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Review Article

A Short Review on Economics Analysis of Crops Production

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ABSTRACT

From previous research studies the economic analysis of crop production, a majority of farm households are unable to comply with their crop income requirements. Another significant factor which contributes significantly to the disposable income of these farm households has been described as income from off-farm sources. Previous studies have proposed that the ability of off-farm sources to reach domestic expenditure should be further exploited. The technological productivity of crops should also be increased to provide farmers with more profits. Previous studies have also shown various important aspects relevant to the economic study of the production of food grain crops. The economics of crop cultivation, including the cost of input usage and crop profitability analysis of output. To calculate per acre input and output, econometric models should be applied. The article focused on the factors limiting crop productivity, the performance of high yielding varieties, the comparison of different crop varieties, the current crop production technology, the economic analysis of different crops and the performance of national strategies for growth.

Keywords: *Crops production, Economics analysis, Profitability, Output.*

INTRODUCTION

Review of relevant literature provides basis for meaningful research to be conducted. It highlights the background of the issue under research. Moreover, valuable information on research techniques (methodology) is gained from the earlier research reports. In addition, a detailed review of the previous work done by the researchers about the economic analysis of Wheat are any other food grain varieties i.e. rice, wheat and maize is presented. A number of researchers explored different economic aspects of various crops in general and particularly of wheat crop.

Relevant Literature on Economics of Crops

Azhar and Ghafoor (1988) carried out a study of the effect of education on technical efficiency for four major crops in Pakistan.

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The crops considered were the high yielding varieties of wheat and rice and the two traditional crops in Pakistan, namely cotton and sugar. An engineering production function were estimated using the 1976/77 cross-sectional data for the entire irrigated region. A modified Cobb-Douglas function combined land, labour and intermediate inputs with farmer's education introduced as a shift variable. The least square estimates suggested that the effects on output of cross-farm variations in labour use were not significant; and that education became important only when the possibility of 27 drawing from historical knowledge was remote, as was the case with Green Revolution crops.

Akhtar (1988) conducted a survey of wheat production in the district Multan, Pakistan Punjab, in the 1984/85 seasons. The survey identified major factors limiting wheat productivity and the profitability of low and high-yielding wheat technologies in the cotton zone of the Punjab. Policy implications were identified for agricultural extension and research. Multan is one of the Punjab's leading cotton growing areas and 150 randomly selected farmers were involved in the study. Questions were posed regarding planting time, land preparation, fertilizer usage, irrigation and previous crops in specific fields. The main factors responsible for differences in wheat productivity were use of phosphorus fertilizers, certified seed and the planting of wheat after cotton cultivation. The net returns of low and average yielding fields barely covered variable costs and the net returns in high yielding fields were positive.

Results emphasize the importance of cost-reducing technologies if wheat is to compete with alternative crops such as sunflowers, soyabeans and spring maize. Farmers in cotton areas normally obtain average wheat yields of 2.5 t/ha but the average yield was 2.2 t/ha in 1984/85, which was a poor year. However, the feasible economic yields for the area were3.5 t/ha. This implies a yield gap of some 30% to be filled by the application of known technologies. Developing appropriate recommendations for more homogeneous groups of farmers can reduce this gap. Recommendations should be based on crop rotations, access to irrigation water and the distribution of newer high yielding wheat varieties.

Tripathi (1993) examined the economics of high yielding variety (HYV) wheat cultivation for three farm size groups for middle hill and valley farms in Tehri Garhwal district, Uttar Pradesh, India. Data were collected from a sample of 120 farms for 1987/88. The average operational cost was Rs 2431/ha for middle hills farms and Rs 2506/ha on valley farms. Bullock labour accounted for the highest percentage of operational cost followed by manure, fertilizer and seeds.

Santha (1993) studied the economics of rice cultivation in India and compared the production cost, input use and profitability of rice production in three seasons. He found that the Viruppu crop performed better in terms of benefit cost ratio and cost of production.

Sreeja and Chandrabhanu (1995) evaluated and identified the economic benefits of fertilization practices for upland rice production. They found that slope of demand curve was greater than the slope of supply curve of paddy; price structure of paddy in Kerala, India. Projected values based on the model showed that instability of supply behavior to adjust changes in price should be changed to reduce the time lagin achieving equilibrium price and output.

