



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Vol XXVI  
No. 4

ISSN 0019-5014

CONFERENCE  
NUMBER

OCTOBER-  
DECEMBER  
1971

# INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF  
AGRICULTURAL ECONOMICS,  
BOMBAY

# RAPPORTEUR'S REPORT

## ON

### AGRICULTURAL PRICES : PROBLEMS AND POLICIES

RAPPORTEUR : JAI KRISHNA

*Chief, Management Services Division  
The State Trading Corporation of India Limited, New Delhi*

In keeping with the suggested synopsis, the range of issues discussed in the papers submitted for the Conference has been very wide. The issues raised in the papers accepted for discussion are however grouped into three broad areas:

1. Pricing of inputs for agriculture.
2. Responsiveness of area and production to output price changes.
3. Pricing of agricultural produce and its impact on farm income.

#### PRICING OF INPUTS

With the adoption of new technology, the role of purchased inputs has become very significant in Indian agriculture. However, enough attention has not been paid to studying the implications of changes in input prices on farmers' decisions, much less to evolve meaningful guidelines for pricing of these inputs.

Donald C. Taylor in his very interesting paper examines the important problem of pricing of water supplied by the Tungabhadra Irrigation Project (TBP) in Mysore. Conceived as a project primarily providing "protective irrigation," the TBP has three localization patterns, namely, "perennial," "wet" and "light," the "light" irrigation category covering over 85 per cent of the land.

The experience in the project has, however, been that the farmers have failed to grow the specified crops in each of the three localized patterns, thus leading to large-scale "unauthorised cultivation" of paddy in the "light" irrigation areas. Another major problem faced is the inefficient use of water.

The author, using five different criteria for measuring relative profitability of "light" irrigated crops vis-a-vis paddy, states, "These findings indicate unambiguously, that one important reason for 'unauthorised' cultivation in the TBP is economic conflict. The economics presently facing individual farmers in the project are immensely different from the economics facing the project management." He maintains that raising the rate charged for irrigating paddy relative to that for "light" irrigated crops and assessing the water rates on a volumetric basis would shift the economics of crop production for individual farmers against paddy.

The author also views the problem from the standpoint of changing the relative prices of different crops and states "... if the present localization pattern in the TBP is taken as fixed, the Government would be well-advised to consider shifting the relative prices of 'light' irrigated crops, particularly the foodgrains, up relative to the prices of paddy." He further states "... a government policy to guarantee greater price stability for the 'light' irrigated crops is needed to provide economic incentive for farmers to reduce 'unauthorized' cultivation."

Taylor's analysis suffers from many methodological flaws. For instance, his study of relative profitability relies on simple averages for different crops grown in different seasons. A mere retabulation of data by *kharif*, *rabi* and summer seasons indicates that paddy is more profitable vis-a-vis "light" irrigated crops only in the *kharif* season. Data on paddy are not given for the *rabi* season; in summer "light irrigated" crops appear to have an upper edge. These results would indicate the need for differential pricing of water not only as between paddy and "light" irrigated crops, but also differentiated by seasons.

Similarly, the models used by Taylor to study relative movements in prices of the two categories of crops are rather elementary. What is perhaps more important from the farmers' view-point is the level, the trends therein and the stability of incomes. Lastly, Taylor leaves the important question "...how responsive farmers are to differing levels of water rates," unanswered.

P. R. Chetty discusses the various aspects of pricing of seed, the most important element of the new technology in agriculture. The starting point is the price paid by seed companies to farmers at the procurement stage. Whether or not the farmer will be attracted towards raising a crop for seed purposes will depend on the parity between additional costs and the premium for seed over the market price for grain.

A case study for maize grown for seed purposes for the National Seed Corporation indicates that seed growing gives 75 per cent higher net income per acre compared to growing grain for the market, a premium adequate enough to induce progressive farmers to grow maize for seed. The rate of optimal premia will obviously vary depending on the skills needed to raise a crop for seed. For instance, open-pollinated crops such as paddy and wheat are easier to manage as compared to the cross-pollinated crops such as maize, bajra and jowar.

