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PROSPECTS OF DEMAND FOR SHORT-TERM INSTITUTIONAL CREDIT FOR HIGH-YIELDING VARIETIES

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While launching the High-Yielding Varieties (HYVs) Programme, the pivot around which the new agricultural strategy revolves, the need for providing the requisite credit support to enable the farmers to effectively participate in the programme was accepted and provision was made to extend special credit to growers of HYV crops, through the Reserve Bank and via the primary agricultural credit societies. The provision of such support was considered essential because it was felt that a sizable section of farmers who would desire to participate in the programme would not be able to do so if they were to be left to themselves to search for the extra cash needed to purchase the vital inputs.

LOW DEMAND FOR CREDIT

Some of the studies which have since been made, mainly by the Agro-Economic Research Centres, have, however, revealed that in a number of districts, owned funds of farmers were the preponderant source for financing current farm expenditure on HYVs and borrowings formed a low proportion of the total input expenditure on the new varieties of the crops (Table I).

Another striking feature of the input finance for the HYVs, or rather of that part of the input finance for HYVs which is met out of borrowings, is the failure of the borrowers to lift the entire credit per acre made available to them by the co-operative institutions. Except in Cuttack, West Godavari, Thanjavur and Tikamgarh districts, the amount borrowed per acre from co-operatives by growers of HYVs ranged from 2 to 32 per cent of the scale of finance per acre fixed for the respective crops.

Apparently, the owned funds of the sample farmers needed to be supplemented only marginally by borrowings in order to meet the input expenses on HYVs; in other words, the demand for credit was low because the sample farmers were resourceful enough to be able to bear a large part of the additional outlays on HYVs.

Admittedly, the above inference is based on a limited and initial experience of the HYV Programme. The low demand for short-term credit for

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TABLE I—SOURCES OF FINANCE FOR PER ACRE EXPENDITURE ON HYVs IN DIFFERENT DISTRICTS

Year	District	HYV crop	Per acre expenditure (Rs.)	Source of finance for per acre expenditure				Borrowing as per cent of per acre expenditure			Scale of finance per acre (Rs.)	Amount borrowed from co-operatives as percentage of scale of finance per acre
				Owned funds (Rs.)	Borrowings from co-operatives	Borrowings from Government (Rs.)	Other borrowings (Rs.)	Co-operatives	Government	Others		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1966-67* ..	Kolaba	Paddy	121	47	72	—	2	59·50	—	1·65	300	24·00
	Thanjavur		163	128	30	—	5	18·40	—	3·07	200	15·00
	Cuttack		339	90	249	—	—	73·45	—	—	350	71·14
	Karnal		424	352	60	1	11	14·15	0·24	2·59	303	19·80
	Krishna		202	107	95	—	—	47·03	—	—	300	31·66
	Ernakulam		365	304	61	—	—	16·71	—	—	400	15·25
1967-68** ..	Birbhum	Paddy	401	264	—	137	—	—	34·33	—	290	—
	West Godavari		294	165	129	—	—	43·93	—	—	250	51·60
	Amritsar		214	180	34	—	—	15·95	—	—	306	11·12
	Thanjavur		183	39	111	—	33	60·65	—	18·15	250	44·40
	Raipur		104	83	7	13	—	7·09	12·75	—	303	2·31
1966-67* ..	Mehsana	Bajra	244	220	24	—	—	9·84	—	—	170	14·11
1967-68** ..	Kaira	Bajra	190	167	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	100	N.A.
	Nasik		190	116	53	15	8	27·91	7·85	4·34	180	29·44
	Karnal		182	173	7	2	—	3·94	1·21	—	185	3·78
1966-67* ..	Aligarh	Maize	262	138	8	91	25	3·05	34·73	9·54	N.A.	N.A.
1968-69† ..	Faizabad	Wheat	440	316	34	80	10	7·73	18·18	2·27	206	16·50
1968-69‡ ..	Tikamgarh	Wheat	246	78	164	—	4	66·67	—	1·63	335	48·96

Sources : * Report on the High Yielding Varieties Programme (Studies in Eight Districts, *Kharif* 1966-67), Directorate of Economics and Statistics, Ministry of Food, Agriculture, Community Development and Co-operation, Government of India, New Delhi, 1967.

