Levels and Pattern of Consumption among Farmers in Sub-Mountainous Punjab

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Abstract

The present study was undertaken to examine the level and pattern of consumption among farmers in sub-mountainous Punjab. Consumption expenditure which includes food and non-food items estimated at 3.55 lakh among sampled households of Gurdaspur district during 2019-20. Food items constituted 23.62 per cent and non-food item 76.38 percent of total expenditure. Expenditure on food-items decreased with increase in farm size whereas expenditure on non-food items increased with increase in farm size. Across different farm size categories food expenditure was 31.41, 26.76, 23.41, 21.36 and 20.44 per cent and non-food items was 68.59, 73.24, 76.59, 78.64 and 79.56 percent among marginal, small, semi-medium, medium and large farm size categories, respectively. Due to fluctuations in income of the households, the consumption expenditure is considered as a better indicator to measure inequality. The value of Gini coefficient for consumption expenditure was 0.53 depicting high inequality among farm households in Gurdaspur district.

Keywords: Consumption expenditure, Farm-size, Gini coefficient

JEL Classification: N55, Q12, Z13

Introduction

During green revolution agriculture sector in Punjab has gone through huge primary changes in case of production (Satish, 2006). Due to green revolution, new technologies have been emerged. These new farming innovations have helped in increasing agricultural production level. But it created income inequality between small and marginal farmers, because small farmers can't afford new agricultural technologies (Wilson, 2002). Consumption expenditure and income level are positively related to each other. All farm categories had the option to record generous expansion in their yield and income through the selection of new farming innovation. With the presentation of new financial strategies in 1991 there was a huge expansion in expenses of development. Notwithstanding the expanding utilization of cutting edge farming data sources, returns were unimportant during the 1980s and surprisingly began declining by the 1990s (Singh, 2000).

Punjab farming has been going through a troublesome stage since 1997.

Indian economy is much diversified. It comprises different sub-groups like rural, urban, business, agriculture, service; etc. It is obvious that the occurrence of inequality in each sub-group will affects the overall distribution. Hence, the studies based on particular sub-groups are useful to identify the factors contributing to the within sub-group inequality. Overall economy can be subdivided into urban and rural sub-groups. The population is 31.16 per cent urban and 68.84 per cent rural (Census of India, 2011). In rural areas, agriculture is an important subgroup which provides employ to large number of people. Agriculture itself can be broadly classified into crop production, plantation, horticulture, livestock, etc. Agriculture contributes 39.2 per cent share in rural National Domestic Product (NDP)and provides employment to 64.1 per cent rural workforce (Singh *et al*, 2011). Overall, agriculture employs about 70 per cent population and contributes 18 per cent

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of Gross Value Added (GVA) in the Indian economy (Anonymous, 2018). More than 85 per cent operational holdings are marginal and small (<2ha) having 44 per cent of the net cultivated area (Anonymous, 2019a). Their number has been on the rise. The increase in population and breakdown of joint families in rural India is causing fragmentation of land holdings making the holding size smaller.

Similarly, Punjab economy is largely dependent on agriculture as 24.95 per cent of total GVA is contributed from agriculture in the year 2018-19 (Anonymous 2019b). The agricultural growth rate in Punjab has been low (1.61%) for 2005-06 to 2014-15 (Gulati *et al,* 2017). On the contrary, the agricultural households in Punjab have the highest income in the country (Rs. 23,133/month) (NABARD, 2017). The share of agricultural workers to total workers was 35.59 per cent in the state. According to agricultural census, there were 33.11 per cent marginal and small farmers in 2015-16 in the state (Anonymous, 2019b). Large farmers gained more than the small farmers, as their income was observed relatively higher upward shift. (Dhanagare, 1988; Dasgupta, 1977; Gahukar, 1992; Pisani; 2006; Johl, 1975). It was also realized that the small farmers were lagging behind the large farmers due to absence of modern innovations (Rao, 1975). It resulted in increased income inequalities between large and marginal farmers (Saini, 1976).

With guidance from the literature reviewed, the focus was to conduct district level analysis of level and pattern of consumption among the farmers as these are more representatives to inequality studies.

