POTENTIAL ECONOMIC BENEFITS OF A GENETICALLY MODIFIED (GM) TUBERMOTH-RESISTANT POTATO VARIETY IN SOUTH AFRICA: AN EX-ANTE SOCIO-ECONOMIC EVALUATION FOR COMMERCIAL PRODUCERS

Agricultural Research Council and University of the Free State

Jordaan, AJ and Carstens J. P. assisted by
Jordaan, AD, Swanepoel, K and Sissons, D.

April 2007

Executive Summary

The development of GM crops already resulted in a significant increase in output for crops such as maize, cotton, soybeans and others in South Africa. South African commercial farmers are willing to adopt biotechnology if it improves their output and profitability. Potatoes that are genetically modified through biotechnology could have a significant impact on the South African potato industry if the new cultivars improve output and quality and or reduce input costs.

This report is a follow up on the ABSP report dated July 2005 and has the objective to provide farm level data for use in the empirical model used in the 2005 report.

The survey revealed that the majority of farmers were already producing GM maize and that they would be willing to produce GM potatoes if it would have a positive impact on their profitability. The results of this study show, however, that the expected impact on the potato industry as a result of better tubermoth control by means of GM potato would not be as significant as expected. The ABSP report (2005) refers to an input cost reduction of 8% for commercial farmers, while this survey reveals that farmers could save between 1.3% and 1.7% in inputs if the price of GM seeds were to remain the same as that of current seed. The average saving that can be expected by potato producers is R610 per farm on farms experiencing tubermoth problems. The reason why this amount is much lower than the normal chemical expenditure is because the farmer interviewed indicated that they had other more serious problems such as leaf miner and that they had to control other insects as well. The same chemicals designed for tubermoth also control leaf miner and other insects.

The results clearly show that tubermoth is a major problem only in the Ceres production area where farmers spend twice as much to control tubermoth than in the rest of South Africa. Kwa-Zulu Natal appears to be the production area with the most insignificant tubermoth problems, with only a few farmers stating that they were experiencing minor tubermoth infestations. The tubermoth as a problem was ranked low by the farmers from all other regions in South Africa except in the Ceres region and that is one of the main reasons why the farmers interviewed were of the opinion that the GM potato would not have any significant impact on their production. Farmers also mentioned that they had other cultivars available with a higher yield potential than the new GM cultivar and they did not expect a rapid adoption rate with the new potato. Most farmers, however, agreed that they are willing to introduce GM potatoes if it would significantly improve productivity.

The survey revealed that the farmers interviewed were of the opinion that the number of sprays would not be influenced significantly, since most farmers were following a fixed spray programme designed to control all insects and pests. The same chemicals designed for tubermoth control also controls other insects, and the farmers expected that they might be able to save on one or a maximum of two sprays. They also indicated that the GM potato would have no impact on labour utilisation, since they normally used permanent labour and not seasonal labour for spraying.

The farmers interviewed were less concerned about the marketability of GM potatoes in South Africa than expected. Most of the farmers were of the opinion that the South African consumer would purchase the product if it were accompanied by a proper marketing promotion effort. However, the producers interviewed were of the opinion that the export market for potatoes would be influenced negatively. More than half of the producers indicated that they are of the opinion that other African countries and Europe would not import GM potatoes.

It appears that farmers in general would agree to introduce GM potatoes into their production planning on condition that the new technology significantly increase their profits. The GM potato with tuber-moth resistant genes might not have the expected rapid adoption rate amongst farmers, since most farmers have tubermoth infestation under control at a reasonable cost.