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SOME REFLECTIONS ON THE USE AND FORMATION OF CAPITAL ON FARMS

R. RAMANNA

*Professor of Agricultural Economics
University of Agricultural Sciences
Hebbal, Bangalore*

AND

T. P. S. CHAUDHARI

*Director (Economics)
National Institute of Community Development, Hyderabad*

This paper deals with the use and formation of capital on farms and tries to illustrate somewhat specifically from studies made with reference to selected commercial and subsistence-oriented farms in the neighbourhood of Bangalore city.

Capital formation in any society in the ultimate analysis is the product of increased production and it implies that not all the increased production is used up for immediate consumption but the society "directs a part of it to the making of capital goods." As Nurkse points out, the term is used to include investment in skills, education and health—a very important form of investment.¹ The U. N. paper on Concepts and Definitions of Capital Formation² observed that, fixed capital formation of enterprise is "the expenditure for machinery, equipment, buildings and other constructional works . . . Measured in this fashion capital formation is related to increase in the production capacity of enterprises." Capital formation in agriculture in the main takes place by capital investment in this sector. For example, expenditure on the development or improvement of irrigation resources would result in greater utilization of the resource which did not exist before or which was not fully utilized.

As the U. N. paper points out, capital formation could be measured at any of the several stages in the process, e.g., the accumulation of funds, expenditure of funds, or the production of capital goods. In an under-developed economy presumably, the first process in capital formation would be an increase in the level of productivity. Capital formation is a function of productivity which, in turn, is a function of capital investment. The main obstacle to capital formation is the additional amount of capital required. It takes money to make money. In so far as farming is concerned, the use of additional amounts of money may help to generate higher incomes and thus contribute to capital formation only if combined with newer farm technology. Venkataram and Ramanna³ have shown from a study of 15 unirrigated jowar growing farms in Dharwar that the net return per rupee of investment was Rs. 1.73 in the case of local jowar while it was Rs. 2.07 in the case of the hybrid variety. Also, the cost of production per quintal of local jowar was Rs. 31.58 as against Rs. 22.83 in the case of the hybrid. (Per acre total

1. Ragnar Nurkse: Problems of Capital Formation in Underdeveloped Countries, Basil Blackwell, Oxford, 1957, p. 2.

2. United Nations: Concepts and Definitions of Capital Formation, 1953, p. 7.

3. J. V. Venkataram and R. Ramanna, "Economic Aspects of High-Yielding Crops—Hybrid Jowar," *Indian Journal of Agricultural Economics*, Vol. XXIII, No. 4, October-December, 1968, p. 135.

costs were Rs. 132.65 and Rs. 263.65 respectively and the net returns were Rs. 228.95 and Rs. 545.10 respectively.) Ramanna and his co-workers⁴ have shown from their study of 131 hybrid maize farmers in Bangalore district that the net return for each rupee of use in maize was Re. 2.36 as against Re. 0.99 from potatoes (the total costs of cultivation per acre were Rs. 772.87 and Rs. 1,823.87 respectively).

In a recent study dealing with the economics of high-yielding varieties of paddy in the Intensive Agricultural District Programme (IADP), Sambalpur, Tripathy and Samal⁵ found that the average gross revenue per acre from the traditional varieties amounted to Rs. 427.72 leaving a net return per acre of Rs. 96.02, whereas the corresponding figures for the high-yielding varieties were Rs. 830.87 and Rs. 377.38 respectively. It is thus clear that the use of additional working capital combined with new crops and new farm technology results in increased return and hence could contribute to capital formation.

Besides the use of additional capital, a fuller use of the available farm resources can also contribute to capital formation in Indian agriculture. The present paper is an attempt to investigate how far additional wealth could be created and hence capital formation made possible on subsistence and commercial-oriented farms in Bangalore district and to estimate the initial capital requirement to initiate the process of capital formation. It is assumed that in this process, at least in the early stages, the additional wealth generated is not used up for conspicuous consumption, but rather for reinvestment in the farm enterprises themselves. Hence, the initial capital in this study represents the working capital requirements for the first season crops (which are meant for sale) and the sale proceeds from these crops would be utilized for production expenditures for the crops that follow in the sequence. Thus the additional wealth generated could be accumulated to meet capital formation requirements.

