POTENTIAL PRODUCTIVITY OF MODERN RICE TECHNOLOGY AND REASONS FOR LOW PRODUCTIVITY ON ASIAN RICE FARMS

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Abstract

Results of a collaborative project involving over 28 agronomists and economists are reported. Over 800 agronomic experiments conducted in ten locations in six Asian countries comparing farmers' production with maximum yield levels of modern rice technology are analysed. Under wet season conditions, yields were raised by an average of 0.9 tonnes per hectare, but the cost of obtaining the increased yields exceeded their value in six out of ten locations. Under dry season conditions, yields were increased by an average of 1.3 tonnes per hectare, and were profitable in nine out of ten locations. High levels of fertilizer and insect control contributed roughly equally to raising the yields, but the increased cost of high insect control exceeded the value of its yield contribution in most cases. The opposite was generally true for fertilizer. One result has been that rice entomologists have reoriented their research to try and achieve more cost effective protection. There was a distinct negative correlation between the increased yield obtained by adding fertilizer above the farmers' levels and the price of fertilizer in terms of rice, dramatizing how price policies affect incentives.

OPENER'S REMARKS--Morag C. Simpson

Discussion of this paper could logically centre around the validity of the findings and their policy implications. Neither time nor the available information allows a discussion of the validity of the findings. Results drawn from a very wide sample raise the question whether all other things were equal. The samples cover two seasons in each of three years and came from six different countries, each presumably with different taxation, government support services, and market situations.

To simplify the situation, let us assume that the results are valid and that the broad picture is that there is a gap of around one tonne of rice per hectare between what farmers actually got and what they could have got if they had used available additional inputs (mainly fertilizers, insecticides and herbicides).

Why did they not use these inputs? Because at existing ratios of input to output prices, it did not pay them to do so. In that these inputs have a large petrochemical component, then if it does not pay farmers to use them now, they will be highly unlikely to do so in the future. Hence the gap will remain unless new farming practices are adopted which rely on renewable natural resources.

Farmers are notorious for being weak sellers and buyers and thus are adversely hit by imperfection in the marketing systems for inputs and outputs, and also tend to bear a higher than intended incidence of taxation. Hence, if it is thought desirable to narrow the yield gap, some attention could profitably be given to marketing and taxation policies.

RAPPORTEUR'S REPORT--Karl T. Wright

No generalizations have been made from this study, which is defined only as yield research to find what farmers did and what they could have done. It does not now pay to use high levels of inputs, whether fertilizer or labour, and will not pay later. Inputs and outputs depend to a large extent on government policies.

This study in technical and economic efficiency and social strategy is a good example of the systems approach. The methodological problem of Herdt's partial approach is that it has not reflected true relationships. Why not use a simulation model where yield gaps, levels of input utilization, product prices, input prices, and other relevant factors are all brought in? It would be interesting to observe the nature of relationships that would then emerge between yield and relative prices from a complete model as against the positive zero order relationships which Herdt has implied in his paper.

The meaning of potential productivity is not clear. Productivity is more concerned with attitude and quality of farming population than with policy measures and extension activities.

Contributing to the discussion were Takeo Misawa, David Norman, Mario Jose Ponce, and R. Thamarajakshi.