** Report on the High-Yielding Varieties Programme (*Kharif* 1967-68), Directorate of Economics and Statistics, Ministry of Food, Agriculture, Community Development and Co-operation, Government of India, New Delhi (mimeo.), 1969.

† High-Yielding Varieties Programme in Faizabad District (*Rabi* 1968-69), Agro-Economic Research Centre, Motilal Nehru Institute of Research, University of Allahabad, Allahabad, 1969 (mimeo).

‡ A Study of High-Yielding Varieties Programme, *Rabi* (1968-69) (Wheat) Agro-Economic Research Centre, Madhya Pradesh, Jabalpur 1969, (mimeo.).

N.A. = Not available.

HYVs in the initial phase of the HYV Programme is understandable due to some reasons to be discussed presently. The present paper endeavours to examine the scope for increase in the demand for production credit for HYVs in the coming few years; after analysing the two factors which affect the level of demand for credit, *viz.*, the extent of adoption of HYVs by farmers and the use levels of recommended inputs and cultural practices, the paper concludes that the demand for short-term credit for cultivation of HYVs is unlikely to increase substantially in the near future.

REASONS FOR LOW DEMAND

Why has the demand for credit for HYVs in the early years of the programme been low? Two main factors are responsible for this feature.

As in all programmes of spreading agricultural innovations, the concentration of the extension effort in the propagation of HYV in the initial stage was on relatively large farmers. The report on the studies of the HYV Programme in eight districts admits that "In this first season of the programme, the participating cultivators were discriminately selected from among the relatively bigger cultivators who had larger owned resources."[1] It is, therefore, probable that these adopters were in a position to incur somewhat larger expenditure on HYVs than they used to do on traditional varieties without having to borrow from any source. The other reason why they did not have to incur debts for meeting expenses on HYVs lay in the fact that the intensity of the use of inputs—some of them critical from the point of view of the success of HYVs—and adoption of other cultural practices was much lower than prescribed, consequently lowering the current expenses.[2] This is not surprising. In the initial phase of experimentation with new varieties of crops, which are fraught with risks and uncertainties, it is natural for cultivators to proceed warily and cautiously.

On the basis of the above discussion, it can be speculated that the demand for production credit for HYVs would go up in the future if relatively small and medium farmers take to the cultivation of HYVs and/or the use levels of market inputs rise and adoption of recommended cultural practices for these crops increase.

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1. Report on the High-Yielding Varieties Programme (Studies in Eight Districts, *Kharif* 1966-67), *op cit.*, p. 59.

2. After a detailed examination of the levels of input use and adoption of cultural practices for three HYV crops, wheat, paddy and jowar, during *rabi* 1968-69 in 12 States, the Programme Evaluation Organisation concluded that "the adoption of 'package' of practices as per recommendations is not so very encouraging, specially for the two principal food crops, wheat and paddy. Thus, there has not been a qualitative break-through as yet in the adoption of high-yielding varieties." Evaluation Study of the High Yielding Varieties Programme, Report for the *Rabi* 1968-69—Wheat, Paddy and Jowar, Programme Evaluation Organisation, Planning Commission, Government of India, New Delhi, 1969, p. 30. The studies made by the Agro-Economic Research Centres also broadly underscore the fact of low levels of input use and cultural practices recommended for HYVs.

PROSPECTIVE LEVELS OF INPUT USE AND ADOPTION OF RECOMMENDED PRACTICES

Let us first deal with the question of input use and adoption of cultural practices. These would tend to increase if the growers of HYVs, after initial experience with the new varieties, feel confident about the favourable results of the experiment. In other words, the results of HYVs in the initial years, in terms of yields and net returns, would significantly affect the stability of the class of "participants" in the HYV Programme which, in turn, would also influence the levels of input use and adoption of the prescribed cultural practices. Empirical evidence about how stable the class of participants is not available on adequate scale. We present here, what is undoubtedly fragmentary, data on this aspect which seem to suggest that the green revolution is yet to stabilize itself in terms of retention of the original group of participants.