As to fixing of sale price of seed, the author refers to three main approaches, namely, the total quantity method, the loading factor method and the unit cost method. While the three approaches essentially represent different accounting methods, a feature common to all the three is the substantial margin, around 100 per cent, between the procurement price and the sale price. Once the glamour attached to new seeds fades away, will the far-

mers be willing to pay such high margins? May be the march of technology will keep throwing up newer varieties of seeds to justify high premia? Or, is it likely that the seed companies may be faced with accumulation of excess stocks of some seeds as indeed happened during 1969 and 1970?

M. V. George and R. P. Singh examine the impact of the changing pattern of inputs used, their costs and changes in factor-product price relationships on yields and returns from wheat and bajra for a sample of 50 farmers from five districts of Haryana. Data collected relate to the period 1967-68 to 1970-71. These are compared with the data collected during 1961-62 under the Farm Management Studies.

The total cost per hectare increased by 327 per cent for wheat and 421 per cent for bajra between 1961-62 and 1970-71, the maximum rise having been recorded for fertilizers and manures and tractors, implements and machinery. However, since the figures have been expressed in value terms only, it is difficult to ascertain the relative influence of increases in input costs and the intensity of their use. Moreover, a comparison of costs per hectare does not seem to be very relevant in view of the sizable increases in output per acre as also the output prices between the two time periods.

What is, however, of considerable interest is the comparison of costs and returns for 1967-68 and 1970-71. The data indicate a very steep decline in the intensity of use of human and bullock labour for wheat. If the values in Table I are divided by wage rates in Table II, it emerges that per hectare use of human labour declined from about 95 days to about 40 days for wheat and from about 45 days to about 35 days for bajra. Similar trends are noticed for bullock labour. Thus, as the authors state, "... human and bullock labour as source of power are being increasingly replaced by mechanical power." The question that remains unanswered, however, is whether it is the rising costs of these inputs which are responsible for the substitution or is it the nature of the new technology itself which necessitates substitution of labour by mechanical power.

Another noteworthy feature is the decline in returns from these two crops, both in gross and net terms. Gross returns from both these crops declined in 1970-71 compared to 1967-68, as a result of the decline in average yields and unit prices. Returns net of costs indicated in Table I show a very steep fall from Rs. 842 to Rs. 191 per hectare for wheat and from Rs. 471 to a loss of Rs. 56 for bajra. Even if we exclude rental value and interest from the costs side, the decline in net returns is quite marked.

Yet another measure of the unfavourable factor-product price relationship is provided in terms of the quantity of produce needed to procure a unit of different types of inputs, output and inputs presumably valued at market prices. It emerges that the quantities of various grains needed to procure a unit of different types of purchased inputs are substantially higher in 1970-71 as compared to 1967-68. Obviously, unless accompanied by corresponding

increases in the productivity of inputs, the additional cost of inputs will have to come out of the farmers' profits.

The authors view these phenomena with concern and state: "Further, with the increase in the price of inputs the cultivators everywhere have experienced a cost price squeeze, and a consequent fall in their net incomes. Studies in Punjab and Haryana have shown that farmers have been investing a good proportion of their annual farm incomes in farm improvements in anticipation of higher returns. This tempo of investment could be maintained only if the farmers are assured of a sufficient margin of profit and a guaranteed minimum price for several seasons ahead." But, is there any evidence to indicate slowing down of the pace of investment in farming as a result of the product-factor price ratios becoming unfavourable?

Discussions on the pricing of only two inputs, namely, water and seed have thrown up many complex problems including conflicts of interests of the producers and the users of these inputs. Pricing of inputs with a long time-span of use, such as tractors and implements, is beset with many more problems. Then, there is the case of the most commonly used input, namely, fertilizers, where all is not well. As it is, some of the fertilizer companies are finding it difficult to market all they can produce. Have these difficulties something to do with the pricing policies? How would farmers react to changes in prices of different inputs? In other words, how elastic is the demand for agricultural inputs? How effective is the instrument of price policy vis-a-vis other measures of promoting demand for inputs? This Rapporteur is convinced that before long the agricultural economists will be called upon to untangle the many methodological and empirical issues in this area. The participants can provide some useful leads.

