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INVESTMENT AND SAVING PATTERN IN IRRIGATED AND UNIRRIGATED ZONES OF HARYANA STATE

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INTRODUCTION

The recent break-through in the agricultural economy, in the realm of new technology, is probably not uniform in different regions even among different types and sizes of farms within the region. The benefit of new technology would depend upon the irrigation facilities, size of holding, financial position, education, tenurial and social status of the farmers. Various studies have revealed that these factors vary considerably among regions and among different types and sizes of farms and as such the new farm technology may lead to disparity in income, investment and saving distribution pattern. In this study an attempt has been made to examine the impact of the green revolution on different sized farms situated in three distinct zones of Haryana State, namely, (*i*) assured irrigated zone, (*ii*) relatively less assured irrigated zones, and (*iii*) unirrigated zones. Specifically, the main objectives of the present study are, (1) to examine the income distribution and level of income in different zones of Haryana State, (2) to see the impact of land and the number of labour on farm family income, and (3) to estimate the average income investment and saving in different sizes of holding zonewise.

METHODOLOGY

Districts Karnal, Hissar and Mohindergarh were purposively selected to represent zone I, II and III respectively. One tehsil from each district and one village from each tehsil were purposively selected to represent their respective zones. The operational holdings of the selected villages of each zone were divided into small, medium and large farm size-groups. In all, 24, 31 and 29 farmers were selected randomly from zone I, zone II and zone III respectively representing equally each farm size-group. The data on income, investment, consumption and saving were collected by survey method on suitably designed schedules for the year 1971-72. The zonal disparity in income distribution was shown by Lorenze curve and Gini concentration ratios. Further, multiple regression analysis was fitted to estimate the impact of size of holding and the number of earners on farm family income in all the three zones.

Concepts and Definitions

Income: The term income implied total agricultural income, loan taken and non-agricultural income during the year.

Investment: It consisted of farm operating capital and fixed capital investment on farm and non-farm items.

Consumption: It included expenses on consumable and durable household goods.

RESULTS AND DISCUSSION

Level and Concentration of Income

From the perusal of data on different sources of income in Table I, it was observed that the major part of the gross income was contributed by crop production. Its share ranged from 94.33 to 98.72 per cent in zone I, 74.52 to 90.49 per cent in zone II and 68.41 to 90.37 per cent in zone III. The remaining part was contributed by other agricultural and non-agricultural sources and borrowings. The share of each of these sources was very meagre as compared to crop production. Among the sources, other agricultural income, non-agricultural income and borrowings ranked second, third and fourth in importance, respectively. The contribution of non-agricultural sources of income was inversely related to the size of holding.

TABLE I—GROSS INCOME PER HOUSEHOLD FROM DIFFERENT SOURCES OF SAMPLED FARMERS: 1971-72

(*Rupees*)

Holding size	No. of farmers	Average operational holding (acres)	Gross crop income	Other agricultural income	Income from loan	Non-agricultural income	Total gross income
Zone I							
Small ..	10	8.32	8,101.00 (94.33)	423.45 (4.39)	--	123.21 (1.28)	8,647.66
Medium ..	8	14.54	14,809.50 (95.51)	696.80 (4.49)	—	—	15,506.30
Large ..	6	27.92	25,601.92 (98.27)	351.33 (1.35)	—	100.00 (0.38)	26,053.25
Zone II							
Small ..	13	13.57	4,321.23 (85.06)	583.90 (11.49)	—	175.00 (3.45)	5,080.13
Medium ..	11	20.15	7,339.36 (90.49)	670.90 (8.28)	-	100.00 (1.23)	8,110.26
Large ..	7	33.67	9,027.42 (74.52)	2,110.14 (17.42)	575.00 (4.75)	401.00 (3.31)	12,113.56
Zone III							
Small ..	15	5.04	2,031.12 (68.41)	249.67 (10.47)	302.18 (12.68)	201.23 (8.44)	2,784.20
Medium ..	9	19.76	4,272.31 (85.57)	421.98 (8.45)	—	298.57 (5.98)	4,992.86
Large ..	5	30.27	7,907.06 (90.37)	171.67 (1.96)	483.45 (5.53)	187.49 (2.14)	8,749.67

Figures in parentheses are percentages of the total income.