SAMPLE AND THE DATA

Data for this study were obtained from the records of the Farm Management Research Centre, Hebbal (1959-60 to 1961-62) and through personal interviews with the selected farmers. From the sample of 106 farmers of the Centre's study, five farmers from each of the subsistence and commercial groups were selected using the Spearman's rank correlation coefficient. Four criteria, namely, gross farm income, farm cash expenses, size of the farm and family size were used in ranking the farmers. Since there was a high degree of concordance between gross income and farm size and between gross income and cash expenses, gross income and family size were finally used as the criteria and farmers were ranked using these criteria. The top five and the bottom five farms by this ranking have been selected for the present study.

MATERIALS AND METHODS

Tables I and II give an indication of the resource situation on the selected farms.

4. Ramanna, *et. al.* : Economics of Producing Hybrid Maize in Bangalore District (unpublished).

5. R. N. Tripathy and B. B. Samal : Economics of HYV of Paddy in the IADP Areas in Sambalpur (unpublished manuscript).

TABLE I—SIZE OF FARMS AND AREA IRRIGATED BY DIFFERENT SOURCES ON THE SAMPLE FARMS

(in acres)

Farmer No.				Dry land	Garden (well irrigated)	Wet land (tank irrigated)	Net farm size	Gross cropped area
Subsistence group								
S 1	..	..	..	2.50	1.20	0.60	4.30	4.85
S 2	..	..	..	3.825	0.20	0.225	4.25	4.45
S 3	..	..	..	2.25	—	0.25	2.50	2.50
S 4	..	..	..	1.50	—	0.25	1.75	1.75
S 5	..	..	..	3.00	—	—	3.00	3.00
Average	..	..	..	2.615	0.28	0.265	3.16	3.31
Commercial group								
C 6	..	..	..	21.20	1.85	3.375	26.425	30.80
C 7	..	..	..	6.60	2.75	0.475	9.825	11.425
C 8	..	..	..	9.15	2.325	4.00	15.475	19.100
C 9	..	..	..	7.575	1.425	0.70	9.700	11.125
C 10	..	..	..	13.275	1.800	—	15.075	16.875
Average	..	..	..	11.560	2.030	1.710	15.300	17.865

TABLE II—FIXED CAPITAL INVESTMENT ON THE SAMPLE FARMS

(in Rs.)

Farmer No.		Land	Cattle and store shed	Implements	Wells	Irrigation equipment	Work stock	Milch and other animals	Total
S 1	..	5,630	600	84	300	40	340	140	7,134
S 2	..	2,680	200	49	800	40	350	450	4,569
S 3	..	5,000	—	37	—	—	400	350	5,787
S 4	..	3,500	—	9	—	—	450	145	4,104
S 5	..	4,875	—	45	—	—	—	175	5,094
Average		4,337	—	44	—	—	308	252	5,338
C 6	..	44,900	2,700	1,687	1,750	1,150	2,100	590	54,877
C 7	..	11,650	—	297	2,500	54	1,000	25	15,526
C 8	..	23,620	—	322	5,475	350	1,000	412	31,179
C 9	..	27,865	—	269	7,700	2,248	1,140	350	39,572
C 10	..	21,000	4,500	380	2,250	1,210	1,000	130	30,470
Average		25,807	—	591	3,935	1,002	1,248	301	34,325

It is clear that over 83 per cent of the total investment in the case of the subsistence group and 75 per cent in the case of the commercial group was in land. Only two farmers in the subsistence group had irrigation wells. The commercial farmers invested nearly 15.5 per cent in irrigation wells and equipment.

