SUGARCANE SMUT – A RECENT INCURSION INTO THE EASTERN AUSTRALIAN SUGAR INDUSTRY

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INTRODUCTION

Sugarcane smut is one of the most destructive sugarcane diseases world-wide. First recognised in 1877 in Africa, the disease has progressively spread to different land masses and countries. Until recently, the Australian, PNG and Fiji sugar industries were the only ones unaffected. In 1998, the disease was found for the first time in Australia in the Ordr River Irrigation district of Western Australia. Resistance-screening research showed that most Australian-bred commercial cultivars were susceptible to the disease and this was of great concern to cane farmers in the much larger eastern Australian region (Queensland and New South Wales).

This paper reports on the finding of sugarcane smut in the eastern Australian industry, and control measures implemented since that finding.

FIRST FINDING

The first smut finding was confirmed on 9th June 2006 in the Childers (Isis Mill area) district of southern Queensland (1). The initial evidence consisted of an infested side-shoot (secondary infection) on a standing cane stalk, but later limited primary disease symptoms presented in affected crops suggesting the disease had been present at least several years previously. Over 70 farms were found to be infested by November 2006.

LOCAL CONTROLS

Quarantine The Queensland sugar industry has a well-defined quarantine system regulated under State Government legislation. There are seven sugarcane quarantine zones within Queensland (Pest Quarantine Areas or PQAs) and such boundaries have been in place for many years. The movement of sugarcane plant material, or machinery that has been in contact with sugarcane crops, is regulated according to these PQAs. The application of quarantine to the first-identified infested farm was immediate; quarantine restrictions were applied to each new property as smut infestation was confirmed over the proceeding 5-6 month period. Records of permits covering machinery movement between PQAs in the previous two years were accessed and this allowed tracing of machinery movement off smut infested farms. Farm-based quarantine was applied until smut was found in the distant Mackay region in November 2006; at that point quarantine restrictions were lifted on individual properties in the Bundaberg/Childers area.

Sanitation Sanitation measures included personal hygiene; crop inspectors discarded contaminated footwear, contaminated clothing was hot water-laundered and disposable overalls were used when infested crops were inspected. Dis-infestation of machinery was achieved by the application of 1% solutions of Sterimax or Cane Knife Steriliser (benzalkonium chloride).

Resistant cultivars Sugarcane disease control relies heavily on cropping resistant cultivars. The smut incursion required an immediate discard of susceptible cultivars from approved planting lists to increase the smut resistance of commercial crops. As sugarcane is a semi-perennial crop, a shift in the overall crop resistance will take time – up to five years on many farms. In un-infested districts sufficient time is available for cane farmers to change to more highly resistant cultivars; however, in some parts of the Bundaberg-Childers area, a rapid build up in disease incidence may make direct smut-associated crop losses unavoidable.

To aid farmer decision making, a monitoring program has been implemented to advise farmers how fast the disease is spreading and building up (increasing in severity) in infested districts. This will ensure the best decisions are made regarding the retention or discard of high yielding susceptible cultivars for cropping. In addition high-yielding, but susceptible, parent canes have been discarded from the breeding program. Resistance screening trials have now been planted in the Bundaberg-Childers area to provide resistance data on newly developed clones. This will allow high yielding smut resistant cultivars to be quickly identified, tested and released on an accelerated basis to industry.

Spore trapping Burkard spore traps are also being used to provide an early warning system for smut infestation of currently un-infested districts. A PCR test has been developed to identify smut spores; positive test results will be coupled with intensive crop inspections to determine the status of crops in each region.

REFERENCES