Data Sources and Methodology

The study was conducted in the Gurdaspur district of Punjab and the data were collected for the agricultural year 2019-20. A three-stage random sampling technique was used to select the sampled households. There are 11 blocks and 1124 villages in Gurdaspur district. In the first stage of sampling, out of 11 blocks in the district, two blocks were selected randomly, namely Batala and Qadian**.** At the second stage**,** list of all the villages in the selected blocks was prepared and two villages were selected from each of the selected blocks; namely, Rangilpur and Sheikhupur from Batala block; Harchowal and Bhagian from Qadian block. In the third stage, 20 farm households were selected randomly from each selected village, thus making a sample of 80

farm households for the present study. There were 11 marginal (<1 ha), 16 small (1-2 ha), 27 semi-medium (2-4 ha), 22 medium (4-10 ha) and 4 large (>10 ha) farmers. Thus, there were 13.75, 20.00, 33.75, 27.50 and 5.00 per cent farm households in marginal, small, semi-medium, medium and large farm-size categories in the sample collected for the study.

The family composition and number of earners in a family affects the consumption expenditure of farmers.

Dependency ratio

It is calculated by dividing the number of earners in a family by the total family members. The ratio gives insight into the family's dependence on the workers of the family.

Lorenz curve

Lorenz curve is a graph that portrays income inequality. On the horizontal axis, the graph plots percentiles of the population based on income whereas on the vertical axis it plots total income.

Gini coefficient

Gini index is a measure of statistical distribution used to estimate the income inequality within group of people. It was developed by statistician Carrado Gini (1912). Higher the Gini ratio, higher is the income inequality and vice-versa. The ratio is expressed in percentage or numerical equivalent has been used to measure the disparities in the income level of different farm categories. Gini coefficient has been used to measure the disparities in income level of farmers as following:

$$G = 1 - \sum_{i=0}^{n-1} (X_{i+1} - X_i)(Y_{i+1} + Y_i)$$

Where,

G = Gini coefficient

n= Number of selected farmers

X_i = Cumulative proportion of the number of farmers in i^{th} category

Y_i = Cumulative proportion of the income corresponding to i^{th} farmer

Results and Discussion

Socio-economic profile of different categories of farmers

It is very important to know the socio-economic

Table 1. Age wise distribution of head of farm households in Gurdaspur district of Punjab, 2019-20

(Numbers)

Farm-size Categories	Age (years)					Total
	up to 18	18-40	40-60	60-80	Above 80	
Marginal	-	1 (9.09)	10 (90.91)	-	-	11 (100.00)
Small	-	5 (31.25)	11 (68.75)	-	-	16 (100.00)
Semi-Medium	1 (3.70)	7 (25.92)	17 (62.96)	1 (3.70)	1 (3.70)	27 (100.00)
Medium	-	1 (4.55)	16 (72.72)	4 (18.18)	1 (4.55)	22 (100.00)
Large	-	-	3 (75.00)	1 (25.00)	-	4 (100.00)
Overall	1 (1.25)	14 (17.50)	57 (71.25)	6 (7.50)	2 (2.50)	80 (100.00)

Note: Figures in parentheses are percentages of total.

characteristics of farmers which influence the income and consumption activities of farmers.

Age-wise distribution of head

Most of the farmers belonged to age group 40-60 years, which constituted 71.25 per cent (Table 1). In age group of 18-40 years, about 17.50 per cent farmers were present. It was examined that 7.50 per cent farmers belonged to 60-80 years age group. Percent share of farmers above 80 years of age group was found to be 2.50 whereas 1.25 per cent farmers were up to 18 years

of age. Only one farmer was below the age of 18 years among the sample respondents and belonged to semi-medium farm size categories.

