

**FARMERS' PRACTICES IN USING COTTON VARIETIES AND SEEDS IN A LIBERALIZED  
MARKET: A CASE IN HEBEI PROVINCE (CHINA)**

**Guiyan Wang**

**Weili Liang**

**Hebei Agricultural University**

**Baoding, China**

**Michel Fok**

**UR SCA, CIRAD**

**Montpellier, France**

**Abstract**

In the area of varieties and seeds, market liberalization is assumed to benefit to growers who could find most adapted varieties at competitive prices. There are nevertheless few empirical studies assessing the extent to which growers actually benefit. Our communication is a contribution to compensate this lack of empiric studies. Our communication deals with the specific case of Hebei Province, in the North of China. This location appears to be a representative location to observe how cotton growers react to a liberalized market of varieties and seeds, because of the policy of licensing Chinese Bt genes. The study we implemented was based upon four years of surveys from 2006 to 2009. Our objective was to capture farmers' practices in using varieties and seeds, to identify whether they could reveal any strategy in connection with the management of production costs. Farmers in Hebei Province have used Bt cotton since 1997. Our study also focused on capturing farmers' feelings about the effectiveness and profitability of this transgenic cotton.

The results of our study clearly indicate that there was some strategic component in the farmers' behaviours in using varieties and seeds, although it was not systematic across all farmers. For more than 40% of farmers, it was strategic for them to not grow only single variety when the average cotton area was only around 0.5 ha. Nearly 10% of farmers used three or more varieties. Paradoxically, seed prices were high despite market competition. This paradox could be partly explained by the farmers' behaviour in shifting to new varieties, implying a great turnover of varieties, which in return forced breeders to raise seed prices to recover costs in a short period. Our study is, to our knowledge, the first to point out the relative importance of the share of varieties whose names could not be verified or to report the poor knowledge farmers had of the varieties they have used.

Nevertheless, we do not think that there was any conscious move of farmers to use varieties of dubious origins as a strategy of minimizing input costs. Farmers in our study were willing to renew annually their seeds or to buy them from merchants. The seed prices of the varieties with dubious names were not lower and there were no systematically lower costs in production inputs for farmers using these varieties.

The results of our study give an illustration of what is called in China the "seed market disorder" linked to the plethora of varieties in a context of lack of control. Through this phenomenon, farmers are often uncertain about the real attributes and names of varieties, as our study shows. Seed prices are not a reliable indicator of their quality. In our study, there was no price difference between varieties with verified/correct names and those with dubious names. There was neither yield difference between the farmers using the two types of varieties. Furthermore, farmers who bought seeds from merchants curiously had lower yields. This might be an indication of poor quality of seeds provided by the market.

Despite rapid adoption of Bt cotton in Hebei Province and elsewhere in China, our study showed that Bt cotton varieties only covered 80.7% of cotton area. This could be connected to the fact farmers were no longer as happy with Bt-cotton effectiveness and profitability. Our study nevertheless could not clarify whether the use of non-Bt varieties was a fact of the "seed market disorder" or was a conscious move from farmers, as it has been reported in the neighbouring province of Henan. This is a point worth consideration in future work.

Several implications can be drawn from our study. Sustainable use of Bt cotton by farmers can hardly be claimed when farmers have such poor knowledge of the varieties they use or when the market is open to varieties whose names cannot be found in official registers. Technical assistance must be adjusted to improve cotton farmer knowledge of cotton varieties, so they do not rely solely on commercial advertising. Better regulation of marketed varieties must be contemplated also. Finally, the decline of the effectiveness and profitability of Bt cotton can no longer be ignored by the Chinese entities in charge of research and development. Otherwise, farmers may return to non-Bt cotton without adequate caution, at their expense and at the expense of the entire Chinese cotton sector.