Another area of interest is the impact of recent changes in the parity of input-output prices for different crops, viewed of course against the background of technological changes, on the intensity of use of various inputs and the adoption of new technology itself. The paper by George and Singh throws up some disconcerting facts. It may be useful to examine evidence from other regions also. How widespread, for instance, is the phenomenon of displacement of human labour by mechanical power? Has the price of labour relative to that of mechanical power any relevance in the matter? To what extent is the so-called "cost-price squeeze" operative in other regions? And, what are its implications for farm investment and consequently for agricultural productivity in the immediate future and more importantly in the long-run?

#### RESPONSIVENESS OF AREA AND PRODUCTION TO CHANGES IN OUTPUT PRICES

The papers in this area follow the much trodden path of relating acreages to changes in prices and a few other explanatory variables. V. Rajagopalan, A. Sennimalai, S. A. Radhakrishnan and A. Kandaswamy considered three

alternative specifications to explain variations in area and production separately of tea, a perennial crop of considerable economic interest to India. Explaining variations in production is found a relatively easier task, though here also the very high and significant negative value of the coefficient for relative price ( $P_r$ ) is puzzling. One would have expected a positive sign for the coefficient. Similarly, relating area brought under new plantings and covered by replantings to changes in prices and other variables might have yielded better results.

J. L. Kaul and D. S. Sidhu while relating acreages under different crops in Punjab to changes in relative profitability of the crop and lagged acreage introduce the concept of variability in relative profitability also in the models. The authors maintain that expressing variability in the form of coefficient of variation (CV) is superior to the measure of standard deviation since the latter is not distributed normally.

The inclusion of variability in relative profitability in the model resulted in some improvement in the explanatory power of the equations for paddy, groundnut and *desi* cotton, but the elasticities did not change materially except in the case of paddy. Further, the very low levels of the coefficients of acreage elasticity for wheat and maize and that too for the period 1960-61 to 1969-70 seem rather odd. The very high level of elasticity for groundnut and the significance of the coefficient of variability at 5 per cent level are not worthy facts.

Dayanatha Jha and C.C. Maji have attempted to test the applicability of the Cobweb theorem for area under sugarcane in four districts of Bihar for the period 1934-35 to 1964-65. Two types of models, namely, traditional cobweb models and dynamic supply versions, have been used. Both the models indicate the existence of a convergent type of cobweb, the traditional model suggesting a two-year periodicity of the price cycle while the dynamic version indicates cycles of 4-5 years duration. While these results are interesting, it is questionable whether one can abstract totally from changes in yield levels while studying the cobweb phenomenon in sugarcane. Similarly, the opposite signs for the coefficients of sugarcane and sugar prices in the demand function is rather difficult to explain.

P. C. Bansil while studying the classic case of area shifts between jute and paddy hypothesizes the existence of "... a core area of 420-430 thousand hectares of jute in West Bengal which, given normal weather conditions, will always remain under jute. The effect of price changes will then be only marginal."

P. Boon-raung, J. S. Sharma, T. V. Moorti and M. M. Wagner in their attempt to explain variations in groundnut acreage find that the behaviour of different explanatory variables differs from State to State. S. R. Subramanian, S. Varadarajan and K. Ramamoorthy find that supply of irrigation water sets the limit for expansion of paddy area in southern region of Tamil Nadu.



But, strangely enough, lagged production and price of paddy were found to have a negative association with paddy area. Surendra Prasad Sinha and Benoy Nath Varma find that on the whole the area under cereals is inelastic to price changes in Bihar. S. L. Shah, R. C. Agrawal and K. S. Turna use three criteria, namely, historical prices, cost of production and parity concept to indicate the right price level for wheat, paddy and maize in Uttar Pradesh.