The farm family income of different farm sizes was the highest in zone I, followed by corresponding farm sizes in zone II and zone III respectively. In all the zones the income level increased with the increase in the size of holding. This resulted in widening the income disparity among the farmers. The income of the large farms was approximately 3.14 times, 2.38 times and 3.01 times higher than the incomes of the small farms of zone III, zone II and zone I, respectively. About 64.8 per cent in zone I, 54.3 per cent in zone II and 59.1 per cent families of the low income groups in zone III, received only one-fourth of the total income against 5.8 per cent in zone I, 8.9 per cent in zone II and 7 per cent farm families of the higher income groups in zone III receiving the same level of income (Table II).

TABLE II—PERCENTAGE DISTRIBUTION OF HOUSEHOLDS IN DIFFERENT INCOME SEGMENTS

Income segments	Percentage of houscholds		
	Zone I	Zone II	Zone III
Lower quartile	64.8	54.3	59.1
Second quartile	23.5	26.5	24.6
Third quartile	5.9	10.3	9.3
Upper quartile	5.8	8.9	7.0
Gini's concentration ratio	.574	.427	.503

Lorenz curves were drawn in Figure 1 in order to illustrate the inequalities of income distribution among the zones. These curves showed that inequalities were the maximum in zone I followed by zone III and zone II respectively. This was further supported by the Gini concentration ratios which were .574, .503 and .427 for zone I, III and zone II respectively. The maximum variation in the income distribution in zone I was mainly the result of green revolution. But the disparity in income in zone III remained higher than that in zone II because of more inequality in the size of holding in zone III in relation to zone II.

Multiple regression equations for income to the size of holding and the number of earners in different zones are as follows :

		R^2
Y_i	$= 4324.90 + 497.46\ X_i^* + 1826.42\ X_2^*$	.61
Y_{ii}	$= 797.15 + 310.44\ X_i^* + 301.31\ X_2^*$	.59
Y_{iii}	$= 567.47 + 205.86\ X_i^* + 248.37\ X_2^*$	.67

* Significant at 5 per cent level.

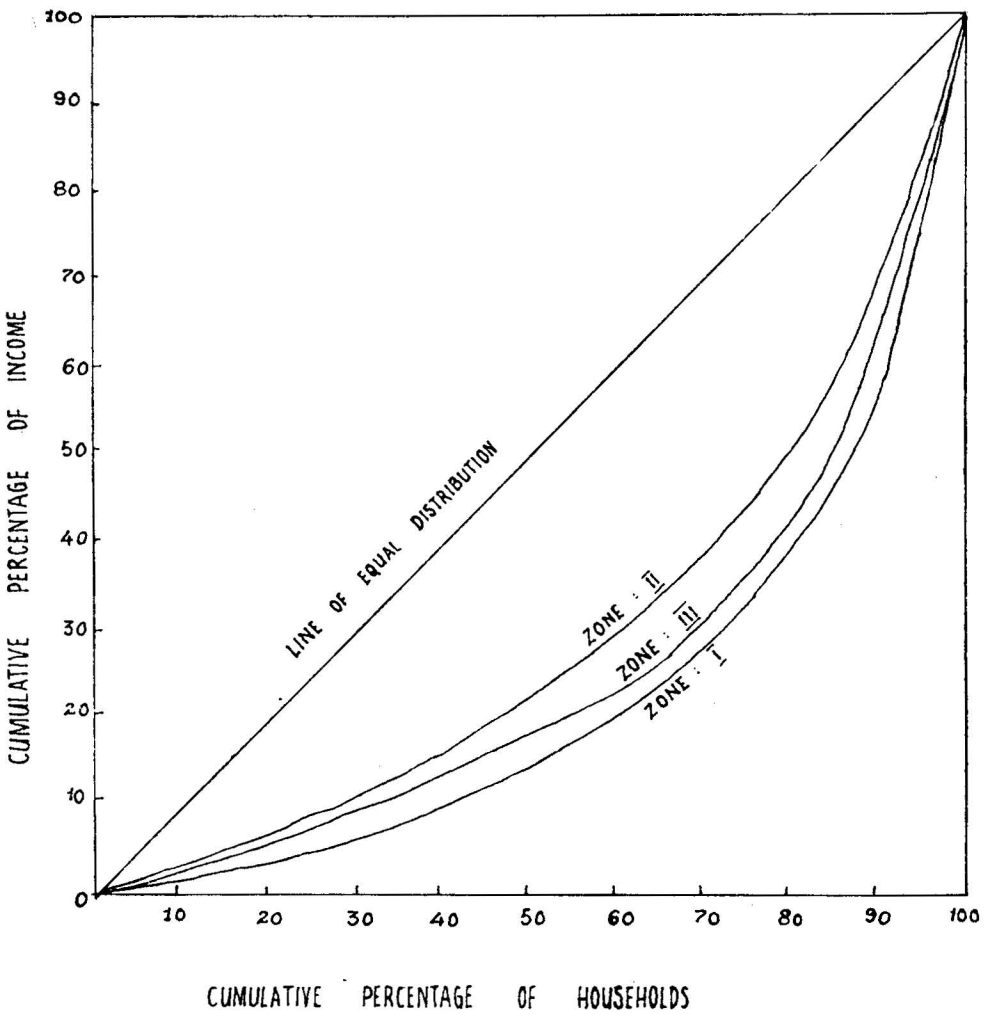

Figure 1 - Lorenz Curve for Income Distribution.

