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A Study on Benefits of Agricultural Input Subsidies for Farmers in South India

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ABSTRACT

The rationale behind on the subsidies depends on the fact that they should be distributed equally among the regions and farmers for attaining the objective of rapid growth in agricultural production. But there has been large inter regional disparity in the use of agricultural input subsidies, which has relatively increased over the time periods. The results reveal that 71.25 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by high level [19.25 per cent] and low level [9.50 per cent]. There is significant difference between size of holdings and benefits of agricultural input subsidies. In addition, there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers among the different states. Therefore, it is recommended that the respective authorities should communicate properly about benefits of agricultural input subsidies among farmers and make them to use agricultural input subsidies efficiently. The agricultural input subsidy programmes should be transparent and combined with credit programmes that can allow farmers really benefit from subsidy programmes.

Keywords: Agricultural Input Subsidies, Benefits, Farmers.

1. INTRODUCTION

In general, agricultural input subsidies are used to enhance the efficiency of input usage, production and also profitability of farming and to deal with problems in input usage from farmer's lack of technological knowledge on the effective use of agricultural inputs and lack of financial understanding of the probable returns to their efficient use of agricultural inputs [Morris, et. al, 2007]. The rationale behind on the subsidies

depends on the fact that they should be distributed equally among the regions and farmers for attaining the objective of rapid growth in agricultural production. During the last two decades, total agricultural subsidies in India have increased tremendously from ₹91737 Crore in 2006-07 to ₹227801 Crore in 2015-16. But there has been large inter regional disparity in the use of agricultural input subsidies, which has relatively increased over the time periods [Acharaya, 1998]. Provision of input subsidies is an incentive to the farmers to adopt advanced technology and improves agricultural production and at the same time, it put heavy burden on the state exchequer and decreases investible surplus and consequently the growth rate of the economy.

2. REVIEW OF LITERATURE

Gowda [1992] found that the impacts of fertilizer and food subsidies were highly destructive than the benefits since it corroded into the actual resources of the government. He also stated that increased food production over the last 10 years, if considered the different forms of subsidy given to the agricultural sector, it was not seen to be greatly cheering. Hence, it was concerned that the expansion of input subsidies must be assessed from both food grain production and its impact on economy.

Gulati and Sharma [1995] revealed that benefits of agricultural subsidies had received by only certain types of farmers in few regions cultivating irrigated crops. Besides, highly subsidized prices of inputs namely water, irrigation and electricity had promoted cultivation of water-intensive crops. As a result, the connection between non-food crops and food crops had been reduced.

Gulati and Sharma [1997] stated that electricity subsidy had the higher growth rate among all the agricultural input subsidies. The small farmers had appropriated a higher amount of subsidies, but it was not encouraging inter personal and regional equity. They mentioned that increasing subsidies on continuous basis were giving wrong signal to farmers altered their production and led to degradation of environmental resources.

Dubash and Rajan [2001] concluded that the benefits of the subsidies were not equally shared and large farmers had received higher level of subsidy as compared to marginal and small farmers. They recommended that institutional reforms and extensive policy were required to deal the problems of irrigation subsidy and to understand their quantum, impact on environment and problems of equity.

Sarris [2005] found that paddy cultivators had continued to get higher benefit from government subsidies on agricultural inputs particularly from fertilizers and irrigation, but also from procurement at minimum support prices and these subsidies had increase the paddy production.

Acharya and Jogi [2007] indicated that input subsidies were mainly going to food crops in India. Out of the total input subsidies, rice accounted for 32 per cent, wheat accounted for 28 per cent, coarse cereals accounted for five per cent and pulses accounted for around two per cent. Among different farm sizes, marginal and small farmers were received larger portion and large farmers were received smaller portion in subsidies with respect to the operated area.

