INTRODUCTION
After achieving independence, agricultural policy of Uzbekistan mainly concentrated on 2 objectives. One of them is to achieve self-sufficieny in grain production. In agriculture reforming it was chosen the path based upon restructuring of agricultural enterprises to fulfill this goal and establish new type of farm – private. The agricultural land was given to rent through competition to private farms. Nowadays the big group of grain producers are private farms. They are completely free in their activities according to the law, but they are severely constrained in practice.

OBJECTS
• estimate technical and allocative efficiency performance of wheat producing private farms;
• determine factors affecting in efficiency

FIELD SURVEY
• Tashkent region, Uzbekistan
• 44 wheat producing private farms for 2004–2005;
• random sampling technique;

RESULTS
Fig 1 Chronological change of reorganization of agricultural enterprises.

The second stage, regression can be used to explain the efficiency scores for the various firm-specific factors as to identify the factor affecting technical efficiency from the DEA results. In this study Tobit regression was used to identify factors associated inefficiency:

\[ \text{T}_\text{Eff} = \beta_1 \text{AGE} + \beta_2 \text{EDUC} + \beta_3 \text{EXP} + \beta_4 \text{FS} + \beta_5 \text{FERT} + \beta_6 \text{MACH} + \epsilon \]

\[ \epsilon \sim N(0, \sigma^2) \]

Variable Description Mean Std. Error

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean</th>
<th>Std. Error</th>
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</thead>
<tbody>
<tr>
<td>AGE</td>
<td>Age of farmer, years</td>
<td>57.25</td>
<td>6.23</td>
</tr>
<tr>
<td>EDUC</td>
<td>Education levels, years</td>
<td>3.20</td>
<td>0.80</td>
</tr>
<tr>
<td>EXP</td>
<td>Experience, years</td>
<td>3.50</td>
<td>0.90</td>
</tr>
<tr>
<td>FS</td>
<td>Fertilizer, kg</td>
<td>73.60</td>
<td>23.60</td>
</tr>
<tr>
<td>FERT</td>
<td>Fertilizer, kg</td>
<td>73.60</td>
<td>23.60</td>
</tr>
<tr>
<td>MACH</td>
<td>Machinery, hours</td>
<td>3.90</td>
<td>0.90</td>
</tr>
</tbody>
</table>

For estimation of efficiency measures were included observations on input used (man-days of labour, fertilizer per kilogram, machinery hours) and farm characteristics (such as age of farmers, years of education and experience, household size, machinery availability). In the study efficiency estimation under constant return to scale by employing input-oriented DEA was used:

\[ \text{Eff} = \frac{1}{\sum_{j=1}^{n} \sum_{k=1}^{m} x_{jk} \lambda_{jk}} \]

\[ \lambda_{jk} = \sum_{i=1}^{n} \beta_{i} x_{ij} \]

\[ x_{jk} \geq 0, \quad w = 1, \ldots, n \]

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Fig 2 Technical and allocative efficiency of wheat producing private farms

Within the limitations of the data availability, it has been able to identify and estimate technical and allocative efficiency and the factors determining technical efficiency among the wheat producing farms. On the average wheat producing farms could reduce input use by 25% and produce the same volume of output.

Among factors that have significant impact of use fuel per hectare. This outcome thus suggests that right proportion of use inputs is important variable to be considered seriously for farmer and policy-makers. Most important is to create long-term programs, which could help to improve machinery availability for farmers, as investment into fleets of machinery and tractors.

CONCLUSIONS

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1. http://www.tropentag.org