

THE EFFECT OF SOIL ENVIRONMENT ON SCAB OF POTATOES GROWN FOR PROCESSING IN TASMANIA.

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INTRODUCTION

Both common scab (*Streptomyces scabies*) and powdery scab (*Spongospora subterranea*) were found on Russet Burbank, the preferred cultivar grown for processing into french fries in Tasmania.

The ability to distinguish between the two types of scab is very important. High soil moisture, which is recommended during the tuber initiation period for common scab control, is conducive to severe powdery scab and vice versa.

The differences in the environmental conditions that determine the susceptibility of tubers to infection by the two different scab organisms lead to much confusion among growers on management practices.

METHODS

A field survey was conducted, as part of a HRDC funded project on common scab that started in 1996, to determine the type of scab found on Russet Burbank tubers and the scab disease incidence. Information on the key field conditions and crop management practices that can influence scab disease incidence and severity was also collated in this survey.

A detailed map of each paddock was constructed following field inspection and sampling of paddocks conducted prior to harvest. Sampling of tubers was conducted according to the paddock terrain, drainage, soil type and structure, different seed lines, and previous crop rotations on the same paddock. This method of sampling enabled the evaluation of the influence of these factors on scab disease incidence and severity.

Other information on cultural practices, also collated in this survey, included seed quality and treatment, soil preparation, planting date and condition, lime application, previous crop rotations, scab disease history, soil analysis, and other management practices that may affect scab disease levels.

Photographic records were taken of the scab symptoms observed on tubers from different properties in order to record any differences in the scab symptoms observed.

RESULTS AND DISCUSSION

Both types of scab were found on Russet Burbank in the survey, with common scab being more prevalent than powdery scab.

Table 1: Types of scab and the percentage of paddocks reported to have scab by growers and examined in the survey.

Types of scab	1997	1998
Common scab	64%	46%
Powdery scab	24%	8%
Common & Powdery scab	12%	46%
Total number of paddocks	25	13

There was some difficulty in differentiating the two types of scab on some tuber specimens, as some common scab lesions have physical characteristics that resemble pustules caused by powdery scab.

Field factors, such as climatic conditions, paddock terrain, soil drainage and irrigation management, could be useful indications of the type of scab that is likely to occur. Powdery scab tended to be prevalent in the Forest-Smithton area, which is usually cold and wet, as well as in poorly drained soil elsewhere. Conversely, common scab tended to be prevalent in the drier and warmer North-East of Tasmania, and in well-drained soil elsewhere.

Paddocks where tubers were infected by both common and powdery scab may have poor soil structures where extreme wet and dry conditions conducive to both scab diseases could occur during the infection period. The use of travelling irrigators, the most common type of irrigator, also tends to create similar extreme soil moisture conditions, especially on level ground. As a result of the unusually dry conditions in 1998, the increased in irrigation with travelling irrigators, seems to increased the number of paddocks (Table 1) where both type of scab occurred. It is noteworthy that almost all powdery scab lesions found on Russet Burbank tubers tended to be small and superficial, whereas most common scab lesion tended to be large in size and more likely to have deep infections. Hence, the processing industry has greater concern with common scab than powdery scab.

Different types of crop rotations also appeared to affect the common scab disease severity. Obvious differences in disease severity could be observed on tubers in parts of the same paddock, which had different crop rotations in previous years.

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