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INVESTMENT ON FARM AND CAPITAL FORMATION IN AGRICULTURE WITH PARTICULAR REFERENCE TO BIHAR

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The basic data for the study have been obtained on the basis of an investigation conducted during the agricultural year 1963-64 in six villages, namely, (1) Damodarpur and Bithouli in the district of Muzaffarpur, North Bihar, (2) Mainpura and Deepnagar in the district of Patna, South Bihar and (3) Hemantpur and Vishnugarh in the district of Hazaribagh, Chotanagpur. The basic information has been obtained from 18 holdings in each village making a total of 108 holdings. In each village 6 holdings were selected from each of the three size-groups, i.e., small, medium and large corresponding to size-groups below 2 acres, 2 to 5 acres and 5 acres and above respectively.

Objectives

An attempt has been made in this paper to throw light in respect of the following aspects : (i) to determine the pattern of investment on farms, (ii) sources of farm investment, and (iii) methods of increasing farm investment.

PATTERN OF INVESTMENT

Investment per Farm¹

The investment includes the purchase of land, purchase of livestock, purchase of implements, machinery and equipments, construction and repair of farm house, bunding and other land improvement including land reclamation, development of irrigation resources and laying of orchards and plantation. Wherever the family labour was employed, its imputed value at daily wage rate has also been added to money expenditure while determining the investment. Similarly, the value of raw material, if any, supplied by the farmers, at current market rate has been taken into account in determining the investment. Table I indicates the investment per farm.

TABLE I—INVESTMENT PER FARM BY SIZE OF HOLDINGS

Size-groups (in acres)	Average size of holdings	In Rupees		
		Investment	Disinvest- ment	Net invest- ment
Below 2	1.42	178	101	77
2 to 5	3.44	207	92	115
5 and above	10.59	550	157	393
All holdings	5.09	311	116	195

* The views expressed are purely in personal capacity of the author.

1. The repairs which were not of annual recurrent type and resulted in increasing life and in greater utilisation of assets have been considered as investment.

The farmers in the large size-group of holdings have made larger investments but the increase in investment is not proportional to the increase in the size of holdings. The total investments varied between Rs. 178 and Rs. 550, the average investment per farm being Rs. 311. The investment per holding in the large size-group of holdings was about three times more than that in the small size-group of holdings, while the increase in investment in the medium size-group of holdings was only 12 per cent when compared to the small size-group of holdings. The disinvestment was the lowest in the medium size-group, being Rs. 92 per holding, while it was the highest in the large size-group of holdings and amounted to Rs. 157 per holding. On an average, the disinvestment amounted to Rs. 116 per holding. However the net investment tended to increase with the increase in the size of holdings. The increase in net investment also was not proportional to the increase in the size of holdings. The variation was between Rs. 77 and Rs. 393, the average net investment per holding being Rs. 195.

Investment per Acre

Table II gives data regarding per acre investment in the selected holdings.

TABLE II—INVESTMENT PER ACRE BY SIZE OF HOLDINGS

Size-groups (in acres)	Average size of holdings	In Rupees		
		Investment	Disinvest- ment	Net invest- ment
Below 2	1.42	125	71	54
2 to 5	3.44	60	27	33
5 and above	10.59	50	14	36
All holdings	5.09	61	23	38

Investment per acre tended to decrease with the increase in the size of holdings. It ranged from Rs. 125 to Rs. 50. On an average, it was Rs. 61 per acre. A similar tendency is exhibited by disinvestment which varied between Rs. 71 and Rs. 14, the average disinvestment per acre being Rs. 23. Consequently, the net investment was the highest being Rs. 54 per acre in the small size-group of holdings. The main reason of per acre net investment being higher in the small size-group than in the other two size-groups of holdings appears due to very high investment, being about twice on construction and repair of farm house. The investment on this item includes mostly family labour which is available in abundance on holdings in small size-group. The per acre net investment in medium and large size-group of holdings was Rs. 33 and Rs. 36 respectively and averaged Rs. 38 per acre.

DISTRIBUTION OF INVESTMENT

Table III shows the distribution of investment under different heads.

