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Impact of Farm Technology on Socio-Economic Traits of Agricultural Labor

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Abstract

The study was conducted in both agro-climatic zones viz. western and eastern zones of Haryana state. On the basis of highest number of agriculture laborers, one district from each zone and one tehsil from each district and three villages from each selected tehsil were selected for the study. The farmers were further divided into three groups on the basis of size of their operational land holdings with the helps of cumulative cube root square method A sample of 40 progressive/non-progressive farmers under different size groups were drawn randomly from each selected village in proportion of total number of farmers. Thus, in all 240 farmers were selected finally for this study. The results reveal that total laborers working on PF were 33.14, 30.86 and 36.00% from general category, BCs and SCs categories, respectively. The traditionally PL were coming from the BCs and SCs groups, but with the induction of the improved agricultural technology, this tradition has been broken. It could be inferred that technology augmented laborers from small sized families in contrast with the tradition of medium sized FL used to work on the farms without technology. It infers that technology augmented laborers from high educated family also, in contrast with the tradition of low educated labourers used to work on the farms without technology. The improved farm technology has broken the hesitation of higher castes and high educated classes to work as agricultural labor but still there is a greater need and scope to persuade these people to achieve the national goal of social equity and justice.

Key words : Technology, Impact, Agriculture, Labor, Socio-economic traits.

India is predominately an agricultural country and more than 65% of its population lives in rural areas. The small farmers and landless laborers constituting about 90% of the rural community depend on agricultural employment for their subsistence. Thus, Indian agriculture is by and large labor intensive employing labor, right from ploughing of field to threshing out and storage of output (1—4). Indian agriculture is under-going rapid changes with the intensification of various agricultural improved technologies and these improved techniques of production are becoming popular with the farms and the choice for substituting farm machinery for bullock power and human labour is being made in an increasing manner, which has resulted in changing pattern and extent of agriculture labour use. This has also affected the wage rates, socio-economic characters and status of the agricultural labors. The total agricultural workers increased from 140.0 million in 1951 to 402.5 million in 2001. The agricultural laborers were 19.50% of total workers in 1951 and this figure increased to 26.70% in 2001 in India. In Haryana, the total agricultural workers increased from 28.78 lakhs in 1961 to 83.82 lakhs in 2001. The agricultural laborers were 6.88% of total workers in 1961 and this figure increased to 15.22% in 2001 in Haryana. The increase in labor-force coupled with sub-division and fragmentation of land holding have created the problem of under-employment and unemployment leading to low per capita income and wages of rural laborers in our country. Keeping in view, study was undertaken to assess the impact of change in farm technology on socio-economic characteristics of the agricultural labor.

Methods

Sampling Design

The Haryana state was divided into two main agro-climatic zones i.e. western and eastern zones. From each zone, one district was selected purposively on the basis of highest number of agricultural labourers, further one tehsil from each selected dis-

Table 1. Caste-wise distribution of laborers on different sized farm holding in Haryana state. (No.). Figures in parentheses are the percentage of total number of laborers in each category. FL—Family laborers, CL—Casual laborers, PL—Permanent laborers, PF—Progressive farmers, NPF—Non-progressive farmers.