Education Level of the head

Education helps the farmers to adopt innovations easily; it also helps to increase the income of the farmers. Majority of farmers (38.75%) had education up to senior secondary/diploma level, 28.75 per cent studied up to matriculation level whereas 13.75 per cent qualified at graduation level, 7.50 per cent up to

Table 2. Education Level of different categories of farm households in Gurdaspur district of Punjab, 2019-20

Farm size categories	Education level						Total
	Illiterate	Up to Middle	Matric	+2/ Diploma	Graduation	Post Graduation	
Marginal	2 (18.18)	1 (9.09)	3 (27.27)	4 (36.36)	1 (9.09)	-	11 (100.00)
Small	1 (6.25)	2 (12.5)	4 (25.00)	7 (43.75)	1 (6.25)	1 (6.25)	16 (100.00)
Semi-medium	1 (3.70)	1 (3.70)	8 (29.63)	13 (48.15)	4 (14.81)	-	27 (100.00)
Medium	-	2 (9.09)	7 (31.82)	6 (27.27)	5 (22.73)	2 (9.09)	22 (100.00)
Large	-	-	1 (25.00)	1 (25.00)	-	2 (50.00)	4 (100.00)
Overall	4 (5.00)	6 (7.50)	23 (28.75)	31 (38.75)	11 (13.75)	5 (6.25)	80 (100.00)

Note: Figures in parentheses are percentages of total.

middle and 6.25 per cent up to post graduate level and only five per cent farmers were illiterate (Table 2). However, none of farmers were illiterate in case of medium and large farm size categories and 50 per cent of large farmers were post graduation. Percent share of marginal and semi-medium at post graduation level were negligible. None of the large farmer was qualified up to middle and graduation level.

Family size

Consumption expenditure is influenced by the family size. Average family size of sampled farm households was 4.81 members. The highest number of members were present in large farm size category, which was found to be 6.00 followed by medium, small, semi-medium and marginal farm size categories, which were observed to be 5.08, 4.86, 4.61 and 4.25 members (Table 3).

Number of earners

Average family size of agricultural households was 4.81 members in Gurdaspur district. Further, the number of total earners per households was found to be 2.08, out of which farm earners and non-farm earners were observed to be 0.75 and 1.33 members. Out of total working members, non-farm earners were accounted to be 0.54, 0.31, 0.70, 1.22 and 0.75 members in case of marginal, small, semi-medium, medium and large farmers, respectively. Higher the number of earners, higher the income level of farmers, thus it affects the

income level of farmers. Total earners increase with increase in the farm-size of farmers, thus income level. On an average farm earner were less than 2 members among all farm size categories (Table 4).

Land Structure

Overall value of operational area was 8.07 acres, out of which 8.18, 0.49 and 0.38 acres area was recorded as owned, leased-out and leased-in land. The percentage share of owned land was increased from 100 per cent due to high proportion leased-out their land. Average size of operational area for marginal, small, semi-medium, medium and large farm size categories was observed to be 1.61, 3.57, 6.53, 12.26 and 29.38 acres, respectively. It was noted that none of the large farmer leased-out their land, even they leased-in land from others farmers and it was observed to be 6.38 acres whereas both semi-medium and medium farmers leased-out as well as leased-in their land but marginal farmers neither leased- in nor they leased-out their land. Small category farmers leased-out their land to other farmers despite of leased in land

Level of Income

Income of all farm categories was worked out to be Rs.16,03,257, Rs.8,36,761, Rs. 5,08,332, Rs. 3,77,935 and Rs. 2,01,511 for large, medium, semi-medium, small and marginal farm households, respectively. Crop farming was the major source of income among all categories of farmers. Income from crops is net farm

Table 3. Family size of different categories of farm households in Gurdaspur district of Punjab, 2019-20

(Numbers)

Farm size	Total		Family Size
	Male	**Female**	
Marginal	2.17	2.08	4.25
	(51.06)	(48.94)	(100.00)
Small	2.62	2.24	4.86
	(53.91)	(46.09)	(100.00)
Semi-medium	2.51	2.10	4.61
	(54.45)	(45.55)	(100.00)
Medium	3.04	2.04	5.08
	(59.84)	(40.16)	(100.00)
Large	3.50	2.50	6.00
	(58.33)	(41.67)	(100.00)
All categories	2.68	2.13	4.81
	(55.72)	(44.28)	(100.00)

Note: Figures in parentheses are percentages to respective family size.

