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ABSTRACTS OF Ph.D. THESES

Jha, Brajesh Kumar. 1994. Production Decisions Under Risk on Mixed Farms of Kurukshetra District. National Dairy Research Institute, Karnal. *Major Advisor:* S.B. Agarwall.

With the advent of green revolution, crop production is exposed to a higher degree of risk. The risk in crop production affects farmers' decisions and often results in technically and allocatively inefficient level of resource use. Thus, it becomes imperative to understand the nature of risk and its likely implications on sustainable agricultural production. The present study was, therefore, undertaken in the green belt of Haryana, to assess the magnitude of risk with commercialisation of agriculture, farmers' attitude towards risk and its likely implications on farmers' production decisions.

The district of Kurukshetra was selected purposively as it is in the forefront of green revolution in Haryana. The study involved a multistage stratified random sampling technique and a sample of 100 farmers was selected for collection of required primary data for the agricultural year 1991-92. The secondary data at district/aggregate level were collected for the period 1972-73 to 1990-91 for crop enterprises and for dairy enterprises for the period 1981-82 to 1989-90 only. The study used coefficient of variation around trend as a measure of risk. Further, downside risk was computed with probability of failure. Expected annual negative deviation and average annual negative deviation in income, farmers' risk attitude was assessed by certainty equivalents involving utility approach and linear relational analysis was performed to identify different socio-economic determinants of risk preference. Farm level diversification was measured by computing Harfindhal index, Entropy index, Index of maximum proportion and number of enterprises. Finally, deterministic linear programming and parametric linear programming, viz; MOTAD and Target MOTAD models were used to formulate risk neutral and risk efficient farm plans.

The study found considerable amount of risk (as measured by C_v) in yield and price of crops other than wheat and paddy. Risk in gross return

of crop was highest in rabi oilseeds followed by gram, coarse cereals, cotton, wheat and paddy. Periodwise analysis showed that risk in gross return of crops decreased except in gram during 80's over earlier period. By and large, the decline in CV_i of yield and gross return of crop enterprises in 80s were accompanied with a relatively lower rate of growth in crop enterprises and also a lower growth and instability in farm inputs, viz; fertilizers. However, farm harvest prices for most of the crops, especially coarse cereals, registered relatively higher rate of growth with less instability during 80s. A comparison of alternate measurement of downside risk found significant amount of market induced risk in crop enterprises. The phenomenon was more pronounced in basmati paddy and potato. The dairy enterprise in general and buffalo in particular involved least downside risk.

Although risk aversion was found to be the most prevalent risk attitude, a relatively higher proportion of farmers, specially large, under risk preference category was found in the study area. Again, the land holding, off farm income and progressiveness of farmers were found to have a positive and significant impact on farmers risk preference. Alternate indices for diversification manifest small farm to be least-diversified. Diversification with crop increased risk in the study area as crop returns were not negatively correlated, while diversification with dairy enterprises reduced risk.

The study found considerable scope for alteration of existing wheat-paddy dominant cropping system provided adequate marketing facilities were created for relatively profitable crops-basmati paddy, potato, sunflower, sugarcane. Again, buffalo was found to be relatively more profitable across different farm sizes, and draught animals on medium and large farms only. Risk efficient farm plans suggest for decrease in area under basmati paddy, potato, lentil and increase in acreage under kharif paddy, toria, wheat and sunflower for stability in farm returns. A comparison of MOTAD and Target MOTAD solutions indicate that risk return trade off depicted by MOTAD is more plausible than Target MOTAD. However, with Target MOTAD results, gross return in different years/situations with given enterprise mix can be assessed.