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Shrikant Mahadu Devkar
Institute of Agri-Business Management, Bikaner, Rajasthan, India

Dr. Madhu Sharma
Institute of Agri-Business Management, Bikaner, Rajasthan, India

Corresponding Author:
Shrikant Mahadu Devkar
Institute of Agri-Business Management, Bikaner, Rajasthan, India

Resource use efficiency of agriculture input subsidies in Bikaner district of Rajasthan

Shrikant Mahadu Devkar and Dr. Madhu Sharma

Abstract
The currant paper is based on "Analysis of Agriculture Input Subsidies in Bikaner District of Rajasthan." The current work is based on three factors i.e. Irrigation, Electricity and Fertilizer. First why analysis of subsidies is important? Because in today's environment these three (Irrigation, Electricity and Fertilizer) factors are so important from government's point of view and also farmers' point of view. Form governments point of view it is needed to form policies for Indian agriculture. As agriculture serves as a livelihood for more than 49 percent of Indian farmers, which contributes about 18.8 percent to GDP of India. The agricultural land is distributed under three heads i.s. Small and Marginal farmers, Medium farmers and Large farmers categories. As large share i.e. more than 86.2 percent farmers fall under small and marginal farmers' category. 13.2 percent of farmers fall under Medium and semi medium category and remaing 0.6 percent farmer's fall under large category of farmers. So, it is very much needed to evaluate the importance of farm policies for Indian farmers.

Keywords: Agriculture, subsidy, electricity, irrigation, fertilizer, resource, efficiency

Introduction
India is a country of enormous geographic, economic and ethnic diversity which has made remarkable economic and social progress since the start of liberalization reforms in the early 1990's. India is the seventh largest country by land area (2.97 million km2) and the second most populous after china with over 1.3 billion people. However, at just 0.15 ha, per capita agricultural land is very scarce. While the level of urbanization increased from 27.8 percent to 31.1 percent within past decade, two third populations still lives in rural areas. While the contribution of the agricultural sector to gross domestic product has continued to decline over the last two decades, as 29 percent in 1990 to 18.8 percent in 2020-2021 it remained a major source of employment, contributing to 49 percent of the total national workforce (Organisation for economic co operation and development, 2018). Farming in India mainly depends on the monsoon. If the monsoon is good, the production will be higher and if the monsoon is below the threshold then the plants fail. Sometimes floods damage our crops. Since irrigation facilities are inadequate, farming depends on the aried season. Due to population growth the pressure to land is increasing. Land shares are fragmented and divided and have no funds. Equipment and equipment cannot be used on such farms. Due to inadequate irrigation systems and poor rainfall, agricultural production is low, farmers are able to find work for a few months a year. Their working capacity cannot be used properly. (Insights IAS 2020 to 2021). While there is transparency in explicit input subsidies, implicit input subsidies are hidden in nature. The latter arise on account of the mechanics of pricing of inputs. If inputs whose prices are administratively determined are priced low as compared to their economic cost, it becomes a case of implicit subsidization. As for the farmer, he does not receive a direct payment but there is someone in the economy that makes a difference. Therefore it is needed to study the three important factors i.e. Fertilizer, Electricity and Irrigation.

Literature Review
Parikh and Suryanarayana (1990) [1] studied food and agricultural subsidies: incidence and welfare under alternative schemes. They observed that the major subsidies relating to the food and agriculture sector are those for fertilizer, public food distribution, irrigation and electricity for farmers. Suresh and Reddy (2006) [2] studied resource-use efficiency of paddy cultivation in Peechi Command Area of Thrissur district of Kerala: An economic analysis.

The allocative efficiency has indicated that marginal return per one rupee increase under these heads would be Rs 2.83, Rs 1.57 and Rs 1.17, respectively. The average technical efficiency of the paddy farmers in the command area has been found as 66.8 per cent. Ray (2011) [3] argued that, at that time, water price policy and/or a system of tradable water rights were not the most effective way to increase irrigation efficiencies.

Water cost for sunflowers was 0.77 percent of its average net profit/acre, for winter wheat it was 0.59 percent, for summer groundnut 1 percent and for sugarcane 1.12 percent. Anbarasi and Latha (2013) [4] studied a study of the resource use efficiency of paddy farmers in Melbhuvanagiri block, Cuddalore district, Tamilnadu. It was observed from study that, the coefficient of manures and fertilizers are 0.4254 and 0.3736 and significant at 5 per cent level. The coefficient of seeds and labour are 0.0128 and 0.5862 respectively. Darko and Gilbert (2013) [5] in their study on economic efficiency and input subsidies in Malawi, stated that, the average profit efficiency score was 46.33 percent which implied that, improvements in technical and allocative efficiencies could increase the average profit per plot by 53.67 percent. Profit efficiency varied widely from 0.13 percent to 87.78 percent, with a standard deviation of 0.184. Only about 18 percent of the plots had efficiency scores of 70 percent and above.