		Eastern zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Generals	25	22	6	3	–	–	31 (40.26)	25 (39.06)
	BCs	5	6	16	8	–	–	21 (27.27)	14 (21.88)
	SCs	2	4	23	21	–	–	25 (32.47)	25 (39.06)
	Sub Total	32	32	45	32	–	–	77 (100)	64 (100)
Medium	Generals	12	9	8	2	2	1	20 (33.34)	11 (24.44)
	BCs	4	5	14	8	3	2	20 (33.33)	14 (31.11)
	SCs	2	4	15	14	5	5	20 (33.33)	20 (44.45)
	Sub Total	18	18	37	24	–	–	60 (100)	45 (100)
Large	Generals	9	6	2	1	5	2	11 (25.00)	7 (17.07)
	BCs	1	2	9	4	7	9	15 (34.10)	8 (19.51)
	SCs	–	2	11	15	12	11	18 (40.90)	26 (63.42)
	Sub Total	10	10	22	20	–	–	44 (100)	41 (100)
Total	Generals	46 (76.67)	37 (61.67)	16 (15.38)	6 (7.89)	7 (41.18)	3 (21.43)	62 (34.25)	43 (28.67)
	BCs	10 (16.67)	13 (21.66)	39 (37.50)	20 (26.32)	10 (58.82)	11 (78.57)	56 (30.94)	36 (24.00)
	SCs	4 (6.66)	10 (16.67)	49 (47.12)	50 (65.79)	17 (100)	14 (100)	63 (34.81)	71 (47.33)
Grand total	All categories	60 (100)	60 (100)	104 (100)	76 (100)			181 (100)	150 (100)

Table 1. Continued.

		Western zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Generals	12	9	3	–	–	–	15 (31.25)	9 (23.68)
	BCs	6	7	12	4	–	–	18 (37.50)	11 (28.95)
	SCs	2	4	13	14	–	–	15 (31.25)	18 (47.57)
	Sub Total	20	20	28	18	–	–	48 (100)	38 (100)
Medium	Generals	24	22	4	1	–	–	28 (37.84)	23 (38.98)
	BCs	2	3	15	6	3	2	20 (27.03)	11 (18.64)

Table 1. Continued.

Category of farms	Caste groups	Western zone FL PF	FL NPF	CL PF	CL NPF	PL PF	PL NPF	Total PF	Total NPF
	SCs	1	2	22	21	3	2	26 (35.19)	25 (42.38)
	Sub Total	27	27	41	28	6	4	74 (100)	59 (100)
Large	Generals	13	11	2	2	–	–	15 (28.30)	13 (26.53)
	BCs	–	1	9	4	7	3	16 (30.18)	8 (16.33)
	SCs	–	1	12	14	10	13	22 (41.52)	28 (57.14)
	Sub Total	13	13	23	20	17	16	53 (100)	49 (100)
Total	Generals	49 (81.67)	42 (70.00)	9 (9.78)	3 (4.55)	–	–	58 (33.14)	45 (30.82)
	BCs	8 (13.33)	11 (18.34)	36 (39.14)	14 (21.21)	10 (43.48)	5 (25.00)	54 (30.86)	30 (20.55)
	SCs	3 (5.00)	7 (11.66)	47 (51.08)	49 (74.24)	13 (56.52)	15 (75.00)	63 (36.00)	71 (48.63)
Grand total	All categories	60 (100)	60 (100)	92 (100)	66 (100)	23 (100)	20 (100)	175 (100)	146 (100)

trict were also chosen on the same pattern. Three villages were selected randomly from two tehsils i.e. Karnal and Sirsa. All farmers of selected villages were classified into progressive farmers and non-progressive farmers. The progressive farmers were categorized considering at least 80% of sown area irrigated, acreage under HYVs, and using chemical fertilizer and pesticides. The farmers were further divided into three groups on the basis of size of their operational land holdings with the helps of cumulative cube root square method A sample of 40 progressive/non-progressive farmers under different size groups were drawn randomly from each selected village in proportion of total number of farmers. Thus, in all 240 farmers were selected finally for this study.

For studying the socio-economic characteristics, two separate lists of the hired laborers were prepared who were working on the farms of progressive and non-progressive farmers with more than 50% of their total labor days put in the season. For distribution of agricultural laborers among different size groups the same criterion was followed. All the hired laborers working on the samples farms were taken as such for studying socio-economic characters of the agricultural laborers. The respondents from various castes were grouped under three major groups. Generals : Jats, Rajputs, Brahmins, Banias and Sikhs ; BCs : Yadavs, Gujjars, Sainis, Malis, Meos, Kambos, Talies, Rai sikhs ; SCs : Balmikis, Dhanaks, Mazhabis, Katiks, Bawarias, Chamars, Raigars, Ramdas.