Sharma and Thaker [2009] concluded that the marginal and small farmers had a greater share in fertilizer subsidy as compared to their share in area under cultivation. The decrease in subsidy for fertilizer would have unpleasant effect on production and income of marginal and farmers small as they did not get any benefits from higher prices for outputs but benefited from lower prices for inputs.

Bardhan and Mookherjee [2011] found that minikits provided by local authorities had a huge effect on productivity in West Bengal, sharing 17% 16% and 8% respectively to the growth productivity in the study periods of 1982–1985, 1986–1990 and 1991–1995. The kits had no significant impact on cropping patterns or cropping areas, indicating that they were effectual by increasing yield of crops. These benefits were enjoyed by all size of farm holding and increasing agricultural incomes of hired workers but lesser than farm incomes.

Pandey and Tripathi [2013] concluded that withdrawal of subsidies would create unprofitable for farming, especially for marginal and small farmers and in less developed regions or states. Thus, there was a justification for subsidizing fertilizers for marginal and small farmers and also for less developed areas. Sharp raised in both imported and domestic fertilizer prices and as raw materials, increasing imports and decrease in subsidy on potassic and phosphatic fertilizers had created markets more unstable and, to the level that higher prices had directed to a reduce in consumption of potassic and phosphatic fertilizers and declinig in the N:P:K ratio.

Bhargava [2015] concluded that Indian government had an important role in the growth and development of agriculture sector in the means of agricultural input subsidies such as seeds, fertilizers, electricity, irrigation and credit. The expenditure on agriculture was very low because of low production and low demand at the time of independence, but with over the periods, quantum of subsidy had swelling and put additional load on government.

3. RESEARCH GAP

From the above review of literature, it is apparent that previous studies have been done on importance of agricultural input subsidies, utilization of agricultural input subsidies and impact of agricultural input subsidies on production. But, there is no research is done on benefits of agricultural input subsidies for farmers. Based on this research gap, the following objectives and hypotheses are framed for the present study.

4. OBJECTIVES

1. To study the benefits of agricultural input subsidies for farmers.
2. To examine the difference between size of holdings and benefits of agricultural input subsidies for farmers.
3. To study the state wise comparison of benefits of agricultural input subsidies for farmers.

5. HYPOTHESIS

1. H_{01}: There is no significant difference between size of holdings and benefits of agricultural input subsidies for farmers.
2. H_{02}: There is no significant difference in benefits of agricultural input subsidies for farmers across the South Indian states.

6. RESEARCH METHODOLOGY

The South Indian states namely Andhra Pradesh, Telengana, Karnataka and Tamil Nadu are chosen for the present study. The respondent farmers are selected for the present study by using multi stage random

sampling method. The sample size for the present study is decided by with the help of the following formula.

$$n = [t^2 \times p\,(1 - p)]/\mathrm{m}^2$$

where,

n = Required Sample Size

t = Confidence Level at 95% (standard value of 1.96)

p = Response from the Respondent Farmers in Pilot Study

m = Margin of Error at 5% (standard value of 0.05)

Step 1:

$$n = (1.96)^2 \times 0.5(1 - 0.5)/(0.05)^2 = 384$$

Step 2: The sample size is enhanced by 5% to account for contingencies namely recording error or non-response.

$$n + 5\% = 384 + (384 \times 0.05)$$

$$= 384 + 19 = 403.$$

Hence, it is rounded to 400.

Therefore, the sample size for the present study is 400 respondent farmers in South Indian states. The data are gathered from 400 respondent farmers through pre-tested and structured questionnaire.

The percentage analysis is done to know socio-economic status of respondent farmers, land holding of respondent farmers and benefits of agricultural input subsidies for respondent farmers. The Analysis of Variance (ANOVA) test is carried out to examine the difference between size of holdings and benefits of agricultural input subsidies for farmers and difference in benefits of agricultural input subsidies for farmers across the South Indian states. The bonferroni post hoc test is used to make multiple comparisons of benefits of agricultural input subsidies for respondent farmers in South Indian states.

