30 | 41 | 53 | 67 | 83 |
| 18 | 23 | 32 | 44 | 58 | 73 | 90 |
| 19 | 24 | 35 | 48 | 62 | 79 | 97 |
| 20 | 26 | 38 | 51 | 67 | 85 | 103 |
| 21 | 28 | 40 | 55 | 72 | 91 | 112 |
| 22 | 30 | 43 | 59 | 77 | 97 | 120 |
| 23 | 32 | 46 | 63 | 82 | 103 | 128 |
| 24 | 34 | 49 | 66 | 87 | 110 | 135 |
| 25 | 36 | 52 | 70 | 92 | 116 | 143 |
| 26 | 38 | 55 | 74 | 97 | 123 | 152 |
| 27 | 40 | 58 | 79 | 103 | 130 | 160 |
| 28 | 42 | 61 | 83 | 108 | 137 | 169 |
| 29 | 44 | 64 | 87 | 114 | 144 | 178 |
| 30 | 47 | 67 | 91 | 119 | 151 | 187 |
| 31 | 49 | 70 | 96 | 125 | 158 | 195 |
| 32 | 51 | 74 | 100 | 131 | 166 | 205 |
| 33 | 53 | 77 | 105 | 138 | 173 | 214 |
| 34 | 55 | 80 | 109 | 143 | 181 | 224 |
| 35 | 58 | 84 | 114 | 149 | 188 | 232 |
| 36 | 61 | 87 | 118 | 155 | 196 | 242 |
| 37 | 63 | 90 | 123 | 161 | 204 | 252 |
| 38 | 66 | 94 | 128 | 167 | 212 | 262 |
| 39 | 68 | 97 | 133 | 174 | 221 | 272 |
| 40 | 70 | 101 | 138 | 180 | 229 | 280 |

*Use height of silage after it has settled for two days.

SILAGE IN ROUND SILOS: The original amount of silage put in the silo can be estimated from the table above. The depth to use is that found two days after filling stopped.

What is left in a silo after part has been used can be estimated as follows:

First: Find the original amount of silage put in the silo, by referring to the table.

Second: Find the amount of silage that has been used, by the same method, using as depth the difference between the present depth and the depth 2 days after filling.

Third: Subtract the amount used from the original amount. The difference is the approximate amount of silage remaining in the silo.

Example: A silo 16 feet in diameter and 32 feet high was filled so that after settling for two days, there were 26 feet of the silage. At the time the inventory was taken there were 12 feet of silage left.

From the table it is seen that 26 feet of silage in a 16-foot silo = 97 tons.

Since 12 feet of silage were left, 26 minus 12 equals 14 feet which had been fed, and 14 feet of silage in a 16-foot silo = 41 tons. Therefore, the bottom 12 feet of silage in this silo would contain about 56 tons of silage, since 97 tons minus 41 tons = 56 tons.

| | Weight per Bu. (lbs.) | No. of bu. to make a ton | | Weight per Bu. (lbs.) |
|---|---|---|---|---|
| Silage | 35 | 57.14 | Turnips | 60 |
| Shelled corn | 56 | 35.71 | Vetch | 56 |
| Corn on the ear | 35 | 57.14 | Blue grass seed | 14 |
| Shelled pop corn | 70 | 28.57 | Mixed clover seed | 60 |
| Corn meal | 50 | | Red clover seed | 60 |
| Oats | 32 | 62.50 | Mammoth clover seed | 60 |
| Oats and barley | 40 | 50.00 | Clover and timothy | 55 |
| Barley | 48 | 41.66 | Alsike | 60 |
| Buckwheat | 48 | 41.66 | Alfalfa | 60 |
| Winter Wheat | 60 | 33.33 | Timothy | 45 |
| Rye | 56 | 35.71 | Orchard grass | 14 |
| Field beans | 60 | 33.33 | Red Top | 14 |
| Potatoes | 60 | 33.33 | | |
| Apples | 50 | | | |
| Peaches | 50 | | | |
| Beets (mangels) | 60 | | | |
| Carrots | 50 | | | |
| Millet | 50 | | | |
| Onions | 57 | | | |
| Peas | 60 | | | |
| Tomatoes | 50 | | | |

No. of bushels of grain in bin.--Take dimensions in feet. $\frac{\text{(Length x width x height) x 8}}{10}$ = bu. of grain in bin.