The data were collected by interviewing the respondents personally pertaining information about size of land holdings, human labor, bullock labor, machinery labor, wages, socio-economic parameters of laborers were collected for the two consective seasons of the agricultural year 2005-06. The conventional analytical tools and techniques as percentages, averages and changes were employed to draw inferences from the data. The abbreviations used are as follows :

Family laborers—F.L., Casual Laborers—C.L., Permanent Laborers-—P.L., S. C.—Schedule Caste, B.C.—Backward Caste, Progressive Farms—P farms, Non-Progressive—N.P farms.

Results and Discussion

Caste Composition

Caste is the most important basis of socio-stratification in Indian 1 society. Table 1 depicts the caste

Table 2. Caste-wise distribution of laborers according to family size on different sized farm holdings in Haryana state. (No.).

		Eastern zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Small	20	18	21	13	–	–	41 (53.25)	31 (48.44)
	Medium	12	14	14	11	–	–	26 (33.77)	25 (39.06)
	Large	–	–	10	8	–	–	10 (12.98)	8 (12.50)
	Sub Total	32	32	45	32	–	–	77 (100)	64 (100)
Medium	Small	8	5	17	11	–	–	25 (41.67)	16 (35.56)
	Medium	6	8	12	8	3	2	21 (35.00)	19 (42.44)
	Large	4	5	8	5	2	1	14 (23.33)	10 (22.22)
	Sub Total	18	18	37	24	5	3	60 (100)	45 (100)
Large	Small	–	–	10	10	3	2	13 (29.55)	12 (29.27)
	Medium	4	8	9	8	6	5	19 (43.18)	21 (47.72)
	Large	6	2	3	2	3	4	12 (27.27)	8 (18.18)
	Sub Total	10	10	22	20	12	11	44 (100)	41 (100)
Total	Small	28 (46.47)	23 (38.33)	48 (46.16)	34 (44.74)	3 (17.65)	2 (14.29)	79 (43.65)	59 (39.34)
	Medium	22 (36.67)	30 (50.00)	35 (33.65)	27 (35.53)	9 (52.94)	7 (50.00)	66 (36.46)	64 (42.66)
	Large	10 (16.66)	7 (11.67)	21 (20.19)	15 (19.73)	5 (29.41)	5 (35.71)	36 (19.89)	27 (18.00)
Grand total	All categories	60 (100)	60 (100)	104 (100)	76 (100)	17 (100)	17 (100)	181 (100)	150 (100)

Table 2. Continued.

		Western zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Small	10	8	12	7	–	–	22 (45.83)	15 (39.47)
	Medium	9	11	9	8	–	–	18 (37.50)	19 (50.00)
	Large	1	1	7	3	–	–	8 (16.67)	4 (10.53)
	Sub Total	20	20	28	18	–	–	48 (100)	38 (100)
Medium	Small	15	12	14	9	1	–	30 (40.54)	21 (35.59)
	Medium	9	13	16	12	3	1	28 (37.84)	26 (44.07)
	Large	3	2	11	7	2	3	16 (21.62)	12 (20.34)

Table 2. Continued.

Category of farms	Caste groups	Western zone FL PF	FL NPF	CL PF	CL NPF	PL PF	PL NPF	Total PF	Total NPF
	Sub Total	27	27	41	28	6	4	74 (100)	59 (100)
Large	Small	1	3	12	9	4	4	17 (32.08)	16 (32.65)
	Medium	5	5	9	7	7	8	21 (39.62)	20 (40.82)
	Large	7	5	2	4	6	4	15 (28.30)	13 (26.53)
	Sub Total	13	13	23	20	17	16	53 (100)	49 (100)
Total	Small	26 (43.33)	23 (38.33)	38 (41.30)	25 (37.88)	5 (21.74)	4 (20.00)	69 (39.43)	52 (35.62)
	Medium	23 (38.33)	29 (48.34)	34 (36.96)	27 (40.90)	10 (43.48)	9 (45.00)	67 (38.28)	65 (44.52)
	Large	11 (18.34)	8 (13.33)	20 (21.74)	14 (21.22)	8 (34.78)	7 (35.00)	39 (22.29)	29 (19.86)
Grand total	All categories	60 (100)	60 (100)	92 (100)	66 (100)	23 (100)	20 (100)	175 (100)	146 (100)