7. RESULTS AND DISCUSSION

7.1. Socio-Economic Status of Respondent Farmers

The socio-economic status of respondent farmers was analyzed and the results are presented in Table 1. The results indicate that 77.25 per cent of respondent farmers are males and the remaining 22.75 per cent of respondent farmers are females. It is observed that 42.50 per cent of respondent farmers are in the age group of 46 – 55 years followed by 36 – 45 years [26.00 per cent], 26 – 35 years [14.00 per cent], less than 25 years [10.25 per cent] and more than 55 years [7.25 per cent].

The results show that 29.50 per cent of respondent farmers have primary education followed by post-primary education [23.50 per cent], illiterate [17.00 per cent], higher secondary education [11.75 per cent], secondary education [7.75 per cent], graduation [6.25 per cent] and post graduation [4.25 per cent]. It is apparent that 41.00 per cent of respondent farmers have farming experience of 16 – 20 years followed by 11 – 15 years [25.50 per cent], 6 – 10 years [13.50 per cent], less than 5 years [11.50 per cent] and more than 20 years [8.50 per cent].

The results reveal that 34.50 per cent of respondent farmers are the in annual income of below ₹1,00,000 followed by ₹1,00,001 – ₹2,00,000 [31.00 per cent], ₹2,00,001 – ₹3,00,000 [13.75 per cent], ₹3,00,001 – ₹4,00,000 [11.50 per cent] and above ₹4,00,000 [9.25 per cent]. It is clear that 91.75 per cent of respondent farmers are married and the remaining 8.25 per cent of respondent farmers are unmarried.

7.2. Land Holding Particulars of Respondent Farmers

The land holding particulars of respondent farmers was analyzed and the results are presented in Table 2. The results show that 82.25 per cent of respondent farmers have owned holdings and the remaining 17.75 per cent of respondent farmers have leased holdings. According to Ministry of Agriculture and Farmers Welfare, Government of India, the size of land holdings are classified in to Marginal [Less than 1 hectare], Small [More than 1, Less than or Equal to 2 hectares], Medium[Greater than 2, Less than or Equal to 5 hectares] and Large [Greater than 5 hectares]. It is clear that 33.25 per cent of respondent farmers are small farmers followed by marginal farmers [30.00 per cent], medium farmers [22.00 per cent] and large farmers [14.75 per cent].

The results reveal that 75.50 per cent of land holdings of respondent farmers are irrigated followed by semi-irrigated [21.50 per cent] and unirrigated [3.00 per cent]. It is observed that tubewell is the source of irrigation for 40.50 per cent of respondent farmers followed by well [27.50 per cent], river [14.50 per cent], canal [12.00 per cent] and tank [5.50 per cent]. The results indicate that 61.00 per cent of land holdings of respondent farmers are partially mechanized followed by fully mechanized [23.50 per cent] and non-mechanized [15.50 per cent].

Table 1
Socio-Economic Status of Respondent Farmers

Socio-Economic Status	*Number of Respondent Farmers*	*Percentage*
Gender		
Male	309	77.25
Female	91	22.75
Age Group		
Less than 25 years	41	10.25
26 – 35 years	56	14.00
36 – 45 years	104	26.00
46 – 55 years	170	42.50
More than 55 years	29	7.25
Educational Qualification		
Illiterate	68	17.00
Primary Education	118	29.50
Post-Primary Education	94	23.50
Secondary Education	31	7.75
Higher Secondary Education	47	11.75
Graduation	25	6.25
Post Graduation	17	4.25

Socio-Economic Status	*Number of Respondent Farmers*	*Percentage*
Experience in Farming		
Less than 5 years	46	11.50
6 – 10 years	54	13.50
11 – 15 years	102	25.50
16 – 20 years	164	41.00
More than 20 years	34	8.50
Annual Income (₹)		
Below ₹1,00,000	138	34.50
₹1,00,001 – ₹2,00,000	124	31.00
₹2,00,001 – ₹3,00,000	55	13.75
₹3,00,001 – ₹4,00,000	46	11.50
Above ₹4,00,000	37	9.25
Marital Status		
Married	367	91.75
Unmarried	33	8.25