In a study of "drop-outs" from the hybrid bajra programme in the Kaira district in Gujarat,[3] it was found that out of the 103 farmers who had taken to the hybrid variety in the first ever major season in which the variety was released for commercial cultivation (*kharif* 1967-68), as many as 49 dropped out in the following year (*kharif* 1968-69); the proportion of new entrants in the hybrid bajra programme in *kharif* 1968-69 was 49 per cent of the total number of adopters; this proportion was 22.5 per cent in *kharif* 1969-70. Again, of the 100 participants in the hybrid bajra programme in the second summer season (summer, 1967-68) since the inception of the programme, as many as 67 were new; in the next summer (summer, 1968-69), 38 out of 69 participants were new. Data in Table II taken from an ongoing study of production and marketing of bajra at the Agro-Economic Research Centre, Vallabh Vidyanagar, also show similar trend.

TABLE II—FREQUENCY DISTRIBUTION OF HYBRID BAJRA GROWERS BY THE YEAR IN WHICH THEY ADOPTED HYBRID BAJRA FOR THE FIRST TIME

Year	Number of hybrid bajra growers	Districtwise distribution of hybrid bajra growers		
		Banaskantha	Sabarkantha	Kaira
1967-68	16	2	4	10
1968-69	23	6	10	7
1969-70	61	12	33	16
1970-71	30	6	13	11
Total	130	26	60	44

Note: For this study, three districts were purposively selected; from each district two talukas and from each taluka three villages were chosen by probability proportional to size (PPS) method (size being the percentage share of area under bajra in the gross cropped area of taluk/villages). From each selected village 15 farmers were selected by stratified random sample. Thus 270 farmers were selected from 18 villages.

3. N. S. Jodha and V. S. Dharap, "Is Green Revolution Stable? An Illustrative Case," *Artha-Vikas*, Vol. VI, No. 2, July, 1970.

If the proportion of the new entrants in the HYV Programme in other areas of the country is as high as revealed by these illustrative cases, the levels of input use and adoption of cultural practices would persistently remain low and they, in turn, will keep the demand for credit low until such time as the green revolution stabilizes itself from the point of view of the composition of "participants."

PROSPECTS OF EXTENSIVE PARTICIPATION BY CULTIVATORS IN HYV PROGRAMME

Rapid spread of HYVs could lead to significant rise in the demand for production credit. As the class of participants in HYV Programme in the initial years consisted mainly of relatively large farmers, rapid spread of HYVs would require bringing relatively small and medium farmers within the fold of the HYV Programme.

Extensive data pertaining to participation rates in the HYV Programme by size of holdings in different parts of the country are not available. However, the data collected by the Agro-Economic Research Centre, Vallabh Vidyanagar from over 16,000 cultivators in Gujarat throw interesting, even if illustrative, light on the situation. The information collected included, among other things, the area of operational holding of the cultivators and their status with respect to membership of credit co-operatives and adoption of high-yielding variety of any crop in *kharif* 1970. This data has been analysed after grouping the cultivators into deciles on the basis of their operational holdings.

The data presented in Table III clearly show that in Gujarat while the extent of participation in the HYV Programme by the relatively large farmers (those in the last three deciles) has been very high, a large percentage of the relatively small farmers (those in the first three deciles) and medium farmers (those in the middle four deciles) has still not taken to HYVs. The data also reveal that the extent of participation in the HYV Programme tends to increase with the enlargement of the size of the holding (indicated by the rank of the decile). The high value of coefficient of association between the size of operational holding (indicated by the rank of the decile) and the extent of adoption of HYVs (value of coefficient being 0.2775) strengthens the above inference.