wise distribution of agricultural workers on progressive and non-PF in both zones. In western zone, the sample of FL was made up of 81.67% of general castes, 13.33% of the BCs and 5.00% of SCs on PF. In non-progressive farms (NPF), FLs. were of 70.00% general category, 18.34% BCs and 11.66% SCs. Here it can be inferred that general castes dominated on both farms followed by BCs. The technology resulted in an increase in general category and decrease in BCs and SCs, which infers that technology has augmented higher castes people to work in own farms. The majority of casual hired laborers engaged for performing various operations on progressive and non-PF were scheduled caste. Both farms hired PL from backward and scheduled castes for various farm operations. Here it can be inferred that traditionally PL were coming from the BCs and SCs groups but with the induction of the new agricultural technology, this tradition has been broken. On the basis of land holding size, total laborers of BCs (37.50%), generals (37.84%) and SCs (41.52%) dominated on small, medium and large sized farms on progressive, while SCs dominated on all size of land holding on non-PF. They formed 47.37, 42.38 and 57.14% on small, medium and large holding on non-PF.

In eastern zone, family laborers dominated by general caste on progressive and non-PF while in CL, scheduled caste dominated over BCs and generals on both farms. The progressive and non-progressive farmers engaged PLs for various operations mainly from BCs and SCs categories. The total laborers of generals (40.26%), BCs (33.34%) and SCs (40.90%) dominated on small, medium and large sized PF, while SCs dominated on all size of land holdings on NPF, with 39.06, 44.45 and 63.42% on small, medium and large land holdings, respectively. They were 40.26, 33.34 and 25.00% on small, medium and large progressive holdings, respectively, whereas on non-progressive holdings they formed 39.06, 24.44 and 17.07% on small, medium and large holdings indicating the same relationship. The relationship between the size of land holding and supply of labor from the general castes was found negative in PF in both zones indicating these by that technology has resulted in breaking down the hesitation of working as agricultural laborers among the higher caste groups.

Family Size

Respondents were categorized into three groups on the basis of the size of their family i.e. small (<4), medium (4—6) and large (>6). Distribution of respondents according to size of the family in both zones is shown in Table 2. On the PF, FL were was accounted

Table 3. Distribution of laborers by educational level of family heads on different sized farm holdings in Haryana state. (No.).

		Eastern zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Low	8	21	22	18	–	–	30 (38.96)	39 (60.94)
	Medium	22	11	23	14	–	–	45 (58.44)	25 (39.06)
	High	2	–	–	–	–	–	2 (2.60)	–
	Sub Total	32	32	45	32	–	–	77 (100)	64 (100)
Medium	Low	4	11	17	14	2	2	23 (38.33)	27 (60.00)
	Medium	10	6	18	8	3	1	31 (52.67)	15 (33.33)
	High	4	1	2	2	–	–	6 (10.00)	3 (6.67)
	Sub Total	18	18	37	24	5	3	60 (100)	45 (100)
Large	Low	1	2	9	7	5	7	15 (34.09)	16 (39.03)
	Medium	3	3	10	11	7	4	20 (45.45)	18 (43.90)
	High	6	5	3	2	–	–	9 (20.46)	7 (17.07)
	Sub Total	10	10	22	20	12	1	44 (100)	41 (100)
Total	Low	13 (21.67)	34 (56.67)	48 (46.15)	39 (51.32)	7 (41.18)	9 (64.29)	68 (37.57)	82 (54.67)
	Medium	35 (58.33)	20 (33.33)	51 (49.04)	33 (43.42)	10 (58.82)	5 (35.71)	96 (53.04)	58 (38.67)
	High	12 (20.00)	6 (10.00)	5 (4.81)	4 (5.26)	–	–	17 (9.39)	10 (6.66)
Grand total	All Categories	60 (100)	60 (100)	104 (100)	76 (100)	17 (100)	14 (100)	181 (100)	150 (100)

Table 3. Continued.