The marginal productivity of both land and labour was the highest in zone I followed by zone II and zone III, respectively. The high marginal value productivity of labour showed the potentiality of increasing labour employment in zone I. The farmers in general could afford to pay Rs. 1,826.42 to labour annually in this zone. The variation in income from land and labour explained about 61 per cent, 59 per cent and 67 per cent in zone 1, zone II and zone III, respectively.

Investment Pattern

A—Working capital

The total working capital was divided into two sub-heads: (1) traditional inputs, and (2) modern inputs. The results are summarised in Table III.

TABLE III—PER ACRE DISTRIBUTION OF WORKING EXPENDITURE

(*Rupees*)

Holding size	Traditional inputs						
	Land revenue	Human labour	Animal power	Manure	Seed (local)	Total	
Zone I							
Small	2.45	230.00	136.83	20.50	9.72	399.50 (60.76)	
Medium	2.71	185.30	120.50	10.00	—	318.51 (51.53)	
Large	2.83	144.85	81.50	7.79	5.54	242.51 (44.62)	
Zone II							
Small	1.01	125.21	89.00	21.00	14.15	250.37 (88.12)	
Medium	0.92	120.69	78.25	15.50	17.80	233.16 (88.31)	
Large	1.02	110.75	79.69	16.75	15.65	223.86 (84.34)	
Zone III							
Small	0.89	89.26	67.12	17.28	19.88	194.43 (100.00)	
Medium	1.06	68.20	72.82	20.07	21.44	183.59 (93.84	
Large	1.12	59.17	64.66	17.19	19.07	161.21 (96.52)	

Holding size	Modern inputs								Grand total of working expenses
	Irrigation charges			HYV seeds	Chemical fertilizers	Plant protection	Farm machinery	Total	
	Outside sources	Owned sources	Total						
Zone I									
Small ..	—	107.63	107.63	24.25	102.57	—	23.59	258.04 (39.24)	657.54
Medium ..	—	76.94	76.94	30.50	91.83	—	100.26	299.53 (48.47)	618.04
Large ..	—	56.59	56.59	28.75	59.29	—	156.26	300.89 (55.38)	543.40
Zone II									
Small II ..	10.32	—	10.32	6.56	13.61	0.37	2.98	33.75 (11.88)	284.12
Medium ..	8.79	—	8.87	3.76	15.22	0.27	2.83	30.86 (11.69)	264.02
Large ..	9.24	—	9.24	5.47	13.08	1.23	12.52	41.54 (15.66)	265.40
Zone III									
Small ..	—	—	—	—	—	0.07	—	0.07 (00)	194.50
Medium ..	—	—	—	1.27	7.57	0.50	2.71	12.05 (6.16)	195.64
Large ..	—	—	—	—	—	—	5.81	5.81 (3.48)	167.02

Figures in parentheses show the percentages of the total working expenditure.

TABLE IV—FIXED CAPITAL INVESTMENT ON VARIOUS ITEMS PER HOUSEHOLD IN DIFFERENT ZONES

(*Rupees*)

Holding size	Purchase of land	Purchase of farm machinery	Purchase and construction of buildings (farm)	Purchase of livestock	Reclamation of land	Plantation	Purchase of poultry and its equipment	Other fixed investment	Total
Zone I									
Small	—	45.00 (4.61)	500.00 (51.24)	330.50 (33.87)	—	—	100.20 (10.28)	—	975.70
Medium	—	460.00 (34.55)	250.25 (18.80)	350.00 (26.29)	210.00 (15.77)	11.00 (—83)	—	50.00 (3.76)	1,331.25
Large	—	1,033.50 (36.34)	773.50 (27.20)	366.50 (12.89)	550.00 (19.34)	20.15 (—71)	—	100.00 (3.52)	2,843.65
Zone II									
Small	—	54.61 (6.09)	257.69 (28.73)	461.53 (51.46)	123.07 (13.72)	—	—	—	896.90
Medium	—	397.27 (30.13)	227.27 (17.23)	643.63 (48.81)	30.45 (2.31)	—	—	20.00 (1.52)	1,318.62
Large	214.28 (10.34)	627.14 (30.28)	657.14 (31.72)	335.71 (16.21)	185.71 (8.96)	—	—	51.50 (2.49)	2,071.48
Zone III									
Small	—	23.00 (3.82)	221.15 (36.75)	357.59 (59.43)	—	—	—	—	601.74
Medium	—	45.00 (5.98)	246.30 (32.66)	285.00 (37.79)	44.44 (5.89)	—	38.89 (5.16)	94.45 (12.52)	754.08
Large	—	1,503.75 (82.01)	100.00 (5.45)	214.44 (11.70)	—	—	—	15.25 (0.84)	1,833.44