The Linear Programming technique was used in developing optimum plans for these farmers with and without additional capital use. Optimal plans were worked for current and recommended farm technology. Thus four plans were worked out for each farmer. The input-output coefficients for the current farm technology were based on the averages for the respective categories of farmers. Coefficients for the recommended technology were developed with reference to the technical literature available and in consultation with local knowledgeable agronomists and extension workers.

RESULTS AND DISCUSSION

The commercial farmers had over 30 different crop combinations on their garden land with microscopic averages allotted to some crops and potato figured prominently in their crop pattern while the two farmers in the subsistence group who owned garden land practised only 7 different crop combination in which potato was conspicuously absent. In both the cases, the garden land was inefficiently used. As against a maximum achievable figure of 300 per cent intensity, the crop intensity in the case of the subsistence group (2 farms) was 153.6 per cent as against 192.5 in the case of the commercial group. It is thus clear that there is every possibility of utilizing this potential resource to earn more to put into capital forming activity for further increasing productivity on these farms. Programming for these farmers at the average level of technology currently in evidence raised the cropping intensity on garden lands to 200 per cent on subsistence and 292 per cent on the commercial farms. No scope seemed to obtain for increasing the cropping intensity on the unirrigated land and the wet land.

The crop combinations used in programming for the recommended practice were so designed as to make a complete utilization of the garden land in all the three seasons and thus achieve a 300 per cent crop intensity. On the dry and wet lands activities with different levels of fertilization for the crops were included. The optimum plan for the recommended practices tended to favour fewer crops and crop combinations. The important crop combinations for the garden land were, maize—cabbage—potato and tomato—potato—garlic, representing 40.96 and 52.04 per cent respectively of the total garden land for the commercial group and 7.4 and 37.5 per cent for the subsistence group under limited capital situations. When restriction was relaxed, permitting borrowing of capital, the tomato—potato—garlic pattern was dropped in favour of the maize—cabbage—potato and maize—potato—peas combinations. Besides, on the dry and wet lands, activities at the highest levels of fertilization entered into the plan. It may be noted that under limited capital situations programming resulted in land disposal of about 0.5 acre garden land (actually 0.494 acre) of farmer C 10 operating at current level of technology and 0.013 acre garden while operating under recommended technology. Similarly, programming under recommended technology with limited capital suggested disposal of 2.50 acres of dry, 0.60 acre of garden and 0.04 acre of wet land for farmer S 1, 0.928 acre of dry land for S 3, 0.50 acre for S 4, 0.765 acre for S 5 and 4.975

acres for C 8. This shows that capital serves in a limitational capacity in the use of recommended technology on farms, and suggests the need for provision of additional capital to farmers to operate at optimum levels under recommended technological conditions.

Optimum plans worked out under the two technological conditions and at the two capital situations indicated that the net incomes could be increased substantially by implementing the farm plans. Table III shows the changes in incomes expected under the different planning situations. Income for the unlimited capital situation under the current farm technology for the subsistence group was the same as for the limited capital situation since capital did not serve in a limitational capacity for this group at their current level of technology. However under recommended technology, capital acted in a severe restriction capacity. Excepting in the case of farmer S 2, a part of the land of this group of farmers went to disposal. In spite of this, there was quite a substantial increase in incomes, on an average of 161.90 per cent, over their present income levels (Table III). When adequate capital (Rs. 338.40 per farmer) was supplied, the mean present plan income of Rs. 539.60 increased to Rs. 2,082.20, an increase of 285.67 per cent.

TABLE III—NET INCOMES IN THE PRESENT AND OPTIONAL PLANS

(in Rs.)