		Western zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Low	5	11	16	10	–	–	21 (43.76)	21 (53.26)
	Medium	13	9	12	8	–	–	25 (52.08)	17 (44.70)
	High	2	–	–	–	–	–	2 (4.16)	–
	Sub Total	20	20	28	18	–	–	48 (100)	38 (100)
Medium	Low	8	15	20	15	4	3	32 (43.24)	33 (55.93)
	Medium	17	10	19	13	2	1	38 (51.35)	24 (40.68)
	High	2	2	2	–	–	–	4 (5.40)	2 (3.39)

Table 3. Continued.

Category of farms	Caste groups	Western zone FL PF	FL NPF	CL PF	CL NPF	PL PF	PL NPF	Total PF	Total NPF
	Sub Total	27	27	41	28	6	4	74 (100)	59 (100)
Large	Low	2	4	11	10	14	10	27 (50.94)	24 (48.98)
	Medium	6	6	11	9	3	6	20 (37.74)	21 (42.86)
	High	5	3	1	1	–	–	6 (11.32)	4 (8.16)
	Sub Total	13	13	23	20	17	16	53 (100)	49 (100)
Total	Low	15 (25.00)	30 (50.00)	47 (51.09)	35 (53.04)	18 (78.26)	13 (65.00)	80 (45.71)	78 (53.43)
	Medium	36 (60.00)	25 (41.67)	42 (45.65)	30 (45.45)	5 (21.74)	7 (35.00)	83 (47.43)	62 (42.46)
	High	9 (15.00)	5 (8.33)	3 (3.26)	1 (1.51)	–	–	12 (6.86)	6 (4.11)
Grand total	All Categories	60 (100)	60 (100)	92 (100)	66 (100)	23 (100)	20 (100)	175 (100)	146 (100)

for 43.33, 38.33 and 18.34% on small, medium and large categories of family, respectively in western zone. On the PF, sample of FL, was made up of 46.67% from small sized families, 36.67% from medium sized families and 16.66% from large sized farmilies in eastern zone. Whereas on the NPF, FL were 38.33, 50.00 and 11.67% respectively from small, medium and large sized of families. While in case of non-PF, FL were 38.33, 48.34 and 13.33% of small, medium and large sizes families, respectively. The highest share of total CL was from small sized families on both progressive and non-PF in both zones. The main source of permanent hired laborers on progressive and non-PF was medium sized families in both zones. According to size of land holding, laborers of small sized family in both zones were dominated on both types of farms except large holdings.

On the whole, the total laborers working on PF were 39.43, 38.28 and 22.29% from small, medium and large sized families, respectively in western zone. While in non-PF total laborers were 35.62, 44.52, and 19.86% from small, medium and large sized families. In eastern zone, total laborers working on PF were 43.65, 36.46 and 19.89% from small, medium and large sized families, respectively. It contrasts on the non-PF they were 39.34, 42.66 and 18.00% from small, medium and large sized families. Both types of farms augmented CL from small and medium sized families and PL of medium sized families.

Educational Level

Agricultural workers were grouped into three categories on the basis of education level of head of family i.e. Low (< primary), medium (primary to secondary) and high (> secondary). Distribution of agricultural workers according to the educational level of family head in both zones is given in Table 3. The sample of FL on PF in western zone comprised of 25.00, 60.00 and 15.00% laborers from low, medium and high level of education of the family head, respectively. In contrast on the non-PF, they were 50.00 and 41.67 and 8.33% respectively from low, medium and high level of education. In eastern zone, the sample of FL on PF comprised 21.67, 58.33 and 20.00% laborers from low, medium and high level of education of the family heads, respectively. While in non-PF, they were 56.67, 33.33 and 10.00% respectively from low, medium and high level of education, which infers technology has boosted to the people of medium and high education to perform various operations on own farm. This infers that technology has boosted to the people of medium and high education of work on own farm activities in both zones.