Table 4. Number of earners among farm households in Gurdaspur district of Punjab, 2019-20

(Number)

Farm size categories	Family size	Farm earners	Non-farm earners	Total earners	Dependency ratio
Marginal	4.25	1.09 (66.87)	0.54 (33.13)	1.63 (100.00)	2.61
Small	4.86	1.62 (83.94)	0.31 (16.06)	1.93 (100.00)	2.52
Semi-medium	4.61	1.30 (65.00)	0.70 (35.00)	2.00 (100.00)	2.31
Medium	5.08	1.31 (51.57)	1.22 (48.03)	2.54 (100.00)	2.00
Large	6.00	1.50 (66.67)	0.75 (33.33)	2.25 (100.00)	2.67
All categories	4.81	1.33 (63.94)	0.75 (36.06)	2.08 (100.00)	2.31

Note: Figures in parentheses are percentages out of total earners

Table 5. Land structure of different categories of farm households, Gurdaspur district, Punjab, 2019-20

(Acre)

Particulars	Marginal	Small	Semi-medium	Medium	Large	Overall
Owned land	1.61	3.63	7.46	12.98	23.00	8.18
Leased-out	-	0.06	1.00	0.86	-	0.49
Leased-in	-	-	0.07	0.14	6.38	0.38
Operational area	1.61	3.57	6.53	12.26	29.38	8.07

income which was computed by deducting the costs incurred on all inputs used in crop production. Mostly, all categories of farmers earned their income from crops (Rs. 3,70,526) followed by dairy (Rs. 93,302) and non-agricultural income (Rs 1,37,139). Large farmers earned the highest share of income from crops (Rs. 13,25,847) followed by medium (Rs. 5,88,664), semi-medium (Rs. 3,01,976), small (Rs. 1,58,407) and marginal farmers (Rs. 63,660). Similarly, large farmers earned the highest income from dairy being Rs 1,01,160 followed by medium (Rs. 1,08,054), semi-medium (Rs. 1,02,636), small (Rs. 78,122) and marginal farmers (Rs. 60,107). The income from non-agricultural sources was important source of livelihood of the farm households in Gurdaspur district. The share of income from non-agricultural sources was the highest for large farm households (Rs 1,76,250) followed by small (Rs 1,41,406), medium (Rs 1,40,043), semi-medium (Rs 1,03,720) and marginal farm households (Rs 76,816).

Table 6. Income level of different categories of farm households in Gurdaspur district of Punjab, 2019-20

(Rs/annum)

Sources of Income	Marginal	Small	Semi-medium	Medium	Large	Overall
a. Farm income	63660	158407	301976	588664	1325847	370526
b. Dairy	60107	78122	102636	108054	101160	93302
c. Non-agricultural income	76816	141406	103720	140043	176250	137139
Total (a+b+c)	201511	377935	508332	836761	1603257	600967

Consumption expenditure

Expenditure on food and non-food items by a farm household is known as household consumption expenditure. Food items include cereals, pulses, milk & milk products, sugar/gur, salt, condiments & spices, pickles, edible oil, fruits and vegetables. Non-food items include clothing, education, electricity bill, mobile recharge, gas cylinder, health expenses, fuel & maintenance of vehicles and social ceremonies. The average consumption expenditure of farm households was found to be Rs. 3.55 lakh. Variations were observed in the level of consumption expenditure of different farm-size categories. Consumption expenditure of marginal, small, semi-medium, medium, and large farm households was Rs. 2.22 lakh, Rs. 2.82 lakh, Rs. 3.40 lakh, Rs. 4.63 lakh and Rs. 6.54 lakh, respectively. Consumption expenditure is directly related to farm-size (Table 7).

Pattern of consumption expenditure

The highest expenditure on all items was made by large farmers due to their high income as compared to other categories of farmers. An average farming household spent 23.62 per cent of their income on food items and 76.38 per cent on non-food items. The results showed that marginal and small farmers spent 31.41 and 26.76 per cent of their income on food items followed by semi-medium (23.41%), medium (21.36%) and large farmers (20.44%). It indicated that marginal and small farmers spent a higher proportion of their income on essential items for their survival. In case of non-food items, major proportion of total consumption expenditure was done by large, medium and semi-medium farmers, which was found to be 79.56, 78.64 and 76.59 per cent as compared to marginal (73.24%) and small farmers (68.59%). It showed that large, medium and semi-medium farmers mostly spent their income for better standard of living (Table 8).