Parikh et al. (1995) measured the economic efficiency in Pakistan agriculture sector using econometric techniques. Their views differed from those of Khan and Maki (2009) and found that small farms were more efficient than large farms. Dash et al. (1995) studied per hectare cost and return and level of input used in production for summer rice and observed that on average, per hectare cost of cultivation was Rs.17113 and average yield per hectare was about 56 quintals, which varied from 52.71 to 58 quintals on sample farms. The average gross and net returns per hectare were Rs. 18923 and Rs. 1920, respectively.

Roy and Talukder (1995) analyzed the relative economic performance of apotato- and a wheat-based cropping pattern in the Chandina Thana, Comilla31 District, Bangladesh. Two villages were studied which practised the cropping patterns of potato-Boro-T. Aman and wheat-T. Aus-T. Aman (Boro, Aman and Aus are varieties of rice planted in different seasons). A total of 40 farmers (20) from each cropping pattern) were surveyed during the crop year 1992/93. Total gross return per hectare from the potato cropping pattern was about twice that of the wheat cropping pattern. Profitability analysis of individual crops can be help fulin short run decision making but over the longer run account needs to be made for the profitability of crop combinations and rotations on specific plots of land inspecific areas.

Maredia (1996) employed an econometric approach using international and national yield trial data to estimate a spillover matrix for wheat varietal technology. The global spillover matrix was estimated based on international yield trial data from 1979-80 to 1987-88, that include 195 international trial locations and 209 wheat varieties. The locations were classified across countries using the CIMMYT's wheat mega environment system and varieties were classified by both their environmental and institutional origin. The model gave good explanatory power and confirmed the location specificity hypothesis, at least, for the varieties developed by national programmes (NARS). The spill over matrix shows that NARS varieties developed in the `home' environment generally perform better on average than varieties developed in other mega environments. The country-level 32 analysis, however, indicated that CIMMYT germplasm did not did so well in some sub-environments, such as the irrigated short-duration environment. The results of the spill over matrix had implications for the design of crop breeding programmes both at the national and international levels.

Dipeolu and Kazeem (1997) in Nigeria estimated three functional forms i.e. linear, semi-logarithmic, and double logarithmic where Cobb-Douglas production function (4) revealed that farmers lacked adequate experience in improved farming technologies. It further showed an average productivity of0.994 tons per hectare which was low, compared to potential rice yield of 2-3 tons per hectare.

Young et al. (1998) described that both government and nongovernmental institutions should devise appropriate policy about production systems i.e. marketing, transport storage, production costs, marketing margins, consumption, exports, capacity of land and water resources to increase production.

Ishida and Asmuni (1998) in Malaysia presented an Economic analysis of rice cultivation in District Swat. Economic analysis of rice production so as to trace the impact of agricultural modernization on paddy income. They concluded that farm mechanization had positive impact on paddy income.

Gamba (1999) studied the best known wheat varieties by both small-scaleand large-scale farmers were Mbuni, Nyangumi, Fahari, Kwale and Tembo, while Mbuni and Kwale were the varieties most widely grown. The recent varieties suchas Duma, Mbege, and Ngamia were hardly known/grown by farmers reflecting the lack of seed of the new wheat varieties. The main sources of wheat seed (old and new) for both the small-scale and large-scale farmers were other farmers. Farmers' wheat seed management practices were on the whole similar between the small scale and large-scale farmers. But significantly more large-scale farmers had separate fields for seed, selected seed at harvest and stored seed separately than did the small-scale farmers. The adoption of new wheat varieties was significantly higher in the high potential zone, in Uasin Gishu District and by large-scale farmers than in the low potential zone, in Nakuru/Narok districts and by small scale farmers. The logit model showed that household size and seed retention period had a negative impact on adoption of new wheat varieties whereas farm size, commercial wheat

price, years in wheat farming and seed selection had a positive impact.

Negatu (1999) analyzed to assess the impact of improved wheat varieties and their recommended fertilizer rate on small farmers' food status. The analysis was based on the primary data collected in 1995 from 192 farmers in two woredas in the central highlands of Ethiopia. The annual production of cereals, pulses and oilseed crops (all field crops) grown by the sample farmers were used to measure the food status of the households. This was done by comparing the total grain food production in calories with the recommended calorie consumption of 243 kg of cereal-equivalent per adult annually. The association of farmers' food status with the adoption of ET-13 wheat variety in Moretna-Jiruworeda and Israel wheat variety in Gimbichuworeda, and the use of their recommended fertilizer rate was analysed employing bivariate statistics. The analysis showed that food status of farm households in Moretna-Jiru was significantly associated with the adoption of 36ET-13, while in Gimbichu the association of the adoption of Israel with food status was not significant. In both woredas the users of the recommended fertilizer ratehad significantly higher food status than the nonusers.