Table 4. Distribution of laborers on basis of annual income on different sized farm holding in Haryana state. (No.)

		Eastern zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Low	5	18	24	18	–	–	29 (37.66)	36 (56.25)
	Medium	24	14	21	14	–	–	45 (58.44)	28 (43.75)
	High	3	–	–	–	–	–	3 (3.90)	–
	Sub Total	32	32	45	32	–	–	77 (100)	64 (100)
Medium	Low	4	5	20	13	3	2	27 (45.00)	20 (44.44)
	Medium	7	11	15	10	2	1	24 (40.00)	22 (48.89)
	High	7	2	2	1	–	–	9 (15.00)	3 (6.67)
	Sub Total	18	18	37	24	5	3	60 (100)	45 (100)
Large	Low	–	–	9	11	4	6	13 (29.55)	17 (41.46)
	Medium	1	5	11	8	6	5	18 (40.90)	18 (43.90)
	High	9	5	2	1	2	–	13 (29.55)	6 (14.63)
	Sub Total	10	10	22	20	12	11	44 (100)	41 (100)
Total	Low	9 (15.00)	23 (38.33)	53 (50.96)	42 (55.26)	7 (41.18)	8 (57.14)	69 (38.12)	73 (48.67)
	Medium	32 (53.33)	30 (50.00)	47 (45.19)	32 (42.11)	8 (47.06)	6 (42.86)	87 (48.07)	68 (45.53)
	High	19 (31.67)	7 (11.67)	4 (3.85)	2 (2.63)	2 (11.76)	– –	25 (13.81)	9 (6.00)
Grand total	All Categories	60 (100)	60 (100)	104 (100)	76 (100)	17 (100)	14 (100)	181 (100)	150 (100)

Table 4. Continued.

		Western zone							
Category of farms	Caste groups	FL		CL		PL		Total	
		PF	NPF	PF	NPF	PF	NPF	PF	NPF
Small	Low	6	10	16	10	–	–	22 (45.83)	20 (52.63)
	Medium	12	9	12	8	–	–	24 (50.00)	17 (44.74)
	High	2	1	–	–	–	–	2 (4.17)	1 (2.63)
	Sub Total	20	20	28	18	–	–	48 (100)	38 (100)
Medium	Low	4	11	18	15	5	3	27 (36.49)	29 (49.15)
	Medium	16	14	22	13	1	1	39 (52.70)	28 (47.46)
	High	7	2	1	–	–	–	8 (10.81)	2 (3.39)

Table 4. Continued.

Category of farms	Caste groups	Western zone FL PF	FL NPF	CL PF	CL NPF	PL PF	PL NPF	Total PF	Total NPF
	Sub Total	27	27	41	28	6	4	74 (100)	59 (100)
Large	Low	–	–	14	12	3	7	17 (32.08)	19 (38.78)
	Medium	5	7	7	6	11	8	23 (43.40)	21 (42.86)
	High	8	6	2	2	3	1	13 (24.52)	9 (18.36)
	Sub Total	13	13	23	20	17	16	53 (100)	49 (100)
Total	Low	10 (16.67)	21 (35.00)	48 (52.17)	37 (56.07)	8 (34.78)	10 (50.00)	66 (37.72)	68 (46.57)
	Medium	33 (55.00)	30 (50.00)	41 (44.57)	27 (40.90)	12 (52.17)	9 (45.00)	86 (49.14)	66 (45.21)
	High	17 (28.33)	9 (15.00)	3 (3.26)	2 (3.03)	3 (13.05)	1 (5.00)	23 (13.14)	12 (5.22)
Grand total	All	60 (100)	60 (100)	92 (100)	66 (100)	23 (100)	20 (100)	175 (100)	146 (100)