Table 7. Level of consumption expenditure of different categories of farm households in Gurdaspur district of Punjab, 2019-20 (Rs/annum)

Farm categories	Marginal	Small	Semi-medium	Medium	Large	Overall
A-Food items						
Cereals	20373	21718	23087	25518	33300	23619
Pulses	4866	3573	3536	5015	6425	4277
Milk & milk Products	28033	29747	30617	43354	61450	35132
Sugar/Gur	5315	5601	5892	6060	7535	5882
Condiments, spices, pickles	959	965	1156	1737	2375	1326
Edible oil	3909	5057	5465	5424	7430	5256
Fruits	2439	3660	4301	5330	7737	4372
Vegetables	4063	5219	5613	6633	7450	5693
Sub-total(A)	69957	75614	79006	97859	133702	85557
B-Non food items						
Clothing	18481	25594	33362	47774	61250	35120
Education	34963	40345	55524	56638	91250	54635
Electricity bill	20036	31775	37225	55372	67625	40282
Mobile recharge	3790	5588	6867	7590	10925	6590
Gas cylinder	9663	13753	14981	12205	17000	13341
Health expenses	23463	25616	30274	59554	71250	38507
Fuel & maintenance of vehicles	21794	31193	39648	51500	77500	40206
Social ceremonies	20609	33045	50481	63591	123750	47572
Sub-total(B)	152799	206909	268363	364700	520550	272729
Grand total(A+B)	222756	282523	340378	463771	654252	355039

Table 8. Consumption pattern of different categories of farm households in Gurdaspur district of Punjab, 2019-20

(Percent)

Farm categories	Marginal	Small	Semi-medium	Medium	Large	Overall
A-Food items						
Cereals	9.15	7.69	6.78	5.50	5.09	6.52
Pulses	2.18	1.26	1.04	1.08	0.98	1.18
Milk & milk Products	12.58	10.53	8.99	9.35	9.39	9.70
Sugar/Gur	2.39	1.98	1.73	1.31	1.15	1.62
Condiments & spices, Pickles	0.43	0.37	0.34	0.37	0.36	0.37
Edible oil	1.75	1.79	1.61	1.17	1.14	1.45
Fruits	1.09	1.30	1.26	1.15	1.18	1.21
Vegetables	1.82	1.87	1.65	1.43	1.14	1.57
Sub-total(A)	31.41	26.76	23.41	21.36	20.44	23.62
B-Non food items						
Clothing	8.30	9.06	9.80	10.30	9.36	9.69
Education	15.70	14.28	16.31	14.47	13.95	15.08
Electricity bill	8.99	11.25	10.94	11.94	10.34	11.12
Mobile recharge	1.70	1.98	2.02	1.64	1.67	1.82
Gas cylinder	4.34	4.87	4.40	2.63	2.60	3.68
Health expenses	10.53	9.07	8.89	12.84	10.89	10.63
Fuel & maintenance of vehicles, transportation	9.78	11.04	11.65	11.10	11.84	11.22
Social ceremonies	9.25	11.70	12.58	13.71	18.91	13.13
Sub-total(B)	68.59	73.24	76.59	78.64	79.56	76.38
Grand total(A+B)	100.00	100.00	100.00	100.00	100.00	100.00

Per capita consumption expenditure of farm households

Average per capita consumption expenditure of all sampled farm households was found to be Rs.76,973 (Table 9). Per capita expenditure on food-items was estimated to be Rs. 18,412 and on non-food items it was Rs. 58,561. Category-wise analysis shows that large farm households incurred more on per capita consumption expenditure than their smaller counterparts. It was Rs. 1.08 lakh followed by medium, semi-medium, small and marginal farm households for which per capita consumption expenditure was Rs. 96,239, Rs. 74,078, Rs. 62,020 and Rs. 53,246, respectively. It depicted that as farm-size increases per capita consumption expenditure also increases.