Farmer No.	Present income (non-programmed)	Current practice optional plans				Recommended practice optional plans			
		Limited capital		Unlimited capital		Limited capital		Unlimited capital	
		Income	Percentage increase over present income	Income	Percentage increase over present income	Income	Percentage increase over present income	Income	Percentage increase over present income
Subsistence group									
S 1	839	1,125*	34.10	—	—	3,967	372.82	5,996	614.66
S 2	708	708**	—	—	—	1,174	150.56	2,070	192.37
S 3	393	393	—	—	—	462	60.80	813	104.27
S 4	276	276	—	—	—	330	19.57	603	118.48
S 5	482	482	—	—	—	536	11.23	929	92.74
Mean	539.60	596.80	—	—	—	1,414.80	161.90	2,082.20	285.67
σ	244.70	—	—	—	—	1,541.10	—	2,260.94	—
Commercial group									
C 6	9,809	11,397†	16.19	11,397	16.19	15,502	58.04	16,969	75.00
C 7	4,405	7,944	80.34	8,181	85.72	12,112	174.96	13,027	195.73
C 8	7,546	8,338	10.50	9,012	20.49	11,261	49.23	13,556	79.45
C 9	4,433	5,563	28.39	5,643	30.25	7,111	64.11	8,485	95.82
C 10	5,854	6,534	11.62	7,146	22.07	9,132	55.00	10,610	81.24
Mean	6,489.40	7,955.20	24.50	8,275.90	29.83	11,023.60	72.53	12,529.40	96.10
σ	2,291.00	2,221.20	—	2,150.56	—	1,418.00	—	1,433.00	—

* Rs. 11.33 of capital remained in disposal.

** Rs. 119.20 capital remained in disposal.

† Rs. 111.75 of capital remained in disposal.

In the case of farmers S 1 and S 2, the expected increases in income were of the order of 614.66 per cent and 192.37 per cent for an additional initial capital of Rs. 669 plus Rs. 186 in wages and Rs. 441 plus Rs. 53 in wages respectively (Table IV). The need for initial capital use was high on these two farms in the subsistence group as they had garden land where they could produce capital intensive crops and hence their net incomes were also quite high.

TABLE IV—INITIAL CAPITAL USED IN THE DIFFERENT PLANS—SUBSISTENCE AND COMMERCIAL SITUATIONS

Farmer No.		Present Plan	Current practice		Recommended practice	
			Limited capital	Unlimited capital	Limited capital	Unlimited capital
S 1	..	169 (36)	158 (38)	158 (38)	169 (42)	669 (186)
S 2	..	282 (15)	163 (16)	163 (13)	282 (43)	441 (53)
S 3	..	96 (5)	96 (5)	96 (5)	96 —	232 (26)
S 4	..	67 —	67 —	67 —	67 —	168 —
S 5	..	117 (9)	117 (9)	117 (9)	117 —	282 (41)
Average	..	146.20 (13)	120.20 (13.60)	120.20 (13.60)	146.20 (42.50)*	338.40 (61.20)
C 6	..	2,430 (425)	2,318 (410)	2,318 (410)	2,430 (598)	3,527 (782)
C 7	..	1,088 (114)	1,088 (272)	1,616 (204)	1,088 (322)	1,614 (464)
C 8	..	1,086 (88)	1,086 (104)	1,736 (92)	1,086 (182)	2,112 (512)
C 9	..	857 —	857 (37)	1,067 —	857 (124)	1,273 (181)
C 10	..	1,061 —	1,061 (17)	1,525 —	1,061 (89)	1,768 (191)
Average	..	1,304.40 (125.40)	1,282.00 (166.00)	1,652.40 (141.20)	1,304.40 (263.00)	2,058.40 (426.00)

*Average for the two farmers S1 and S2.

Figures in parenthesis indicate the initial wage requirements for the months from April to August.

The other three farmers in this group could produce only one crop and hence their initial capital requirement was also limited in relation to their total capital requirement and only in the case of the recommended practice unlimited capital plans, the need for additional capital use arose. This capital was required primarily to buy better quality seeds, fertilizers and plant protection materials and to pay wages for hired labour.