In casual hired laborers, the highest number of laborers was from low education level group on progressive and non-progressive in both zones which infers that technology is more receptive to the higher educated groups as compared to low educated ones. In PL, about two-third of laborers and one fourth of laborers engaged for various operations on the progressive and non-PF in both zones were from low and medium level of education respectively, No PL on both types of farms was from high level of education. Thus technology augmented the medium and low educated laborers compared to traditional farms were more low educated laborers were working. According to size of land holdings, education level of laborers was positively correlated with size of farms on progressive and non-PF in both zones. Laborers of high education levels were working more on progressive and non-PF. On the whole, the education level of total laborers working on progressive and non-PF was directly related to size of farms in both zones.

Annual Income

Agricultural workers were classified into three groups on the basis of annual family income i.e. low (<Rs 25,000), medium (Rs 25,000—50,000) and high (>Rs 50,00). Distribution of laborers according to the annual income of their family is presented in Table 4. In western zone, on the basis of family income, on the PF, 16.67, 55.00 and 28.33% family workers were from the families earning low, medium and high income groups, respectively. Whereas on non-PF, the number of family workers 35.00, 50.00 and 15.00% were from families earning low, medium and high income.

In eastern zone on the basis of family income, in the PF, 15, 53.33 and 31.67% of family workers were from the families earning low, medium and high income, respectively. Whereas on the non-PF, the number of family workers use 38.33, 50.00 and 11.67% from families earning low, medium and high income, respectively. The technology is more receptive to the laborers of high income families as compared to laborers of low income families.

In casual and PL working on progressive and non-PF in both zones, the highest number of laborers was coming from low income families followed by medium income families. Thus, higher number of CL was inversely related to income group. Hence technology augmented CL from low, medium and high income families, in contrast to the traditional farms where laborers from only low and medium income earning families dominated the scene. On the whole, the total laborers working on PF were coming 37.72, 49.14 and 13.14% from low, medium and high income

Table 5. Socio-economic profile of agricultural laborers working on different sized farm holdings in Haryana state due to technology. (No.)

Socio-economic parameters groups of laborers	Socio-economic parameters groups of laborers	Eastern zone				Western zone			
		FL	CL	PL	Total	FL	CL	PL	Total
Caste	Generals	9	10	–	19	7	6	–	13
		(24.32)	(166.60)		(44.19)	(16.66)	(200.00)		(28.89)
	BCs	-3	19	4	20	-3	22	5	24
		(-23.07)	(95.00)	(133.30)	(55.56)	(-27.27)	(157.14)	(100.00)	(82.00)
	SCs	-6	-1	-1	-8	-4	-2	-2	-8
		(-60.00)	(-2.00)	(-9.90)	(-11.26)	(-57.14)	(-4.08)	(-13.33)	(-11.26)
	Sob Total	0	28	3	31	0	26	3	29
		(0.00)	(36.84)	(21.42)	(20.67)	(0.00)	(39.39)	(15.00)	(19.86)
Family size	Small	5	14	1	20	3	13	1	17
		(21.73)	(41.17)	(50.00)	(33.89)	(13.04)	(52.00)	(25.00)	(32.69)
	Medium	-8	8	2	2	-6	7	1	2
		(-26.26)	(29.62)	(28.57)	(3.13)	(-20.69)	(25.53)	(11.11)	(3.08)
	Large	3	6	0	9	3	6	1	10
		(42.85)	(40.00)	(0.00)	(33.33)	(37.50)	(42.86)	(14.28)	(34.48)
	Sub Total	0	28	3	31	0	26	3	29
		(0.00)	(36.84)	(21.42)	(20.67)	(0.00)	(39.39)	(15.00)	(19.86)
Education level	Low	-21	9	-2	-14	-15	12	5	2
		(-61.76)	(23.07)	(-22.22)	(-17.07)	(-50.00)	(34.29)	(38.46)	(2.56)
	Medium	15	18	5	38	11	12	-2	21
		(75.00)	(54.54)	(100.00)	(65.51)	(44.00)	(40.00)	(-28.57)	(33.87)
	High	6	1	–	7	4	2	–	6
		(100.00)	(13.63)		(70.00)	(80.00)	(200.00)		(100.00)
	Sub Total	0	28	3	31	0	26	3	29
		(0.00)	(36.84)	(21.42)	(20.67)	(0.00	(39.39)	(15.00)	(19.86)
Annual income	Low	-14	11	-1	-4	-11	11	-2	-2
		(-60.84)	(26.19)	(-12.50)	(-5.48)	(-52.38)	(29.73)	(-20.00)	(-2.94)
	Medium	2	15	2	19	3	14	3	20
		(6.66)	(46.87)	(33.33)	(24.94)	(10.00)	(51.85)	(33.33)	(30.30)
	High	12	2	2	16	8	1	2	11
		(171.42)	(100.00)	(NA)	(177.77)	(88.88)	(50.00)	(200.00)	(91.67)
	Sub Total	0	28	3	31	0	26	3	29
		(0.00)	(36.84)	(21.42)	(20.67)	(0.00)	(39.39)	(15.00)	(19.86)