Distribution of per capita consumption expenditure

It can be observed that the share of the bottom ten per cent of farmers in total consumption expenditure was 5.86 per cent (Table 10). On the other hand, the share of the top ten per cent of farmers accounted for 16.31 per cent of total expenditure. The lowest fifty per cent of farm household shared 37.87 per cent of consumption expenditure against the upper fifty per cent farm household's share 62.13 per cent. Singh *et al* (2011) reported that the value of the Gini coefficient was 0.26 in Punjab. But the present study revealed that the value of the Gini coefficient was worked out to be 0.53 which indicated a high level of inequality in consumption expenditure among different categories of farm households.

Conclusion and Policy Implications

Consumption expenditure which includes food and non-food items estimated as 3.55 lakh among sampled households of Gurdaspur district during 2019-20. Food

Table 9. Per capita consumption expenditure of farm households in Gurdaspur district of Punjab, 2019-20

(Rs./annum)

Farm categories	Marginal	Small	Semi-medium	Medium	Large	Overall
A-Food items						
Cereals	4945	4801	5061	5144	5633	5044
Pulses	1157	788	783	1007	1084	926
Milk & milk Products	6767	6544	6669	9344	10308	7575
Sugar/Gur	1281	1239	1268	1275	1274	1266
Condiments & spices, Pickles	231	227	253	371	403	285
Edible oil	943	1124	1200	1152	1255	1139
Fruits	586	810	946	1142	1316	942
Vegetables	985	1143	1233	1426	1261	1235
Sub-total(A)	16895	16676	17413	20861	22534	18412
B-Non food items						
Clothing	4395	5650	7335	10109	10452	7513
Education	8102	8961	11917	14259	15405	11620
Electricity bill	4824	6874	7994	11823	10995	8537
Mobile recharge	912	1209	1445	1560	1768	1372
Gas cylinder	2296	2961	3272	2545	2795	2852
Health expenses	5615	5536	6581	12409	12101	8118
Fuel & maintenance of vehicles, transportation	5220	6814	8671	10369	12821	8685
Social ceremonies	4987	7339	9450	12844	19780	9864
Sub-total(B)	36351	45344	56665	75378	86117	58561
Grand total(A+B)	53246	62020	74078	96239	108651	76973

Table 10. Distribution of per capita consumption expenditure of farm households

(Percent)

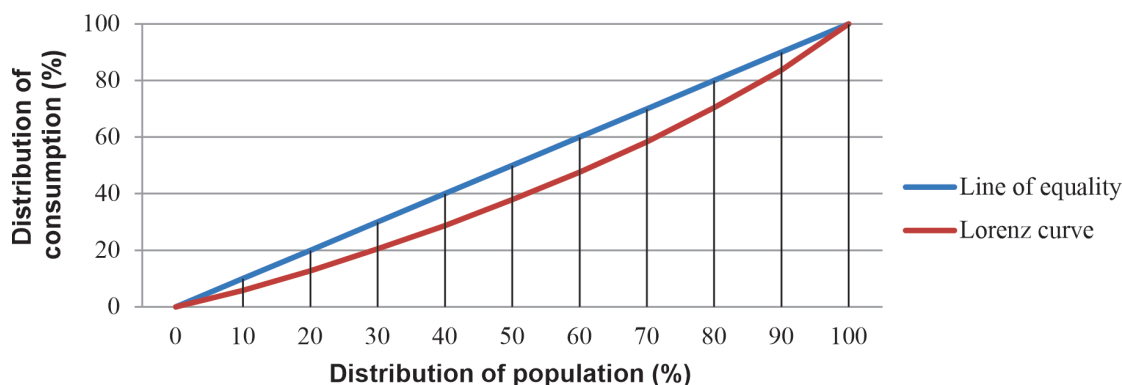| Cumulative percentage of households	Cumulative percentage of farm households' consumption
10	5.86
20	12.75
30	20.46
40	28.75
50	37.87
60	47.61
70	58.30
80	70.34
90	83.69
100	100.00
Gini Coefficient	0.53