The average income (non-programmed) for the sample of five commercial farms was Rs. 6,389.40 (σ =Rs. 2,291), the individual incomes ranging from Rs. 4,405 to Rs. 9,809. In programming for these farmers without injection of any additional outside capital at the average technology current with them their estimated average income increased by Rs. 1,565.80 (+24.50 per cent). Addition of an average of Rs. 348 of initial capital plus Rs. 15.80 in wage payments increased the net income per farm by only Rs. 325.70 (a net increase of Re. 0.90 per rupee of additional capital use) and Rs. 5.19 per rupee of additional capital use over the non-programmed income. The increase in incomes in both the cases was statistically significant at 5 per cent level. However, the average net return under the recommended technological conditions increased to an estimated Rs. 11,023.60 (σ = Rs. 1,418), an increase of 72.53 per cent over the present plan incomes even without any additional capital use (significant at 1 per cent level: $t=5.073$). But when unlimited capital (to operate at optimum level) of Rs. 2,058.40 plus wages of Rs. 426 or Rs. 1,054.60 of additional initial capital including wages was made available, these commercial farms operating under recommended technological conditions could net an average return of Rs. 12,529.40 per farm (σ =Rs. 1,433), amounting to an increase of 96.10 per cent over their non-programmed incomes. This represents a net additional return of Rs. 5.82 for each additional rupee used. This analysis lead us to the conclusion that the use of additional initial capital in farming is more remunerative if farmers could practise recommended technology. Putting it somewhat differently, the adoption of recommended practices necessitates the use of additional capital to operate at a high level of efficiency.

A comparison of the rates of returns for the limited capital situations under current farm technology with the estimated rates of returns from the successive plans reveals interesting information which holds promise for making investment decisions by farmers. Even if the rate of interest on borrowed capital ranged from 12 to 24 or even 30 per cent as is common with some private lenders, it still pays the farmers to make additions to their working capital although they are operating at their average technology level. Again, the increase in net income in the recommended practice limited capital plan over the non-programmed income serves as a pointer to the extension agency to make intensified efforts to popularise the recommended practice and growing of new crops like hybrid maize and also persuade farmers to plan their farms for fuller use of their resources. This step contributes to creation of additional wealth which could be diverted to capital forming activity.

Table V gives a comparative picture of the initial and total capital (inclusive of total wages) required and the average net returns in the different plans for the five commercial farms. The initial capital required to earn Rs. 100 of net return was Rs. 20.70 in the present plan. For the current practice alternate plans it was estimated at Rs. 16.10 and Rs. 20 respectively for the limited and unlimited capital situations. In respect of the recommended practices, this reduced to Rs. 11.85 and Rs. 16.44 respectively for the two capital situations. Thus, the capital needs for starting on the year's operation and keep it going are relatively less for the optimal plans than for the present plan. This, however, does not mean that absolute capital requirements decrease.

The average initial capital required to operate at optimum levels are obviously higher than the actual use by farmers, being Rs. 1,651 per farm operating at current

technology and Rs. 2,059 per farm operating at recommended technology (as against Rs. 1,305 actually used).

TABLE V—CAPITAL USE AND NET RETURNS IN THE PLANS—COMMERCIAL-ORIENTED FARM SITUATION

(in Rs.)						
	Present plan	Current practice		Recommended practice		
		Limited capital	Unlimited capital	Limited capital	Unlimited Capital	
Initial capital used	6,522	6,410	8,256	6 522	10,295	
Average initial capital ..	1,305	1,282	1,651	1,305	2,059	
Total capital inclusive of wages	11,595	15,599	17,612	18,752	22,722	
Average total capital	2,319	3,120	3,522	3,750	4,544	
Average total return per farmer	6,389·40	7,955·20	8,275·80	11,023·60	12,529·40	
Initial capital required to earn Rs. 100 net return ..	20·70	16·10	20·00	11·85	16·44	
Net return per rupee of total capital used	2·75	2·55	2·35	2·94	2·76	

The net return per rupee of total capital varied from a low of Rs. 2.35 in current practice limited capital plan to a high of Rs. 2.94 in the recommended practice limited capital plan. The recommended practice represents an improved technology and a higher production function and hence net returns per rupee of total capital used under the two capital situations were higher than under the corresponding capital situation in the current practice. Also under both the technologies, the net return per rupee of total capital used decreased as more capital was used, indicating a tendency for the marginal productivity of capital to decrease.