families respectively, whereas laborers of non-progressive were coming 46.57, 45.21 and 5.22% respectively which infers that technology augment laborers from medium income families in contrast with the tradition of laborers of low income families used to work on the farms without technology.

To sum up, both the zones, western and eastern revealed that the sample of agricultural laborers working on traditional farms were mainly constituted of lower castes, low and medium income families and low education families in contrast to the sample of pF that was constituted of higher eastes, medium income and medium education families in addition to the lower ones. Hence, technology has certainly brought a change in the composition of agricultural labor.

Technological Impact on Socio-Economic Profile of Agricultural Laborers

Change in the distribution of the agricultural workers in different socio-economic parameters i.e. caste, size of family, education level and annual income of family in western and eastern zones are presented in Table 5. Due to improved farm technology, FL increased by 16.66% of general category on progressive over non-PF. The FL belonging BCs and SCs

in both zones decreased substantially while causal laborers of general category and BCs increased to greater extent. PL of scheduled caste were displaced on PF.

The family workers of small and large sized families increased in both zones replacing certain number on medium sized families. There was increase in number of casual and PL on all sized families, respectively. In case of educational level of laborers, medium and high educated FL increased on PF displacing low educated FL. The FL of high income families revealed highest increase on PF, followed by medium income families. The CL coming from low, medium and high income familes were showed positive sign. PL of medium and high income groups indicated increase while in low income group, there was displacement of PL.

The farm technology is more receptive to family workers of general caste, large sized family, high education and high income group (5—9). The technology is more augmented to CL of general category, small sized families, high education and medium income group. Technology is also receptive to PL of BCs, small sized families, low education level and high annual income groups.

Further, the technology has resulted in breaking down of the hesitation for working as agricultural laborers among the families of higher castes, high income and high education, in contrast with the custom of working as agricultural laborers on traditional farms by the people of low castes, low income and low education.

Conclusion

The results reveal that total laborers working on PF were 33.14, 30.86 and 36.00% from general category, BCs and SCs categories, respectively. The traditionally PL were coming from the BCs and SCs groups, but with the induction of the improved agricultural technology, this tradition has been broken. The technology augmented laborers from small sized families in contrast with the tradition of medium sized FL used to work on the farms without technology. The technology augmented laborers from high educated family also, in contrast with the tradition of low educated laborers used to work on the farms without technology. The improved farm technology has broken the hesitation of higher castes and high educated classes to work as agricultural labor but still there is a greater need and scope to persuade these people to achieve the national goal of social equity and justice.

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