One of the reasons for the non-adoption of HYVs by a large portion of the class of relatively small farmers could be their inability to meet higher cash outlays on cultivation of HYVs from their owned resources. They are also not able to obtain institutional credit, specially co-operative credit, because a large number of them have not yet been enrolled as members of credit co-operatives. The data in Table III also show that only 26 per cent of the small farmers in a large part of Gujarat are members of credit co-operatives in contrast to 61 per cent in the case of relatively large farmers. In the case of membership of credit co-operative also the size of operational

TABLE III—PERCENTAGES OF MEMBERS OF CO-OPERATIVE CREDIT SOCIETIES AND ADOPTERS OF HIGH-YIELDING VARIETIES OF CROPS AMONG CULTIVATORS, GROUPED IN DECILES, IN FOURTEEN DISTRICTS OF GUJARAT

Zone / Deciles	Central Gujarat (3, 15, 2631)*				North Gujarat (4, 51, 7116)*				Saurashtra (6, 42, 4600)*			
	Members of credit co-operatives	Adopters of HYV			Members of credit co-operatives	Adopters of HYV			Members of credit co-operatives	Adopters of HYV		
		Total	Members of credit co-operatives	Non-members of credit co-operatives		Total	Members of credit co-operatives	Non-members of credit co-operatives		Total	Members of credit co-operatives	Non-members of credit co-operatives
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
First (Lowest)	6·20	8·81	3·05	5·76	15·41	17·99	8·86	9·13	23·30	50·75	18·40	32·35
Second	6·77	18·67	4·20	14·47	23·60	32·67	17·53	15·14	43·00	69·27	35·87	33·40
Third	17·87	32·05	12·08	19·97	30·81	39·89	20·53	19·36	53·77	74·03	48·16	25·87
Sub-total	10·28	19·84	6·44	13·40	23·27	30·18	15·64	14·54	40·02	64·68	34·14	30·54
Fourth	8·81	26·04	5·32	20·72	40·17	50·70	31·32	19·38	55·28	75·28	50·33	24·95
Fifth	19·81	47·21	10·19	37·02	40·27	50·50	27·04	23·46	55·35	83·74	53·49	30·25
Sixth	23·13	47·79	19·77	28·02	56·46	60·78	37·92	22·86	56·98	88·70	55·24	33·46
Seventh	33·11	47·34	25·86	42·96	51·01	58·09	34·23	23·86	68·02	87·73	62·88	24·85
Sub-total	21·21	42·09	15·26	26·83	46·98	55·01	32·63	22·38	58·91	83·86	55·49	28·37
Eighth	35·55	64·88	22·05	42·83	87·38	67·86	44·88	22·98	59·65	90·96	58·35	32·61
Ninth	51·79	77·02	41·06	35·96	58·42	66·08	44·88	21·20	63·26	91·63	60·87	30·76
Tenth (Highest)	62·11	86·94	51·91	35·03	72·02	72·13	57·02	15·11	63·94	94·07	61·12	32·95
Sub-total	49·81	76·28	38·34	37·94	72·61	68·69	48·93	19·76	62·28	92·22	60·11	32·11
Grand Total	27·10	46·07	20·01	26·06	47·62	51·29	32·40	18·89	53·74	80·25	49·91	30·34

(*Contd.*)

TABLE III—(*Concld.*)