Materials and Methods

Proposed plan of work

In order to achieve various objectives of the study, an appropriate methodology which describes, type of research, sources of data, sampling technique, selection of sample and data collection, Tools for primary data collection and tools of analysis is necessary to present. Hence, to fulfill this requirement current chapter describes the methodology used in the present study.

Type of research

Descriptive research design

Primary data

The interview schedule was designed to collect information on family composition, size of the holding, area under various crops, major crops grown, the extent of farm inputs used, cost of and returns from the crop, constrains in using selected agricultural inputs etc.

Secondary data

Secondary data collected from research papers, journals, write ups, Indiastat and government portals etc. Secondary data collected was about subsidies on fertilizer, irrigation and electricity collected from Department of Agriculture and Department of Horticulture, IGNP, Electricity Board and websites related to fertilizer, irrigation and electricity distribution.

Sampling Technique

Stratified Random Sampling

Selection of the district

Bikaner district was purposefully selected because it comes under the jurisdiction of the university

Selection of the crops

Two major crops using more of subsidized inputs ware groundnut and wheat in the area of study.

Selection of subsidized inputs for study

The subsidized inputs directly impacting the production of crops *viz*., fertilisers, irrigation water and electricity are the major inputs and were considered for detailed study.

Selection of *Tehsils*

Bikaner and Lunkaransar, two potential *tehsils* from each canal irrigated and tube well irrigated areas, were selected in consultation with the agriculture department.

Selection of villages

From Bikaner *Tehsil* namely, Ridmalsar, Khara and Jamsar, likewise from Lunkaransar *Tehsil* Dhirera, Fulandesar and Roza villages were selected

Selection of farmers

'Stratified random sampling method' was used to select groundnut and wheat growers from different sizes of land holding. Categories of size holdings were defined into three groups. Marginal and Small (0-2 Hectare), Medium and Semi - Medium (>2-10 Hectare) and Large (>10 Hectare). Thus, total 180 farmers were selected for final analysis.

Methodology

Resource use efficiency of subsidized inputs

The specific form of the function fitted was specified as follows

$$Y = aX_1^{b1} X_2^{b2} X_3^{b3}$$

Estimating resource use efficiency

To examine the economic efficiency of resource use, the marginal value of the product of each resource was carried out by using the following formula

$$MVP = bi \frac{y}{x_i}$$

Result and Discussions

Concept of agricultural input subsidy

Fertilizer Subsidy

Fertilizer subsidy is defined as the difference between farm gate cost of fertilizers and the price ultimately paid by farmers.

Irrigation Subsidy

Irrigation charges were calculated based on per hectare charges for the crop during the life cycle. Subsidy was calculated as per Irrigation Commission 1972, 5 per cent of gross income for field crops and 12 per cent of gross income for cash crops per unit and irrigation charges paid by farmers to IGNP or the basis of domestic water charges.

Electricity Subsidy

Electricity charges were calculated based on electricity rates for the agriculture sector applied by the electricity board and subsidy rates for the year 2017-2018.

Estimating resource use efficiency

Table 1: Resource use efficiency values of Groundnut for subsidized inputs.

	Coefficient			Adjusted	MVP		
Category	**Fert**	**Ele**	**Irri**	**R^2**	**Fert**	**Ele**	**Irri**
Small	0.015^{NS}	-	-	0.002	-	-	-
Medium	-0.079^{NS}	-0.015^{NS}	-	0.006	-	-	-
Large	-0.220^{*}	0.240^{NS}	-	0.130	-4.48	-	-
Overall	-0.053^{NS}	0.008^{*}	-	0.155	-	0.60	-

NS – non significant, * significant at 5 percent

The coefficient of fertilizer was -0.220 with R^2 value 0.130. This coefficient was significant with 95 percent level of significance. The MVP of the coefficient was -4.48. Therefore it can be concluded that fertilizer was overused by the farmers. The coefficient of electricity was 0.008 with R^2 value 0.155. The coefficient was significant with 95 percent level of significance. The MVP of coefficient was 0.60. Therefore it is concluded that, electricity was underutilized by the farmers, since there is scope to utilize more electricity

