

PRODUCTION BEHAVIOUR, SIZE OF FARM AND TECHNOLOGY: A Case Study of Punjab

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The Issue

Since mid-sixties, significant changes have taken place in agricultural technology of the Punjab. The new agricultural technology consists of some biochemical and some mechanical innovations. High yielding seeds, chemical fertilizers, pesticides, etc. are examples of biochemical innovations and tractor, thresher, harvester, etc. are those of mechanical innovations. While biochemical innovations are generally labour-absorbing, land-saving and neutral to scale of operation, mechanical innovations are generally human and bullock labour displacing and biased to scale (Rao, 1975; Srivastava, 1971). Again, while biochemical innovations call for a high dose of working capital, mechanical innovations need substantial capital investment. Thus, the introduction of these innovations has, on the one hand, increased the capital intensity of agricultural production in general, and, on the other, changed both the quantum as well as the composition of farm capital.

The impact of these innovations has not been evenly distributed among different crops. In terms of adoption of both types of innovations, the wheat technology since close sixties (joined by rice a few years later) could be notionally described as 'modern'; maize and cotton technologies largely 'semi-modern', and those for most other crops as 'traditional'. Thus, at the farm level, a three-tier technological system has been in operation since the close of sixties.

Given the differences in the resource structure of small and large farms, the new technology offers mixed production gains to different farm size groups. For example, while the large farms enjoy a relative edge because of the increased importance of capital, the small farms retain their traditional edge because labour is still a bottleneck with large farms, at least for some time-bound crop operations. On balance, it is widely felt that the new technology has shifted the production relationships to the *net* relative disadvantage of small farms.

This paper seeks to examine the production behaviour of small, medium and large farms of the Punjab, at the three levels of crop technology. The idea is to see how well the small farms in comparison with medium/large farms, convert inputs into output separately at