It will be observed from Table III that in case of the small size-group of holdings, construction and repair of farm house was responsible for the largest investment and accounted for 43.2 per cent of the total investment. It was followed by

TABLE III—DISTRIBUTION OF INVESTMENT UNDER DIFFERENT HEADS BY SIZE OF HOLDINGS
(in Rupees)

Items	Size-groups (in acres)							
	Below 2		2 to 5		5 and above		All holdings	
	Investment	Per cent to total	Investment	Per cent to total	Investment	Per cent to total	Investment	Per cent to total
Purchase of land ..	48	27.0	24	11.3	214	39.0	95	30.6
Purchase of livestock ..	34	19.2	134	64.8	241	43.9	136	43.6
Purchase of implements, machinery and equipments ..	5	2.8	8	3.8	10	1.8	8	2.6
Construction and repair of farm house ..	77	43.2	37	17.9	44	8.0	52	16.7
Bunding and other land improvements including land reclamation ..	14	7.8	1	0.5	27	4.9	14	4.5
Development of irrigation resources ..	—	—	3	1.7	6	1.1	3	1.0
Laying of orchards and plantation ..	—	—	*	—	8	1.3	3	1.0
Total ..	178	100.0	207	100.0	550	100.0	311	100.0

* Less than one.

investment on land and livestock accounting for 27 and 19.2 per cent respectively. In case of holdings in the medium size-group, livestock alone accounted for about two-thirds of the total investment followed by investments on construction and repair of farm house and on land accounting for 17.9 and 11.3 per cent respectively. In case of holdings in the highest size-group, investment on livestock and land alone accounted for more than four-fifth of the total investment. On the whole, investment on livestock alone accounted for 43.6 per cent of the total investment followed by investment on land and construction and repair of farm house constituting 30.6 and 16.7 per cent respectively. It is worthwhile to mention that because of sales of livestock on a large scale, the investment on livestock does not give a true picture of investment as will be evident from Table IV relating to disinvestment.

TABLE IV—DISTRIBUTION OF DISINVESTMENT UNDER DIFFERENT HEADS BY SIZE OF HOLDINGS
(in Rupees)

Items	Size-groups (in acres)							
	Below 2		2 to 5		5 and above		All holdings	
	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total
Sale of land ..	58	57.4	—	—	—	—	19	16.4
Sale of livestock ..	43	42.6	92	100.0	157	100.0	97	83.6
Total ..	101	100.0	92	100.0	157	100.0	116	100.0

It is evident from Table IV that except the holdings in the size-group below 2 acres where the land was sold in two cases—in one case to repay the old debt and in the other to repurchase the land—sale of livestock was the only item of disinvestment in case of medium and large size-group of holdings. On the whole, the disinvestment on account of livestock alone accounted for more than four-fifth of the total disinvestment.

TABLE V—DISTRIBUTION OF NET INVESTMENT UNDER DIFFERENT HEADS
BY SIZE OF HOLDINGS

(in Rupees)

Items	Size-groups (in acres)			All holdings	
	Below 2	2 to 5	5 and above	Net investment	Per cent to total
Purchase of land	—10	24	214	76	39.2
Purchase of livestock	9	42	84	39	20.0
Purchase of implements, machinery and equipments ..	5	8	10	8	4.1
Construction and repair of farm house	77	37	44	52	26.5
Bunding and other land improvements including land reclamation	14	1	27	14	7.2
Development of irrigation resources	—	3	6	3	1.5
Laying of orchards and plantation	—	*	8	3	1.5
Total ..	77	115	393	195	100.0

* Less than one

It may be seen from Table V that net investment on land and livestock tended to increase with an increase in the size of holdings from being negative by Rs. 10 and Rs. 9 respectively in small size-group of holdings to Rs. 24 and Rs. 42 on holdings in the medium size-group and Rs. 214 and Rs. 84 in large size-group of holdings. On an average, the net investment on land and livestock was Rs. 76 and Rs. 39 per farm respectively. Construction and repair of farm house was another major item of net investment accounting for Rs. 77, Rs. 37 and Rs. 44 per farm on holdings below 2 acres, 2 to 5 acres and 5 acres and above respectively. On an average, it amounted to Rs. 52 per farm. On the whole, land, construction and repair of farm house and livestock were the main items of investment accounting for 39.2 per cent, 26.5 per cent and 20 per cent respectively to the total net investment. The other items of investment were bunding and land improvements and purchase of implements, etc., accounting for 7.2 and 4.1 per cent respectively of the total investment. The investment on the remaining items was negligible being less than 2 per cent of the total investment.