Table 2: Resource use efficiency values of Groundnut for non subsidized inputs

	Coefficient			Adjusted	MVP		
Category	**Fert**	**Ele**	**Irri**	**R^2**	**Fert**	**Ele**	**Irri**
Small	0.015^{NS}	-	-	0.002	-	-	-
Medium	0.063^{NS}	0.017^{NS}	-	0.019	-	-	-
Large	-0.239^{**}	0.021^{NS}	-	0.163	-2.613	-	-
Overall	0.040^{NS}	0.007^{**}	-	0.155	-	0.08	-

NS – non significant, * significant at 5 percent

The coefficient of fertilizer was -0.239 with R^2 value 0.163. This coefficient was significant with 95 percent level of significance. The MVP of the coefficient was -2.613. Therefore it can be concluded that fertilizer was overused by the farmers. The coefficient of electricity was 0.007 with R^2 value 0.155. The coefficient was significant with 95 percent level of significance. The MVP of coefficient was 0.08. Therefore it is concluded that, electricity was underutilized by the farmers, since there is scope to utilize more electricity.

Table 3: Resource use efficiency values of Wheat for subsidized inputs

	Coefficient			Adjusted	MVP		
Category	**Fert**	**Ele**	**Irri**	**R^2**	**Fert**	**Ele**	**Irri**
Small	0.02^{NS}	-	-	0.004	-	-	-
Medium	-0.04^{NS}	-0.03^{NS}	-	-0.030	-	-	-
Large	-0.24^{*}	-0.03^{NS}	-	0.100	-3.24	-	-
Overall	0.01^{NS}	0.01^{*}	-	0.110	-	0.441	-

NS – non significant, * significant at 5 percent

The coefficient of fertilizer was -0.24 with R^2 value 0.100. This coefficient was significant with 95 percent level of significance. The MVP of the coefficient was -3.24. Therefore it can be concluded that fertilizer was overused by the farmers. The coefficient of electricity was 0.01 with R^2 value 0.11. The coefficient was significant with 95 percent level of significance. The MVP of coefficient was 0.441. Therefore it is concluded that, electricity was underutilized by the farmers, since there is scope to utilize more electricity.

Table 4: Resource use efficiency values of Wheat for non subsidized inputs

	Coefficient			Adjusted	MVP		
Category	**Fert**	**Ele**	**Irri**	**R^2**	**Fert**	**Ele**	**Irri**
Small	0.016^{NS}	-	-	0.031	-	-	-
Medium	0.037^{NS}	-0.033^{NS}	-	0.033	-	-	-
Large	-0.241^{*}	-0.033^{NS}	-	0.100	-1.84	-	-
Overall	-0.008^{NS}	0.009^{**}	-	0.122	-	0.061	-

NS – non significant, * significant at 5 percent

The coefficient of fertilizer was -0.241 with R^2 value 0.100. This coefficient was significant with 95 percent level of significance. The MVP of the coefficient was -1.84. Therefore it can be concluded that fertilizer was overused by the farmers. Since there is scope to use less amount of fertilizer. The coefficient of electricity was 0.009 with R^2 value 0.122. The coefficient was significant with 95 percent level of significance. The MVP of coefficient was 0.061. Therefore it is concluded that, electricity was underutilized by the farmers, since there is scope to utilize more electricity.

References

1. Parikh KS, Suryanarayana MH. Food and agricultural subsidies: incidence and welfare under alternative schemes. Indira Gandhi Institute of Development Research, Bombay, Discussion Paper. 1990, 22.
2. Suresh A, Reddy TR. Resource-use efficiency of paddy cultivation in Peechi Command Area of Thrissur district of Kerala: An economic analysis, Agril. Econ. Res. Rev., Vol. 2006;19:159-171.
3. Ray I. Farm Level Incentives for Irrigation Efficiency: Some Lessons from an Indian Canal. University of California, 2011, 1-8.
4. Anbarasi V, Latha R. A study of the resource use efficiency of paddy farmers in Melbhuvanagiri block, Cuddalore district, Tamil Nadu. Language in India. 2013;13:71-75.
5. Darko FA, Gilbert JR. Economic Efficiency and Subsidized Farm Inputs: Evidence from Malawi Maize Farmers. International Conference of the African Association of Agricultural Economists. 2013;4:1-25.
6. Organisation for Economic Co-operation and Development. Review of Agricultural Policies in India, TAD/CA (2018)4/FINAL, 2018, 286. http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=TAD/CA(2018)4/FINAL&docLanguage=En

7. Insights IAS. Importance of agriculture in Indian economy, 2021. https://www.insightsonindia.com/agriculture/role-of-agriculture-in-indian-economy/