Zone / Deciles	Kutch (1, 12, 1884)*				All districts (14, 120, 16231)*			
	Members of credit co-operatives	Adopters of HYV			Members of credit co-operatives	Adopters of HYV		
		Total	Members of credit co-operatives	Non-members of credit co-operatives		Total	Members of credit co-operatives	Non-members of credit co-operatives
1	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
First (Lowest)	10·58	3·70	0·53	3·17	16·13	28·69	9·67	19·02
Second	15·87	3·70	2·12	1·58	27·58	41·50	18·78	22·72
Third	17·02	13·82	6·91	6·91	34·46	49·23	25·42	23·81
Sub-total	14·49	7·10	3·18	3·92	26·06	39·81	17·95	21·86
Fourth	33·51	8·51	5·85	2·66	41·12	53·63	29·53	24·10
Fifth	34·04	24·46	12·77	11·69	42·13	57·55	30·10	27·45
Sixth	31·91	34·57	19·15	15·42	48·61	64·95	37·69	27·26
Seventh	34·04	28·72	12·77	15·95	51·14	63·37	38·48	24·89
Sub-total	33·38	24·06	12·64	11·42	45·75	59·87	33·95	25·92
Eighth	40·42	43·08	21·80	21·28	54·28	70·09	42·34	27·75
Ninth	52·91	48·67	33·86	14·81	61·15	72·53	47·54	24·99
Tenth (Highest)	53·96	54·49	39·68	14·81	67·90	77·31	55·35	21·96
Sub-total	48·21	47·80	31·78	16·02	61·11	73·31	48·41	24·90
Grand Total	32·08	26·32	15·87	10·45	44·31	57·36	33·44	23·92

Note: For the study of Cost of Cultivation of Bajra in Gujarat for which the above data were collected, 40 talukas were randomly selected from fourteen districts of Gujarat on the basis of the PPS method, the size being the proportionate area under bajra to gross cropped area in the taluka; on the same basis a cluster of three villages was chosen from each of the selected talukas. The data presented here were collected in the listing round and pertain to *kharif*, 1970-71.

* Figures in brackets are those of the number of districts covered, the number of villages and the number of cultivators, respectively, covered in the listing round.

holding is an important governing factor. The proportion of cultivators reporting membership of credit co-operatives increases with the increase in the size of operational holding and the value of coefficient of association between the size of operational holding and membership of credit co-operatives is also very high (0.2849).

The above situation is discouraging because in the case of relatively small farmers, the availability of cheap and adequate institutional credit is of greater importance for adoption of innovations than in the case of large farmers. Their small resource-base would, however, imply that the volume of institutional credit that might be available to them would also be small. This factor, together with uncertainty and risks associated with the adoption of HYVs, might make them disinterested in growing HYVs and in seeking membership of credit co-operatives.[4]

Expansion of the resource base of the small farmers, specially installation of irrigation capacity on individual or co-operative basis, would tend to raise their demand for short-term credit as well. However, the present policy of fixing long-term credit limits of farmers on the basis of their owned area militates against the achievement of this goal.[5]

There are, of course, other known factors, too, which prevent small farmers from becoming members of co-operatives. Extending institutional credit facilities to this section of cultivators is indeed a complex task involving far-reaching changes in the socio-politico-economic environment in the rural areas as well as in the operational aspects of credit co-operatives, and hence cannot be expected to be achieved in the near future. For this reason, the pace of adoption of HYVs would tend to be slow in the coming few years.

Further, in the past three years prices of agricultural commodities (mainly foodgrains) have tended to decline but there has not been a corresponding decline in the input prices; if this pattern of behaviour of output and input prices persists, the spread of HYVs might be adversely affected; and even those who grow HYVs would have little incentive to use the full package of recommended inputs and practices. From the standpoint of the demand for production credit for HYVs, these factors would further tend to depress the demand.

TWO OTHER RELEVANT FACTORS

There is yet another aspect of the demand for co-operative credit which needs to be taken note of. The proportion of borrowing members in the

4. On the basis of the data given in Table III, the coefficient of association between membership of credit co-operatives and adoption of HYVs works out to 0·3016. It is noteworthy also that against the partial coefficient of association of 0·2097 for size of operational holding and adoption of HYVs, the partial coefficient of association for membership of credit co-operatives and adoption of HYVs is 0·2416.

5. For example, see, Some Aspects of Long-Term Agricultural Finance—A Study of Two Areas in Gujarat, Agro-Economic Research Centre, Vallabh Vidyanagar, 1969 (mimeo.).

total membership of credit co-operative societies has been declining over the years. In Gujarat, this proportion declined from 65 per cent in 1960-61 to 52 per cent in 1966-67.[6] In 1968-69, the percentage[7] had further declined to 51. If this feature of the co-operative credit together with low coverage of cultivators is kept in view, the prospects of channelising the bulk of short-term credit required for HYVs through co-operatives would appear to be bleak.