Region-wise Distribution of Investment

The Bihar State may be conveniently divided into three natural agricultural tracts, viz., North Bihar, South Bihar and Chotanagpur. The North and South Bihar regions represent the North and South Gangetic plains, while the Chotanagpur plateau region abounds in hills, mountains and forests and has an altitude ranging from 1,000 to 4,000 feet. The alluvial soils of North Bihar are quite fertile capable of holding sufficient moisture for the growing of *rabi* crops and sugarcane under unirrigated conditions. Consequently, North Bihar is considered the most fertile region of the State. In South Bihar though irrigation facilities are available to about 40 per cent of the cultivated area, there is great inadequacy of irrigation water during summer. This factor led to the reduction in the percentage area under sugarcane and other cash crops in comparison to North Bihar. Hence on the whole the region is considered less fertile than the North Bihar. In Chotanagpur, the *uplands* or *Tanrs* and *intermediatory lands* or *Chauras* form the major portion of the cultivated land which do not retain any moisture after the rainy season is over and only monsoon crops are grown in this region. The available irrigation facilities being negligible are mainly dependent on rainfall. Hence agriculture is not so well developed in this region. All these characteristic features peculiar to different agricultural regions of Bihar appear to have played an important role in the determination of investment for capital formation in different regions of the State. Table VI shows the per holding investment in different regions of the State.

TABLE VI—DISTRIBUTION OF INVESTMENT PER FARM UNDER VARIOUS HEADS IN DIFFERENT REGIONS OF BIHAR

Items	(in Rupees)							
	North Bihar		South Bihar		Chotanagpur		Average	
	Invest- ment	Per cent to total	Invest- ment	Per cent to total	Invest- ment	Per cent to total	Invest- ment	Per cent to total
Purchase of land ..	86	20.3	139	42.2	61	33.5	95	30.6
Purchase of livestock ..	237	56.0	139	42.2	32	17.6	136	43.6
Purchase of implements, etc. ..	11	2.6	7	2.2	4	2.2	8	2.6
Construction and repair of farm house ..	89	21.1	34	10.3	35	19.2	52	16.7
Bunding and other land improvements including land reclamation ..	—	—	7	2.2	35	19.2	14	4.5
Development of irrigation resources ..	—	—	—	—	9	5.0	3	1.0
Laying of orchards and plantation ..	*	—	3	0.9	6	3.3	3	1.0
Total ..	423	100.0	329	100.0	182	100.0	311	100.0

* Less than one.

It will be observed that investment per holding was more than twice in North Bihar as compared to Chotanagpur, while it was 28 per cent higher in North Bihar than that in South Bihar. In North Bihar purchase of livestock alone was responsible for 56 per cent of the total investment. Construction and repair of farm house, purchase of land and purchase of implements were the other items of investment in North Bihar accounting for 21.1 per cent, 20.3 per cent and 2.6 per cent respectively of the total investment in the region. In South Bihar purchase of land and the purchase of livestock each accounted for 42.2 per cent of the total investment. Construction and repair of farm house accounted for 10.3 per cent of the total investment. In the remaining items the investment was negligible being less than 3 per cent. In Chotanagpur, besides the purchase of land which was responsible for the maximum investment of 33.5 per cent, the noteworthy feature of the investment is on account of construction and repair of farm house and bunding and other land improvements involving the use of human labour probably supplied by family labour. The investment on account of these two items constituted 38.4 per cent of the total investment, each contributing 50 per cent of it. Development of irrigation resources and laying of orchards accounted for 5 and 3.3 per cent respectively of the total investment. It is worthwhile to mention that only in Chotanagpur region larger investments have been made for land improvements and development of irrigation resources. No investments have been made on these items in North Bihar while in South Bihar only 2.2 per cent of the total investment has been incurred on land improvements. Investment on laying of orchards was also negligible in North Bihar and South Bihar, while in Chotanagpur it formed 3.4 per cent of total investment.