Table 2
Land Holding Particulars of Respondent Farmers

Land Holding Particulars	*Number of Respondent Farmers*	*Percentage*
Type of Holdings		
Owned	329	82.25
Leased in	71	17.75
Size of Holdings		
Marginal [Less than 1 hectare]	120	30.00
Small [More than 1, Less than or Equal to 2 hectares]	133	33.25
Medium [Greater than 2, Less than or Equal to 5 hectares]	88	22.00
Large [Greater than 5 hectares]	59	14.75
Nature of Irrigation		
Irrigated	302	75.50
Semi-Irrigated	86	21.50
Unirrigated	12	3.00
Source of Irrigation		
Canal	48	12.00
Tank	22	5.50
Well	110	27.50
Tubewell	162	40.50
River	58	14.50
Degree of Mechanization		
Fully Mechanized	94	23.50
Partially Mechanized	244	61.00
Non-Mechanized	62	15.50

7.3. Benefits of Agricultural Input Subsidies for Respondent Farmers

The benefits of agricultural input subsidies for respondent farmers were analyzed and the results are presented in Table 3. The results show that 41.25 per cent of respondent farmers strongly agreed with subsidies as means to ensure cheap inputs to agriculture followed by agree [34.75 per cent], neutral [10.50 per cent], strongly disagree [7.25 per cent] and disagree [6.25 per cent]. It is clear that 40.25 per cent of respondent farmers agreed with subsidies stabilize the price of inputs followed by neutral [24.75 per cent], strongly agree [21.00 per cent], disagree [10.25 per cent] and strongly disagree [3.75 per cent].

Table 3
Benefits of Agricultural Input Subsidies for Respondent Farmers

Benefits of Agricultural Input Subsidies	*Strongly Agree*	*Agree*	*Neutral*	*Disagree*	*Strongly Disagree*	*Total*
Subsidies ensure cheap inputs to agriculture	165 [41.25]	139 [34.75]	42 [10.50]	25 [6.25]	29 [7.25]	400 [100.00]
Subsidies stabilize the price of inputs	84 [21.00]	161 [40.25]	99 [24.75]	41 [10.25]	15 [3.75]	400 [100.00]
Subsidies ensure availability of inputs for agricultural operations	121 [30.25]	161 [40.25]	59 [14.75]	36 [9.00]	23 [5.75]	400 [100.00]
Subsidies reduce cost of production	102 [25.50]	131 [32.75]	59 [14.75]	94 [23.50]	14 [3.50]	400 [100.00]
Subsidies reduce need to borrow	164 [41.00]	145 [36.25]	28 [7.00]	44 [11.00]	19 [4.75]	400 [100.00]
Subsidies enhance consumption	142 [35.50]	132 [33.00]	49 [12.25]	52 [13.00]	25 [6.25]	400 [100.00]
Subsidies provide security to farmers	121 [30.25]	126 [31.50]	45 [11.25]	43 [10.75]	65 [16.25]	400 [100.00]

The figures in the parentheses are per cent to total

The results indicate that 40.25 per cent of respondent farmers agreed with subsidies ensure availability of inputs for agricultural operations followed by strongly agree [30.25 per cent], neutral [14.75 per cent], disagree [9.00 per cent] and strongly disagree [5.75 per cent]. It is observed that 32.75 per cent of respondent farmers agreed with subsidies reduce cost of production followed by strongly agree [25.50 per cent], disagree [23.50 per cent], neutral [14.75 per cent] and strongly disagree [3.50 per cent].

