



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

Cost-Benefit Analysis of Drip Irrigation in Cotton Production in China

TIL FEIKE^{1,2}, THOMAS LANG², NAN HA², REINER DOLUSCHITZ²

¹*Julius Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants, Inst. for Strategies and Technology Assessment, Germany*

²*University of Hohenheim, Inst. of Farm Management, Germany*

Abstract

The extremely arid climate of the Tarim Basin in the Xinjiang province in Northwestern China offers ideal production conditions for cotton, making the region one of the nation's major cotton production bases. However, in the last decades the overuse of water resources for agricultural production led to severe ecological degradation and increasing competition for water among farmers. Still the majority of farmers in the region uses flood irrigation to provide water to their crops. Drip irrigation under plastic mulch constitutes a new technology that generally features increased water use efficiency, however at higher production costs. The present study assesses the costs and benefits of applying drip irrigation based on a primary household dataset of 229 cotton producing households collected in the region. Three scenarios are tested for farmers shifting from flood to drip irrigation technology: i) no effect on yield level, ii) yield gap to sampled drip irrigation farmers is closed by 50 %, iii) yield gap to sampled drip irrigation farmers is closed completely. Furthermore three levels of seed cotton sales price are examined. Finally the necessary water price level is identified at which the net present value of the investment into drip irrigation becomes zero. The results furthermore indicate, that the application of drip irrigation is only beneficial in economic terms, if farmers manage to increase their yield levels at the same time. Therefore it is recommended to improve the agricultural extension service, and cover a substantial share of the additional cost for the farmer through providing subsidy for advanced irrigation technology.

Keywords: China, cost-benefit analysis, cotton, drip irrigation