Figure 1. Distribution of per capita consumption expenditure of farm households

items constituted 23.62 per cent and non-food item 76.38 percent of total expenditure. Proportionate expenditure on food-items decreased with increase in farm size and non-food items decreased with increase in farm size. Across different farm size categories food expenditure was 31.41, 26.76, 23.41, 21.36 and 20.44 per cent and non-food items was 68.59, 73.24, 76.59, 78.64 and 79.56 percent among marginal, small, semi-medium, medium and large farm size categories, respectively. There was high inequality among farm households in Gurdaspur. The value of the Gini coefficient for consumption expenditure was 0.53. The consumption expenditure for marginal farm households exceeded over the farm income of the households. the consumption expenditure of the small farm households was marginally covered by the income of these households putting them on the threshold of sustainable livelihood. Governmental support measures for households specifically belonging to lower strata of consumption distribution must be ensured to address consumption stress among these farm households.

References

Anonymous 2019a. Punjab Economic Survey. Economic and Statistical Organisation, Department of Planning, Government of Punjab. https://www.esopb.gov.in/static/PDF/EconomicSurvey-2019-20.pdf

Anonymous 2019b. Statistical Abstracts of Punjab, Economic and Statistical Organization, Government of Punjab, Chandigarh. https://www.esopb.gov.in/static/PDF/Abstract2019.pdf

Anonymous 2018. Agricultural Statistics at a Glance. Department of agriculture, cooperation and farmer's welfare, Government of India. https://agricoop.gov.in/sites/default/files/agristatglance2018.pdf

Census of India 2011. Date on Populaiton. Office of the Registrar General and Census Commissioner, New Delhi. https://censusindia.gov.in

Dasgupta B 1977. India's Green Revolution. *Economic and Political Weekly.* **12**:241-260. https://www.epw.in/journal/1977/6-7-8/specials-economic-crisis/india-s-green-revolution.html

Dhanagare D N 1988. The Green Revolution and Social Inequalities in Rural India. *Bulletin of Concerned Asian Scholars.* **20**: 2-13. https://doi.org/10.1080/14672715.1988.10404444

Gahukar R T 1992. Green Revolution in Food Crops: An Indian Experience. *Outlook on Agriculture.* **21**:129-136. https://doi.org/10.1177/003072709202100208

Gulati A, Roy R and Hussain S 2017. Getting Punjab agriculture back on high growth path: Sources, drivers and policy lessons. https://icrier.org/pdf/Punjab_agriculture_Report

Johl S S 1975. Gains of the Green Revolution: How they have been shared in Punjab. *Journal of Development Studies.* **11**:178-189. https://doi.org/10.1080/00220387508421536

NABARD 2017. All India Rural Financial Inclusion Survey Department of Economic Analysis & Research. https://www.nabard.org/auth/writereaddata/tender/1608180417NABARD-Repo-16_Web_P.pdf

Pisani E 2006. Some socio-economic consequences of the green revolution. *Land Reform.* **2**:97–107. https://mpra.ub.uni-muenchen.de/24977/

Rao T H 1975. The small farmers and the asset structure (A case study of three villages in Vishakhapatnam district). *Indian Journal of Agricultural Economics.* **30**: 272–279.

Saini G R 1976. Green Revolution and disparities in farm incomes—a comment. *Economic & Political Weekly.* **11**:1804-1806. https://www.epw.in/journal/1976/13/review-agriculture-uncategorised/green-revolution-and-distribution-farm-incomes.html

Satish P 2006. Institutional credit, indebtedness and suicides in Punjab. *Economic & Political Weekly.* **41**: 2754–2761. https://www.epw.in/journal/2006/26/review-agriculture-review-issues-specials/agricultural-institutional-credit

Singh S, Sharma V K and Kingra H S 2011. A study into the economics of farming and the pattern of income and expenditure distribution in the Punjab agriculture research report, Department of economics and sociology, Punjab Agriculture University, Ludhiana.

Singh S 2000. Crisis in Punjab agriculture. *Economic & Political Weekly.* **35**:1889-1892. https://www.epw.in/journal/2000/23/commentary/crisis-punjab-agriculture.html

Wilson K 2002. Small cultivators in Bihar and 'new' technology choice or compulsion? *Economic & Political Weekly.* **37**:1229-1238. https://www.jstor.org/stable/4411926