Disinvestment

The sale of livestock is the major item of disinvestment as is evident from Table VII.

TABLE VII—DISTRIBUTION OF DISINVESTMENT PER FARM UNDER VARIOUS HEADS IN DIFFERENT REGIONS OF BIHAR

Items	(in Rupees)							
	North Bihar		South Bihar		Chotanagpur		Average	
	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total
Sale of land	..	—	58	41.7	—	—	19	16.4
Sale of livestock	..	180	81	58.3	31	100.0	97	83.6
Total	..	180	139	100.0	31	100.0	116	100.0

Land was sold in two cases only—in one case to repay the old debt while in another to repurchase the land—in Deepnagar village of South Bihar. Besides, the only disinvestment was due to the sale of livestock.

Net Investment

Like total investment the net investment also has considerably been influenced by the agro-climatic conditions of the different regions of the State as will be observed from Table VIII.

TABLE VIII—DISTRIBUTION OF NET INVESTMENT PER FARM UNDER VARIOUS HEADS IN DIFFERENT REGIONS OF BIHAR

Items	(in Rupees)							
	North Bihar		South Bihar		Chotanagpur		Average	
	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total	Amount	Per cent to total
Purchase of land ..	86	35.5	81	42.6	61	40.4	76	39.2
Purchase of livestock ..	57	23.4	58	30.5	1	0.6	39	20.0
Purchase of implements, machinery and equipments, etc. ..	11	4.5	7	3.7	4	2.6	8	4.1
Construction and repair of farm house ..	89	36.6	34	18.0	35	23.2	52	26.5
Bunding and other land improvements including land reclamation ..	—	—	7	3.7	35	23.2	14	7.2
Development of irrigation resources ..	—	—	—	—	9	6.0	3	1.5
Laying of orchards and plantation ..	*	—	3	1.5	6	4.0	3	1.5
Total ..	243	100.0	190	100.0	151	100.0	195	100.0

* Less than one.

On the whole, North Bihar accounted for the highest net investment amounting to Rs. 243 per holding which is higher by 61 and 28 per cent respectively than the Chotanagpur and South Bihar regions. Practically, in all the three regions purchase of land constituted the main item of net investment ranging from 35.5 per cent in North Bihar to 42.6 per cent in South Bihar. In North Bihar, construction and repair of farm house and purchase of livestock were the other main items of investment constituting 36.6 and 23.4 per cent respectively of the total net investment. Besides purchase of land in South Bihar, purchase of livestock and construction and repair of farm house were the other two main items of net investment forming 30.5 and 18 per cent respectively of the total investment. In Chotanagpur next to the purchase of land, the other main items of investment were bunding and other land improvements and construction and repair of farm house, each accounting for 23.2 per cent of the total investment.

SOURCES OF INVESTMENT

The sources of obtaining the necessary amount for investment may include the followings :

A. Owned readily available sources: (i) Past savings and (ii) Current income.

The imputed value of family labour included in the investment has also been taken into consideration in determining the current income.

B. Sale of assets.

C. Borrowings: (i) Government agencies, (ii) Co-operative agencies, and (iii) Private agencies.

D. Other Sources: These include gifts, prizes, etc.

Table IX indicates the percentage contribution by different sources towards the total investment.

TABLE IX—PERCENTAGE CONTRIBUTION OF DIFFERENT SOURCES TO TOTAL INVESTMENT BY SIZE OF HOLDINGS

Sources	Size-groups (in acres)			
	Below 2	2 to 5	5 and above	Average
A. Owned readily available sources:				
(i) Past savings	17.1	17.1	33.8	27.1
(ii) Current income	46.3	53.7	26.5	35.9
Total	63.4	70.8	60.3	63.0
B. Sale of assets	29.7	29.2	26.5	27.8
C. Borrowings	6.9	—	13.2	9.2
Total	100.0	100.0	100.0	100.0

It is evident from Table IX that past savings and current income were responsible for financing the major portion of investments amounting to about two-thirds of the total investment. The contribution by current income alone was 53.7 and 46.3 per cent in medium and small size-group of holdings respectively, while it was only 26.5 per cent on holdings in large size-group. The contribution by sale of assets towards the total investment formed about 29 per cent each in small and medium size-group of holdings and about 26.5 per cent in large size-group of holdings. On an average, it accounted for 27.8 per cent. On an average, borrowings accounted for 9.2 per cent of the total investments made. The contribution on account of borrowings towards total investment was 13.2 per cent in the large size-group of holdings, while it was 6.9 per cent in the small size-group of holdings. No borrowings were made in the medium size-group of holdings.