Unfortunately, in spite of the advocacy of multi-agency approach for meeting the credit requirements of cultivators, the familiar story of larger farmers deriving benefits of credit facilities has not changed significantly for the better. The other important agency which has been pressed into service for the above purpose in recent years is the commercial banks. The available evidence shows that while the banks have, since their nationalisation, done fairly well, by providing Rs. 210.40 crores by way of short-term and medium-term credit to agriculture, the bulk of the credit supplied by them has gone to above-average farmers. Also, the States which have received comparatively larger share of financial assistance from the commercial banks (Maharashtra, Gujarat, Andhra Pradesh and Tamil Nadu) are those in which the co-operatives are equally active.[8] The demand situation in regard to short-term credit would not improve markedly unless conscious and deliberate efforts are made to make the bank credit available to really credit needy farmers.

CONCLUSION

From the foregoing discussion it would be clear that the demand for credit for cultivation of HYVs would remain low in the coming few years on account of the following reasons :

(*a*) The pace of adoption of HYVs has been slow. The pace will remain slow if the tendency of prices of agricultural commodities to fall, as witnessed in the recent years, persists because the profitability of crops, including HYVs, will also be reduced if the input prices do not decline.

(*b*) There appears to be lack of sufficient confidence in the new varieties among those who adopt them, as indicated by the relatively large portion of drop-outs and relatively large proportion of new entrants in the total number of adopters of HYVs in Gujarat in the first few years. This lack of confidence adversely affects the level of adoption of recommended inputs and practices, keeping the input expenditure low and thereby reducing the need and demand for credit.

(*c*) The scope of providing massive institutional credit does not seem large because of the low coverage of farmers by co-operative credit institutions; in particular the coverage of those sections of cultivators who would need

6. Selected Statistics on Co-operative Credit in India, Reserve Bank of India, Bombay, 1969.
7. See, A Decade of Steady Expansion, 1960-69, The Gujarat State Co-operative Bank Ltd., Ahmedabad, 1970.
8. See, Agricultural Financing by Commercial Banks, *Bank of India Bulletin*, Vol. 9, No. 4 April, 1971.

credit for cultivation of HYVs has been extremely low. Also, in view of the complexity of the problem of extending effective institutional credit support to needy small farmers, rapid spread of the HYV Programme among them cannot be expected.

(*d*) The benefit of other sources of institutional credit, specially commercial banks, seems to have gone to above-average farmers and to co-operatively well developed areas. Unless banks make determined efforts to provide credit to the needy areas and needy farmers, the demand situation in regard to such credit would not improve markedly.

SHORT-TERM CREDIT REQUIREMENTS AT THE END OF THE FOURTH PLAN, 1973-74

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The Rural Credit Survey conducted by the Reserve Bank of India in 1950-51 estimated the annual borrowings of cultivators for short, medium and long-term purposes at Rs. 750 crores. This comprised loans to the extent of 42 per cent for agriculture, 47 per cent for consumption purposes, about 5 per cent for non-farm business and 6 per cent for miscellaneous purposes.

Indian agriculture has since then undergone a revolution. The size of agricultural finance required has increased appreciably. A number of exercises has been made from time to time by various institutions with regard to the requirements of agricultural credit (Table I). Most of the earlier calculations were based on certain assumed norms such as the requirements for area under high-yielding varieties programme and other irrigated areas, etc. An answer to the problem can also be found on the basis of:

(*a*) The ratio of total borrowings for all purposes, farm as well as non-farm to national income from agriculture, according to the Rural Debt and Investment Survey, 1961-62.

(*b*) Total borrowings for farm expenses per acre according to the 1961-62 survey.

(*c*) Expenditure on various inputs as well as other household expenses.

* This represents the personal views of the author.