The results reveal that 41.00 per cent of respondent farmers strongly agreed with subsidies reduce need to borrow followed by agree [36.25 per cent], disagree [11.00 per cent], neutral [7.00 per cent] and strongly disagree [4.75 per cent]. It is apparent that 35.50 per cent of respondent farmers are strongly agreed with subsidies enhance consumption followed by agree [33.00 per cent], disagree [13.00 per cent], neutral [12.25 per cent] and strongly disagree [6.25 per cent].

The results imply that 31.50 per cent of respondent farmers agreed with subsidies provide security to farmers followed by strongly agree [30.25 per cent], strongly disagree [16.25 per cent], neutral [11.25 per cent] and disagree [10.75 per cent].

7.4. Level of Benefits of Agricultural Input Subsidies for Respondent Farmers

The level of benefits of agricultural input subsidies for respondent farmers was analyzed and the results are presented in Table 4. It is classified in to low level, moderate level and high level based on " Mean ± SD" criterion. The mean is 26.20 and SD is 3.89. The number of respondent farmers above Mean + SD value [above 30] is high level, the number of respondent farmers below Mean – SD value [below 22] is low level and the number of respondent farmers between Mean – SD and Mean + SD value [above 22 and below 30] is moderate level.

Table 4
Level of Benefits of Agricultural Input Subsidies for Respondent Farmers

Level of Benefits of Agricultural Input Subsidies	*Number of Respondent Farmers*	*Percentage*
Low	38	9.50
Moderate	285	71.25
High	777	19.25
Total	400	100.00

The results reveal that 71.25 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by high level [19.25 per cent] and low level [9.50 per cent].

7.5. Size of Holdings and Benefits of Agricultural Input Subsidies for Respondent Farmers

The relationship between size of holdings and benefits of agricultural input subsidies for respondent farmers was analyzed by using Analysis of Variance [ANOVA] test and the results are presented in Table 5.

Table 5
Size of Holdings and Benefits of Agricultural Input Subsidies for Respondent Farmers

Size of Holdings	*Level of Benefits of Agricultural Input Subsidies*			*Total*	*F-Value*	*Sig.*
	Low	*Moderate*	*High*			
Marginal	14 [11.67]	96 [80.00]	10 [8.33]	120 [30.00]	4.514	.004
Small	28 [21.05]	96 [72.18]	9 [6.77]	133 [33.25]		
Medium	16 [18.18]	61 [69.32]	11 [12.50]	88 [22.00]		
Large	19 [32.20]	32 [54.24]	8 [13.56]	59 [14.75]		
Total	77 [19.25]	285 [71.25]	38 [9.50]	400 [100.00]	–	–

The figures in the parentheses are per cent to total

Out of 120 marginal respondent farmers, 80.00 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by low level [11.67 per cent] and high level [8.33 per cent]. Out of 133 small respondent farmers, 72.18 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by low level [21.05 per cent] and high level [6.77 per cent].

Out of 88 medium respondent farmers, 69.32 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by low level [18.18 per cent] and high level [12.50 per cent]. Out of 59 large respondent farmers, 54.24 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by low level [32.20 per cent] and high level [13.56 per cent].

The F-value of 4.514 is significant at one per cent level revealing that there is significant difference between size of holdings and benefits of agricultural input subsidies. Thus, the null hypothesis of there is no significant difference between size of holdings and benefits of agricultural input subsidies is rejected.

7.6. State Wise Comparison of Benefits of Agricultural Input Subsidies for Respondent Farmers

The state wise comparison of benefits of agricultural input subsidies for respondent farmers is analyzed by applying Analysis of Variance [ANOVA] test and the results are presented in Table 6.

Table 6
State Wise Comparison of Benefits of Agricultural Input Subsidies for Respondent Farmers

State	*Mean*	*F-Value*	*Sig*
Tamil Nadu	3.40	68.514	.000
Karnataka	3.79		
Andhra Pradesh	4.06		
Telengana	3.72		

The results show that the respondent farmers in Andhra Pradesh receive higher benefits from agricultural input subsidies followed by respondent farmers in Karnataka, respondent farmers in Telengana and respondent farmers in Tamil Nadu.