If ear corn is being measured deduct one-half from the result.

Hay: In Mow--500 cu. ft. = 1 ton--Bottom of mow, 450 cu. ft. = 1 ton--In stacks more than 500 cu. ft. = 1 ton--Straw--1000 cu. ft. = 1 ton

Two bushels of ear corn, (by measure) = one bushel grain. In one bushel of ear corn (35 lbs.) there are 28 lbs. of shelled corn; in one bu. of pop corn on the ear (42 lbs.) there are 35 lbs. of shelled pop corn.

## LIME EQUIVALENTS

Amounts of different kinds of lime that are equal in neutralizing power. (Based on base equivalent.)

| BURNT Limestone or shell of 90% purity | HYDRATED Limestone or shell of 90% purity | GROUND Limestone, shell or marl of 90% purity | GROUND Dolomite, 30% MgCo3; 60% CaCo3 |
|---|---|---|---|
| Pounds | Pounds | Pounds | Pounds |
| 500 | 660 | 895 | 837 |
| 1,000 | 1,320 | 1,790 | 1,674 |
| 1,500 | 1,980 | 2,685 | 2,511 |
| 2,000 | 2,640 | 3,580 | 3,348 |

## SOIL REACTION FOR CROPS

A = most favorable reaction. B = reaction at which plants may grow fairly well. C=unfavorable reaction

| Plants | pH range from 4.5 to 7.5 | | | | | | |
|---|---|---|---|---|---|---|---|
| | 4.5 | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 |
| Alfalfa | C | C | C | C | B | A | B |
| Beans (Bird Eye) | C | C | B | A | A | B | B |
| Buckwheat | C | C | A | A | B | B | B |
| Clover: Alsike | C | C | B | B | A | B | B |
| Crimson | C | C | B | A | A | B | B |
| Mammoth | C | C | C | B | A | B | B |
| Medium Red | C | C | C | B | A | B | B |
| Sweet | C | C | C | C | B | A | A |
| White | C | C | B | A | A | B | B |
| Corn | C | C | B | A | A | B | B |
| Cotton | C | B | A | A | B | B | C |
| Grasses | C | C | B | A | B | B | C |
| Lespedeza | C | C | B | A | B | B | C |
| Peas | C | C | B | A | A | B | B |
| Peanuts | C | C | B | A | A | B | C |
| Sorghum | C | B | A | A | A | B | B |
| Soybeans | C | C | B | A | A | B | B |
| Tobacco | C | C | A | A | B | C | C |
| Pastures | C | C | B | A | B | B | C |

## pH RANGES OF SOILS

| Acid | Neutral | Alkaline |
|---|---|---|
| pH 4--pH 5--pH 6 | pH 7 | pH 8--pH 9 |

## APPROXIMATE AMOUNT OF LIME REQUIRED TO CHANGE pH VALUES

| Soil class | Pounds required per acre to change reaction of one pH | | |
|---|---|---|---|
| | Burnt lime | Hydrated lime | Ground limestone, marl, or oyster shells |
| Light sandy | 840 | 1,110 | 1,500 |
| Sandy loams | 1,120 | 1,480 | 2,000 |
| Loams | 1,680 | 2,220 | 3,000 |
| Silt loams and clay loams | 1,960 | 2,590 | 3,500 |

## WEIGHT OF ONE QUART OF FEED
In Pounds

| | | | |
|---|---|---|---|
| Gluten | 1.3 | Cocoanut meal | 1.5 |
| Corn Meal | 1.5 | Beet pulp dried | 0.6 |
| Corn and cob meal | 1.4 | Molasses, cane or black strap | 3.0 |
| Hominy feed | 1.1 | Alfalfa meal | 0.6 |
| Flour wheat middlings | 0.8 | Distillers' grains, dried | 0.6 |
| Wheat bran | 0.5 | One gallon maple syrup | 8 lbs. sugar |
| Wheat feed (shorts and bran) | 0.6 | | |
| Oats ground | 0.7 | 1 sack lime | 50 lbs. |
| Barley ground | 1.1 | 1 barrel apples | 3 bu. |
| Brewers' grain dried | 0.6 | 1 barrel potatoes | 2¾ bu. |
| Buckwheat middlings | 0.9 | Ordinary peach basket | 14 qts. |
| Cotton seed meal | 1.5 | High Hat peach basket (14 or) | 10 qts. |
| Linseed oil meal | 1.1 | Jersey (heaped) basket | 16 qts. |