It is evident from the foregoing discussion that high potential exists for increasing income specially on the commercially oriented farms. In the case of the subsistence-oriented group of farms, because of the nature of the land resource owned, although the average percentage increases in incomes in the different plans were quite high, statistical tests applied did not indicate these increases to be significant. However, taking only the three farmers S 3, S 4, and S 5 who owned similar types of land (dry and wet land), the differences in income were found to be statistically significant. In can, therefore, be inferred that high potentialities exist on both the categories of farms for increasing incomes through the adoption of recommended practices combined with additional capital use.

A careful analysis of income originating from the three land categories is more revealing in indicating the nature of the future lines of activity in regard to capital formation.

TABLE VI—TOTAL RETURNS AND INITIAL CAPITAL REQUIRED BY CLASS OF LAND FOR THE TWO CATEGORIES OF FARMS*

(in Rs.)

				Present plan	Current practice plans		Recommended practice plans	
					Limited capital	Unlimited capital	Limited capital	Unlimited capital
Commercial group								
Returns								
Dry land	..	..	..	13,269	13,314	13,990	13,988	19,113
Wet land	..	..	..	4,125	4,125	4,125	4,354	5,873
Garden land	..	..	..	16,704	25,732	27,022	40,867	42,476
Total returns	..	..	..	34,098	43,171	45,137	59,209	67,462
Capital								
Dry land	..	..	..	3,029	2,962	3,153	3,060	5,072
Wet land	..	..	..	449	453	452	684	1,681
Garden land	..	..	..	3,044	2,995	4,651	2,778	3,541
Total capital	..	..	..	6,522	6,410	8,256	6,522	10,294
Subsistence group								
Returns								
Dry land	..	..	..	2,114	2,141	—	2,052	4,266
Wet land	..	..	..	159	159	—	289	622
Garden land	..	..	..	630	906	—	5,052	6,231
Total returns	..	..	..	2,903	3,206	—	7,393	11,119
Capital								
Dry land	..	..	..	632	509	—	470	1,222
Wet land	..	..	..	50	44	—	40	140
Garden land	..	..	..	47	47	—	220	430
Total capital	..	..	..	729	600	—	730	1,792

* Note : The returns are inclusive of wages.

There is a general tendency for the incomes originating on both types of land in the successive plans either to remain stationary at their present levels or in some cases to decrease. The increase in some cases is marginal. However, in the case of the recommended practice unlimited capital, there was a good increase in the programmed incomes. In the case of the subsistence group however, the returns from dry land for the recommended practice unlimited capital plan more than doubled by doubling the capital use on these farms. Similarly, on wet lands also for these farms a near three fold increase in capital use led to an almost four fold increase in returns. This suggests the greater productivity of capital on this group of farmers which may be categorized as "small farmers" and indicates the need for provision of credit facilities for them.

An examination of the returns for the commercial group from garden land indicates that it provides the main source of income accounting for over 49 to 72 per cent of the total incomes. But the initial capital requirement was not high; in most cases it was less than what was required for dry land cultivation. A little over 16 per cent addition in initial capital in the recommended practice unlimited capital plan over the present plan led to over 154 per cent increase in incomes from the garden land. In the case of the two subsistence farmers S1 and S2 who owned some garden land, the increase in income from this land was nearly ten times more in the recommended practice unlimited capital plan than in the present plan. The capital requirement also increased by over nine times. This indicates that these "small farmers" because of severe capital restraints could not operate their farms at optimum levels thus pointing to the need for special type of effort combining credit with extension work. Because of the low level of capital use on this category of farms even a small incremental capital used can bring about a marked increase in the productivity on these farms as the marginal productivity of capital on these "capital starved" farms is quite high. Garden land is the potential source of income and also employment on farms. Wherever possible, these small farmers may be encouraged and helped to sink wells and convert part of their dry land into vegetable growing (garden) lands. In fact, the programme of extending subsidies for sinking wells ought to be vigorously pursued as a part of the programme of capital formation in agriculture.