As indicated in the beginning, the papers discussed in this section have by and large conformed to the now "conventional" acreage response studies. There is hardly any room for debate about the farmers' responsiveness to economic stimuli in allocating land among competing crops. The area that has still remained unexplored is the response of production to changes in economic variables for individual crops and for aggregates of crops. How far can the changes in output of different crops be related to changes in economic variables? To what extent is the phenomenon purely technological? Is there any evidence of complementarity between changes in economic variables, in particular output prices, and the adoption of new technology? Obviously variability in yields and prices due to factors beyond the control of the farmers will have to be taken into account while formulating alternative models.

The so-called "green revolution" has given rise to serious imbalances in the product-mix in agriculture in some regions. For instance, the country seems to be producing more wheat and coarse grains, like maize, jowar and bajra, than what the economy can absorb at "procurement prices." How far is this phenomenon "price inspired?" And, what has been the impact of manipulations in the relative price structure of food and non-food crops on resource allocation and consequently productivity and production of these crops? And, finally, how elastic is the aggregate agricultural output to changes in agricultural prices? Or, would a more meaningful question relate itself to the ability of the price mechanism to so direct resource allocation in agriculture as to take maximum advantage of supplementary and complementary relations not only as between food and non-food crops, but also among various crops and non-crop enterprises, such as livestock horticulture, etc.?

The above are some of the issues on which the participants may like to focus attention.

#### PRICING OF AGRICULTURAL PRODUCE

The papers discussed in this section mainly focus attention on procurement and distribution policies for foodgrains. P. C. Goswami and J. Gogoi in a study covering 150 farm families in Nowgong district of Assam find that the small farmers make bulk of their sales immediately after the harvest, whereas large farmers tend to hold back a large proportion of the output for selling in the lean months. Further, the authors find that the small farmers fail to take advantage of the favourable cost-return ratio for jute relative to *Ahu*



paddy. They conclude “. . . . there is little scope for the farmers in the lower size-groups to increase or decrease the area under the principal crops. Only the big farmers are able to do this and take advantage of the higher prices in the lean months by holding back the sale of surplus crops.”

On the basis of a study of 50 surplus paddy growers in Sibsagar district of Assam, P. D. Saikia and A. K. Bora also arrive at a similar conclusion. They find that most of the surplus paddy growers, especially big farmers, make bulk of their sale in the lean months during which open market price is higher than the procurement price. The authors also indicate that while the small farmers generally sell their produce to the agencies approved by the Government, the big farmers patronize the private channels of marketing.

M. L. Patel while highlighting the differences in the patterns of marketing as between subsistence and surplus farmers, makes out a case for special measures for providing relief to the subsistence sector of Indian agriculture.

F. K. Wadia while surveying the developments in price policies for agricultural produce argues against relaxation in the present procurement and public distribution operations. She maintains that “A continuous system of procurement and distribution would, . . . , help achieve a measure of stability in the inter-and intra-year market prices of foodgrains.” She goes on to argue the case for extension of the system of the public distribution to the rural areas also with a view to provide relief to the small growers and the landless labourers. S. K. Chakravorty favours a two-price market for each commodity, a fixed quantity, consistent with minimum per capita requirement, being supplied at a lower price and the balance being made available at a higher price. This approach would also ensure a much larger participation by the State in marketing operations of foodgrains.

The above discussion raises two main issues. First, the pattern of marketing as between subsistence and surplus farmers and the impact on intra-seasonal price variations, on this pattern. When there are substantial variations in prices within the marketing season the big farmers having the capacity to hold back stocks take full advantage. On the other hand, such fluctuations put the small farmers, who sell part of their produce when prices are low and buy their food requirements in the lean season when prices are high, to a double disadvantage.

Second, there is the problem of resolving the conflict between the interests of producers and the consumers. It is well-known that raising of the procurement prices results in automatic increase in the issue prices of foodgrains, unless the Government are willing to foot the bill.

The field of policy for pricing of agricultural produce both from the point of view of the farmers and the consumers is indeed a very fertile area for generating extremely divergent views and consequently sharply conflicting policy alternatives. While the participants would, no doubt, like to cover as wide a ground as possible within the limitation of time, it would be useful to focus attention on the income-distributive role of agricultural prices.

---