Figures in parentheses show the percentages of the total fixed capital investment.

The figures in Table III indicated many fold higher use of traditional inputs over the modern inputs in zone II and zone III while in zone I the share of modern and traditional inputs in the total working capital was almost equal. There was no apparent difference in per acre working capital among different holding sizes of zone II and zone III, except on the large farms in zone I where the working capital was low. The total working capital per acre in zone I was approximately 2.5 and 3.5 times higher than in zone II and zone III respectively.

B—Fixed capital

It was observed from Table IV that the farmers in zone I invested mainly on the purchase of farm equipment, machinery and building construction. The farmers of zone II and zone III made investment largely on the purchase of livestock and construction of farm buildings. The investment on the large farms was approximately three times higher than investment on the small farms in all the zones. The difference between zone I and zone II was not so apparent, while it was nearly one and half times higher than zone III.

Income, Consumption and Saving

It can be seen from Table V that the net income of the large sized holding was nearly three times, two and half times and two times higher than that of the small holdings in zone I, II and III respectively. The net income in

TABLE V—INCOME, WORKING CAPITAL, CONSUMPTION AND SAVING PER HOLDING

(*Rupees*)

Holding size	Gross income: agricultural and non-agricultural	Revenue paid	Agricultural working expenditure	Net income	Consumption	Savings
Zone I						
Small ..	8,647.66	20.44	4,799.48	3,827.74 (640.09)	3,838.33 (641.86)	—10.59 (—1.77)
Medium ..	15,506.30	42.15	9,064.24	6,399.91 (888.88)	5,498.31 (763.65)	901.60 (125.23)
Large ..	26,053.33	79.00	14,468.63	11,505.70 (1,643.67)	8,498.16 (1,214.02)	3,007.54 (429.65)
Zone II						
Small ..	5,080.13	13.69	2,568.92	2,497.52 (419.11)	2,723.80 (457.01)	—225.88 (—37.90)
Medium ..	8,110.26	18.63	2,936.35	5,155.28 (879.74)	5,015.70 (855.92)	139.58 (23.82)
Large ..	12,113.56	34.50	5,398.12	6,680.94 (725.40)	5,974.15 (648.66)	706.79 (76.74)
Zone III						
Small ..	2,784.70	4.49	680.28	2,099.93 (244.59)	2,277.15 (265.40)	—177.22 (—20.81)
Medium ..	4,992.86	20.95	2,518.22	2,453.69 (315.38)	2,614.79 (336.09)	—161.10 (—20.71)
Large ..	8,749.67	33.90	4,475.81	4,239.96 (471.11)	4,150.44 (461.16)	89.52 (9.95)

Per capita figures are given in parentheses.

different holding sizes was the highest in zone I followed by corresponding farm sizes in zone II and III respectively. Consumption also showed almost the same pattern.

Savings tend to increase with the size of holding and irrigation facilities. However, savings in general were positive on the medium and large holdings in zone I and zone II while only on the large farms in zone III, their saving potential was quite low. The negative savings of the small and medium farms in zone III and the small farms in zone I and zone II indicated that the economic conditions of these farmers should be improved to make them viable units.

CONCLUSIONS

As hypothesized, the working capital, fixed investment, consumption and income were found to be the highest on different sized farms in zone I followed by corresponding farm sizes in zone II and zone III, respectively. Thus the benefits of new farm technology were directly related to the irrigation facilities. This has resulted in increasing income disparity in different zones. Further, in all zones the investment, consumption and income were positively associated with the size of holding and adoption of modern inputs. Though the agricultural income of farms of all sizes has increased with the adoption of improved practices, the so-called green revolution is not free from the economies of scale. Thus the benefits of the new farm technology were exploited more fully by the large farmers. Hence there is great need for simultaneous improvement in the economic conditions of the small and marginal farmers, in order to accelerate agricultural development with social justice.