Agricultural Change and Migration in a Rural Agrarian Setting
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ABSTRACT
Using longitudinal panel data from the western Chitwan Valley of Nepal, we investigate the impact of the use of modern farm technologies on out-migration. Combining the labor substitution hypothesis with multi-ple logistic regression response hypothesis, we developed a new theoretical framework to test the relationships between technology use and out-migration. Our results from discrete-time hazard models show that the use of labor-saving farm technologies significantly increases subsequent out-migration from a rural agrarian setting.

BACKGROUND
In the second half of the 20th century, world agriculture has been dramatically revolutionized with innovations in green revolution technologies such as high yielding crop varieties, chemical fertilizers, pesticides, and farm mechanization facilitated by the development of new markets. In Nepal, the setting for this investigation, is experiencing rapid transition away from subsistence farming with a very low level of mechanization to a more commercialized farming system (MOAC 2003; APP 1995), resulting a large pool of surplus labor.

THEORETICAL FRAMEWORK
Modern technologies, particularly farm technologies, replaces farm labor (Blimwanger 1987; Schuttier and Van der Veen 1997), resulting in surplus labor pool.

Agriculture in the Valley

- Farming is a major source of livelihood and is largely subsistence-based.
- Large majority of farmers practice mixed-farming with highly integrated crop-livestock production systems.
- A 1996 household survey indicated over 85% of households grew crops and three-fourths kept animals.
- Almost all households used its own family labor in farming.
- Recently, farming is experiencing rapid transition and family mode of production is changing.
- Farm households are increasingly using labor-saving mechanical equipment (tractors, pumps and implements) as well as bio-chemical (chemical fertilizers and pesticides) inputs in crop production.

To what extent do the uses of labor-saving modern farm technologies influence out-migration, net of other socioeconomic factors known to influence migration?

SETTING
Western Chitwan Valley, situated in south-central Nepal, was covered with dense forest before the 1990s. During the 1990s, the valley was opened for settlement with distribution of land to farmers.

DATA
- Monthly prospective household registry
- 1996 household agriculture and consumption survey
- 1996 individual interviews

Sample
- 151 sample households
- 1,456 farm households
- 3,366 individuals

MEASURES
- Hazard of first migration lasting one month or more
- Household use of labor-saving farm inputs and technologies measured as dummy variables indicating use of a tractor, use of any farm implement, use of chemical fertilizers, and use of pesticides

ANALYSIS
- Descriptive: Frequency, percent, mean, standard deviation
- Bi-variate: Pearson’s correlation and one-way ANOVA
- Multivariate: Multi-level discrete time hazard model technique

RESULTS

Multivariate Results
- Uses of a tractor and farm implements increased the odds of individual out-migration. However, the use of a tractor significantly increased the odds of out-migration, net of all other controls.
- The effects of the uses of chemical fertilizers and pesticides were statistically not significant and the direction of the effects were not as expected.

CONCLUSION
- We examine the impact of use of labor-saving modern farm inputs and technologies on out-migration in a poor rural agrarian setting.
- The findings provide evidence that the use of mechanical technologies, particularly the use of a tractor in crop production, encourages subsequent out-migration.

REFERENCES

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Graphs and charts showing data and results are omitted for this natural text representation.