## BALANCING MANURE AS A FERTILIZER

This table gives the amount of 20% superphosphate and 50% muriate of potash necessary to add to one ton of manure to produce the equivalent amount and analysis of fertilizer given.

| Animal | Manure (Tons) | 20% Superphosphate (Lbs.) | 50% Muriate (Lbs.) | Equivalent amount and analysis of fertilizer produced (Lbs.) | (Analysis) |
|---|---|---|---|---|---|
| Sheep | 1 | 192 | 7.0 | 385 | 4-12-4 |
| Calf | 1 | 133 | 0.0 | 250 | 4-12-4 |
| Pig | 1 | 213 | 21.0 | 420 | 4-12-4 |
| Cow | 1 | 100 | 0.0 | 215 | 4-12-4 |
| Horse | 1 | 121 | 0.0 | 245 | 4-12-4 |
| Poultry | 1 | 353 | 31.0 | 655 | 4-12-4 |

### Avoirdupois Weight

27 11/32 grains = 1 dram
16 drams = 1 ounce
16 ounces = 1 pound
2000 lb. = 1 short ton
2240 lb. = 1 long ton

### Long Measure

12 inches = 1 foot
3 feet = 1 yard
5 1/2 yards = 1 rod
5280 feet = 1 statute mile
320 rods = 1 statute mile

### Dry Measure

2 pints = 1 quart
8 quarts = 1 peck
4 pecks = 1 bushel

### Square Measure

144 square inches = 1 square foot
9 square feet = 1 square yard
30 1/4 square yards = 1 square rod
43,560 square feet = 1 acre
640 acres = 1 square mile

### Liquid Measure

4 gills = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
31 1/2 gallons = 1 barrel
2 barrels = 1 hogshead
16 fluid ounces = 1 pint

## Virginia average yields, 1928-1937

(Hand Book of Agronomy, Bulletin No. 97, V.P.I. Extention Division)

| Virginia average yield | Crop | Virginia average yield | Crop |
|---|---|---|---|
| 22 bu. | Corn, bu. shelled | 61 gal. | Sorghum for syrup |
| 8.5 tons | Corn, silage | 1,027 lb. | Peanuts |
| 14 bu. | Wheat | 12 bu. | Soybeans for grain |
| 19 bu. | Oats | 9 bu. | Cowpeas for grain |
| 11 bu. | Rye | 1.0 ton | Clover and timothy hay |
| 25 bu. | Barley | 1.7 tons | Alfalfa hay |
| 13 bu. | Buckwheat | 659 lb. | Flue-cured tobacco |
| 121 bu. | Potatoes, white | 750 lb. | Fire-cured tobacco |
| 115 bu. | Potatoes, sweet | 1,036 lb. | Burley tobacco |
| 284 lb. | Cotton | | |

## VENTILATION AND WATER REQUIREMENTS OF LIVESTOCK

| Animal | Cu. Ft. Air per hour | One Sq. Ft. Out-take Flue Area Sufficient for | Average Gallons Water Required per day |
|---|---|---|---|
| Horse | 4924 | 5 | 12 |
| Cow (or steer) | 3953 | 6 | 10 |
| Dairy cow | 3953 | 6 | 12-14 |
| Hog | 1510 | 18 | 2 |
| Sheep | 929 | 24 | 1 |
| Hens | 37 | 400 | 1 |

## DRESSING PERCENTAGES

| Livestock | Range, Per Cent | Average, Per Cent |
|---|---|---|
| Cattle | 45-68 | 54 |
| Sheep | 45-55 | 51 |
| Hogs | 68-85 | 75 |

The dressing percentage is determined by comparing the weight of the chilled carcass with the live weight ot the animal before slaughtering.