The F-value of 68.514 is significant at five percent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers among the different states. Hence, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers among the different states is rejected.

The multiple comparisons of benefits of agricultural input subsidies for respondent farmers in different states is analyzed by using bonferroni post hoc test and the results are presented in Table 7.

Table 7
Multiple Comparison of Benefits of Agricultural Input Subsidies for Respondent Farmers in Different States

(I) State	*(J) State*	*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
TN	KA	–1.22000*	.44860	.041	–2.4095	–.0305
	AP	.44000	.44860	1.000	–.7495	1.6295
	TE	4.80000*	.44860	.000	3.6105	5.9895
KA	TN	1.22000*	.44860	.041	.0305	2.4095
	AP	1.66000*	.44860	.001	.4705	2.8495
	TE	6.02000*	.44860	.000	4.8305	7.2095

(I) State	(J) State	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
AP	TN	–.44000	.44860	1.000	–1.6295	.7495
	KA	–1.66000*	.44860	.001	–2.8495	–.4705
	TE	4.36000*	.44860	.000	3.1705	5.5495
TE	TN	–4.80000*	.44860	.000	–5.9895	–3.6105
	KA	–6.02000*	.44860	.000	–7.2095	–4.8305
	AP	–4.36000*	.44860	.000	–5.5495	–3.1705

*The mean difference is significant at the 0.05 level.

The mean difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Karnataka states is significant at five per cent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Karnataka states. Therefore, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Karnataka states is rejected.

The mean difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Telengana states is significant at five per cent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Telengana states. Therefore, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Tamil Nadu and Telengana states is rejected.

The mean difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Andhra Pradesh states is significant at five per cent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Andhra Pradesh states. Therefore, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Andhra Pradesh states is rejected.

The mean difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Telengana states is significant at five per cent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Telengana states. Therefore, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Karnataka and Telengana states is rejected.

The mean difference in receiving benefits from agricultural input subsidies by respondent farmers between Andhra Pradesh and Telengana states is significant at five per cent level indicating that there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Andhra Pradesh and Telengana states. Therefore, the null hypothesis of there is no significant difference in receiving benefits from agricultural input subsidies by respondent farmers between Andhra Pradesh and Telengana states is rejected.

8. CONCLUSION

The findings reveal that majority of respondent farmers are males and most of them are in the age group of 46 – 55 years. Majority of respondent farmers have primary education and most of them have farming experience of 16 – 20 years. Majority of respondent farmers are the in annual income of below ₹1,00,000 and most of them are married. Majority of respondent farmers have owned holdings and most of them are small farmers. Majority of land holdings of respondent farmers are irrigated and the tubewell is the source of irrigation for majority of respondent farmers and most of land holdings of respondent farmers are partially mechanized.

The results reveal that 71.25 per cent of respondent farmers view the level of benefits of agricultural input subsidies at moderate level followed by high level [19.25 per cent] and low level [9.50 per cent]. There is significant difference between size of holdings and benefits of agricultural input subsidies. In addition, there is significant difference in receiving benefits from agricultural input subsidies by respondent farmers among the different states.

Therefore, it is recommended that the respective authorities should communicate properly about benefits of agricultural input subsidies among farmers and make them to use agricultural input subsidies efficiently. The agricultural input subsidy programmes should be transparent and combined with credit programmes that can allow farmers really benefit from subsidy programmes. The agricultural input subsidy programmes should be reorganized to comprise Farmer Based Organizations [FBOs] as a major distribution channel for subsidized agricultural inputs to farmers. Besides, the agricultural input subsidy programmes should be reorganized to directly transfer such benefits through the Direct Benefit Transfer [DBT] scheme.

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