BRITISH POTATO COUNCIL

growers' advice

Rationalising the use of fungicides on seed potatoes during storage

Judging the need for a fungicide on seed potatoes during storage can be difficult. Whilst seed health is highly important, no one wants to apply fungicide unnecessarily. This note is intended to provide guidance on the decision making process.

1. Pre-harvest decisions

There are five situations where the decision to apply a fungicide routinely can be made before harvest. When:

- the variety grown is highly susceptible to a specific tuber-borne disease (e.g. Pentland Squire – *Rhizoctonia*, Atlantic – dry rot, Shepody – gangrene)
- there is a history of a persistent tuber-borne disease on the farm
- significant levels of disease were present on the mother tubers
- the presence of a tuber-borne disease, even at low levels, would have a major affect on marketability (this will depend to a large degree on contract specifications)
- fungicide treatment constitutes part of a contract

The last situation is not really a rational use of fungicide, it is far better to judge the situation.

2. Decisions at, or after, harvest

Outwith the five situations above, the need for fungicide treatment will depend on evaluating the risk of disease. Judgement is thus required to identify those situations where the disease risk is high.

For each of the five major tuber diseases below, if the answer to each question is yes then fungicide treatment is likely to be worthwhile.

a) Diseases that require fungicide treatment at or soon after harvest

Gangrene

- Is harvest after 1st October or is tuber temperature below 5°C?
- Is the damage index by the harvester or other handling operations over 100?
- Does the variety have a resistance rating of 5 or less?
  (resistance ratings from gangrene are listed in the *NIAB Pocket Guide to Varieties of Potatoes*)

Dry Rot

- Are conditions warm (15°C+) and dry at harvest?
- Is the variety known to be susceptible to dry rot? (N.B. There are no resistance ratings for this disease but breeders promotional literature or comments in the NIAB Potato Variety Handbook may indicate susceptibility)
- Is the damage index by the harvester or other handling operations over 100?

Skin spot

- Is harvest after 1st October?
- Has there been above average rainfall since 1st September?
- Is the variety known to be susceptible to skin spot? (N.B. There are no resistance ratings for this disease)

b) Diseases for which fungicide treatment can be applied at any time during storage

Fungicide applications for silver scurf and black scurf are largely intended to minimise spread to the progeny crop

Silver scurf

- Is crop being lifted after 15th September?
- Is silver scurf present at harvest?
- Was there obvious silver scurf on the tubers at planting?
- If present, will the disease affect marketability of the seed?
  (N.B. Treatment at harvest will be required to minimise development during storage)

(Note. There is evidence to suggest that the best time to take measures against silver scurf to reduce this disease in the ware crop is in the last storage season prior to ware production)

Black scurf

- Is black scurf present on more than 2% of tubers?

Choice of fungicide product or combination must be appropriate to the disease and risk of fungicide resistance.

3. Practical considerations

Practical considerations can override the need to spray. Two questions are important:

a) How much soil is there on the tubers?

A spray fungicide application will be progressively less effective as tubers become increasingly more contaminated with soil. A coating of soil will prevent a fungicide reaching the tuber surface and the fungal spores. In this situation, unless the stock is cleaned it is a waste of money to attempt fungicide application. With fumigation using 2-aminobutane, a light soil covering is unlikely to impede penetration by the gas but a high soil content will drastically limit penetration. (Note. 2-aminobutane will be withdrawn after 2006)

b) Is the ware fraction of sufficient quantity or quality or of sufficient value to retain?

If the answer is yes and a fungicide is required at or soon after harvest then split grading is essential. To ensure that fungicide treatment with a spray fungicide is effective this means split grading and treating within twenty-four hours of harvest. If 2-aminobutane fumigation of seed is to be carried out, the requirement to split grade at or soon after harvest is less important. However, healing of wounds made during split grading must be complete before fumigation.

Updated and revised by the BPC Crop Protection Treater Group, May 2004.