Soni (2000) conducted a study of the impact of improved wheat production technology, including high yielding varieties with cultural practices, in Sagar district, Madhya Pradesh, India. Yield, input level and net return were compared for three technology options: (i) full package: national front line demonstration plots (FLD); (ii) progressive farming (adjacent plots of FLD participating farmers); and (iii) traditional farming (farmers in FLD villages). Data relate to the years 1993/94, 1994/95 and 1995/96. Demonstration fields produced significantly higher yields than the farmers' practices. Farmers harvested 29.81q/ha and 14.17 q/ha under irrigated and un-irrigated conditions, respectively, with the traditional system of cultivation. The progressive farmers harvested 20% higher yield than the traditional system. However, farmers adopting advanced technology had 61.92%-76.07% higher yield as compared to the traditional system. The study concludes that the investment in modern technologies proportionately enhanced output and net income.

Haq et al. (2002) using Cobb-Douglas type of production function technique investigated the relationship of farm size and input use and its effect on production and gross/net incomes in potato. Theyconcluded that labour, seed, farmyard manure, nitrophos and labours were the factors significantly contributed towards output.

Lohano and Mari (2005) assessed the input-output relationship of onion crop in Hyderabad district, Sindh, using Cobb-Douglas production function and found that input-output relationship of onion crop was characterized by constant returns to scale.

Ahmad, et al. (2005) determined the cost and revenue for potato crop and compared it for two districts of Punjab namely Okara and Kasur. They found significant difference in cost and revenue in these districts. They also considered funds availability, seed quality and stability in price as responsible factors to increase production of potato crop and its profitability.

Arifullah (2007) noted that yield potential was low (13-23%) as compared to world average yield for various crops in general and particularly for IRRI rice, onion, wheat, sugarcane and chickpea. He suggested decreasing the cost of production along with increasing per hectare yield.

Hussain and Khattak (2010) made the economic analysis of sugarcane crop in district Charsadda (Khyber Pakhtunkhwa), using primary data collected from100 respondents and Cobb-Douglas production function. They noted that area under sugarcane crop, tractor hours, fertilizer, seed, labour and pesticides were significant variables affecting sugarcane crop district.

Elahi and et al. (2015) assess the cost and returns (profit) of Rice cultivation in district Dera Ismail Khan. The results showed that the average cost per acre was Rs. 31,040 and average production (output) of rice was estimated to be 1840 kg per acre. Therefore, the gross return of rice production was Rs. 44468 per acre. The study, therefore, indicates that there is positive influence between return price and output of rice whereas on the other hand the input cost of rice had negatively affected the rice production.

Suggestions Based on the findings of this study

Based on the findings of studies, the following suggestions are made:

1) The government should make efforts to bring more area under wheat crop cultivation for increasing food crop production.

2) Information (awareness) should be given to the farmers to grow improved varieties rather traditional varieties. The farmers should grow the most profitable varieties of wheat according to the climatic conditions of the district.

3) The farmers should use only recommended seed, which is healthy, desired resistant and standard.

4) Timely and balanced fertilizer application schedule should be followed.

5) Proper storage facilities should be provided to the wheat growers.

6) Interest free loan facilities should be provided to the farmers.

7) The agriculture research stations should play active role in solving farmers' problems. It should set up a good relationship with the farmers. It should point out the causes of low yield and suggest measures for improvement. Furthermore, it should arrange seminars and programmes to aware the farmers about the agriculture updates. It should work free of political interference.

8) Multi-cropping system should be adopted in the research area to utilize the holdings and increasing food grain productivity so as to sell them in terminal markets.

CONCLUSION

From the research studies it is clear that food grain especially wheat crop represents the way of life and its cultivation is most closely connected with the socioeconomic conditions of food growers. Any improvements in wheat cultivation will ultimately improve the standard of living of the local community and further will have a positive impact on sources of income, labour force and capital, employment, labour distribution within the villages, food grain marketing, consumption pattern, price fluctuations, poverty alleviation, self-sufficiency, strengthening fertilizer business, reduction in prices of food grain maden commodities, farm mechanization, reduction in food grain shortages, extension in tractors and threshers market, prevailing brotherhood and increasing livestock production. The research showed that what are characterized by increasing returns to scale i.e. food grains' output increases more than their inputs.

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