It is but fair to point out that, generally speaking, investment in durable assets which contribute directly to production naturally influences production, productivity and income on farms. Observations on farms selected in the package districts and corresponding non-package districts in the States of Andhra Pradesh, Orissa and Punjab⁶ showed non-IADP < IADP. Except for Punjab, investment in fixed assets including land, draft cattle, implements, etc., tended to rise with the increase in the area of the holding. When land value was excluded, differences in the average value of assets per holding were found to be significant as between IADP and non-IADP in Orissa and Punjab alone. When the value of assets was standardized in per acre terms, the superiority of the IADP farms over non-IADP no longer remained true, except for the State of Punjab. This seems to be so because of the preponderance of land assets in Andhra Pradesh and Orissa farms. Also the picture of rising investments with rise in the area of holding was no longer

6. T. P. S. Chawdhari, *et al.* : Resource Use and Productivity on Farms—A Comparative Study of Intensive and Non-intensive Agriculture Area, National Institute of Community Development, Hyderabad, 1969.

true. In both Andhra Pradesh and Orissa, well over 83 to 94 per cent of total assets on farms seems to consist of land as against the corresponding fraction of 84 to 90 per cent in the Punjab farms.

However, in respect of the difference between non-intensive and intensive agriculture, the revealing picture is found in the balance maintained between draft animal and implements parts of investment. With the value of draft cattle taken as unity, the investment in machinery from non-IDAP to IADP to FRB⁷ is 1.3, 2.3 and 4 in Punjab, 0.8, 2.3 and 0.02 in Andhra Pradesh and 0.3, 0.2 and 0.6 in Orissa.¹ In other words, in the intensive agriculture situation in Punjab and to some extent also in Andhra Pradesh, mechanical power devices are coming into increasing use for supplementing bullock power. To the extent that farm planning supplemented with credit supply has contributed to the situation, this provides a pointer for future extension activities. /

In this particular study in all the three States, the question of credit use and its contribution to assets was examined. / In contrast with the non-IADP situation, in IADP, borrowing was noticed more often even in larger holdings. In respect of amount of debt per holding, the intensive agricultural programme in Punjab seems to have helped to extend credit facilities more liberally to borrowers in all size-groups unlike in Andhra Pradesh and Orissa where only the larger sized holdings seem to be the larger beneficiaries. / Further, with the exception of Punjab, the proportion of all holdings reporting to be in debt is 30 to 40 per cent higher in IADP than in non-IADP, pointing to the contribution which increased credit supply has to make in early stages of the intensive agriculture programme.

When we consider credit as a percentage of total assets on the farms, we find that farmers in intensive agricultural programme areas in Punjab and Andhra Pradesh have apparently reached a stage where they depend to a large extent on their own resources for financing production, while in Orissa this stage has yet to come. Perhaps this could be taken to imply that technological and economic impact of IADP on this score seem to be much stronger in Punjab and Andhra Pradesh as compared to Orissa.

CONCLUSION

The foregoing discussion seems to reveal the possibilities of increasing production and productivity on farms by augmenting working capital supply in the first instance and building up productive farm assets in due course. These possibilities are indeed quite substantial when the current levels of technology are substituted by more modern technology, such as is gradually coming into vogue in the package districts. The potential for augmented capital use is there on all types of farms but it is remarkably more so on farms which can raise more cash crops and are commercially oriented. A further pointer obtained in the course of this study is the remarkable productivity of working capital on capital starved small or subsistence-oriented farms, indicating the special credit needs of farms under this category.

7. By FRB farms are meant those farms in IAD areas where much more intensive type of farm planning is being attempted by the extension agency.