Region-wise Distribution of Sources of Investment

Table X shows the contribution of sources to total investment in different agricultural regions of the State.

TABLE X—PERCENTAGE CONTRIBUTION OF DIFFERENT SOURCES TO TOTAL INVESTMENT IN DIFFERENT REGIONS OF BIHAR

Sources			North Bihar	South Bihar	Chotanagpur	Average
A. Owned readily available sources :						
(i) Past savings	..	..	23.2	23.2	44.4	27.1
(ii) Current income	..	..	40.4	21.4	51.1	35.9
Total	..	..	63.6	44.6	95.5	63.0
B. Sale of assets	..	..	34.2	34.0	—	27.8
C. Borrowings	..	..	2.2	21.4	4.5	9.2
Total	..	..	100.0	100.0	100.0	100.0

Large variations have been observed in the percentage contribution by past savings and current income towards the total investment made in different regions of the State. The contribution by this source of investment was maximum in Chotanagpur followed by North Bihar constituting 95.5 and 63.6 per cent of the total investment respectively, while it was only 44.6 per cent in South Bihar region. No sales of assets were made for the purpose of making investments in Chotanagpur, while this source of investment accounted for about 34 per cent each in the other two regions of the State. Borrowings constituted less than 5 per cent of the total investment in North Bihar and Chotanagpur regions, while in case of South Bihar 21.4 per cent of the total investment was financed by borrowings.

MEASURES OF INCREASING INVESTMENT

The following measures may be adopted to increase the farm investments.

(1) *To improve employment situations* : Labour input is in excess in rural areas. It is either idle or under-employed. This unproductive surplus labour may be utilised for productive purposes through the construction of irrigation channel, excavation of tanks, etc., and by setting up industries in rural areas. It will obviously contribute to the mobility of productive resources. Progressive expansion of such constructive work will accentuate the change of the nature of land utilisation demanding greater capital intensity.

(2) *Increasing savings* : As has been mentioned earlier, savings alone contribute about two-thirds of the total investment in agriculture. In fact saving depends partly upon the desire of the people to improve their economic conditions. It is, therefore, essential that the outlook of the people for improvement should be encouraged which in turn will create savings. The creation of surplus through increased output provides the pool for saving and also the incentive to

investment. It can be increased significantly without increasing capital input through the application of improved practices, improved seeds, good rotations and growing more cash crops, etc.

(3) *Making larger funds available* : (i) Co-operative credit must be enlarged and linked with productive investment. Some capital-forming activities should be undertaken by co-operative institutions. Co-operative organisation should be assisted technically and financially for such investments.

(ii) Some constructional works, i.e., reclamation and levelling of wide tracts of land, excavation of tanks, sinking of tubewells and installation of small plants or machinery should be undertaken by development authorities at least in the initial stages.

(iii) Central and State Governments should provide some funds and channelise them through the establishment of industries, construction of storage houses or godowns and provision of transport facilities in rural areas.

INVESTMENT PATTERNS IN AGRICULTURE

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The level of investment per holding might be broadly regarded as an index of commercialisation and intensity of agriculture and the prosperity of the agriculturists in a region. This varies not only from region to region but also within the region according to holding size and cropping pattern adopted by the individual farmers. Considerable data on investment for various holding sizes and regions have become available from a number of farm management and cost of cultivation studies made in recent years. The object of the present paper is to examine such data collected in a recent survey for cost of cultivation of cotton, oilseeds and rotation crops conducted in important cotton tracts of the country during the period 1960-63 with the financial assistance of the Cotton Committee, Indian Central Oilseeds Committee and the Indian Council of Agricultural Research.

The survey was located in the States of Punjab, Gujarat, Maharashtra and Mysore. Only the most important cotton and oilseeds producing districts in these States were covered by the enquiry. The districts were as follows :