

# Treatment of Cut Potato Seeds

## to Improve Suberisation and Reduce Rot

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## NUBARK™, A NEW FIR BARK PRODUCT USED FOR TREATING CUT SEEDS, CAN HELP REDUCE ROT

### Introduction

After cutting, the potato seed undergoes a healing process. First, a suberin layer is formed to seal off the wound, preventing moisture loss and providing protection from pathogens. Later, a layer of corky cells will form a permanent, protective barrier against infection and water loss. Poor or slow suberisation of the cut tuber surface results in seed-piece breakdown, due to fungal or bacterial invasion.

Douglas fir bark powder is often dusted onto cut tuber seeds in order to dry and separate the cut tubers. It also promotes rapid healing, thus reducing rot on the cut surfaces.

Three separate studies were conducted in 2000 to determine whether there is any difference between two types of commercial Douglas fir bark products in reducing rot.

### Study 1

Russet Burbank tuber seeds from two commercial seed lines, A and B, were hand cut and treated within one hour after cutting. Douglas fir bark (NuBark™), with or without mancozeb fungicide, or the Commercial Standard (CS) fir bark was applied at the rate of 4kg/tonne seed by mixing in a plastic bag. Each treatment was repeated three times.

The treated seeds were then placed in a paper bag and incubated with no circulated air, under high humidity at 10-15°C. After incubation, the number of seeds with black bacterial rot on the cut surface was recorded, and the percentage of tubers with rot was tabulated.

In both seed lines, tuber seeds treated with NuBark™, with or without mancozeb, had a lower percentage of rot compared to PM fir bark and untreated seeds, as shown in the following charts and photos.

Untreated Control



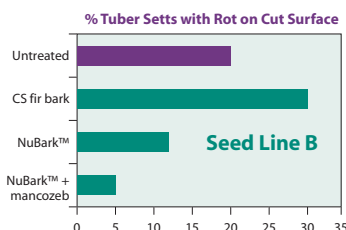
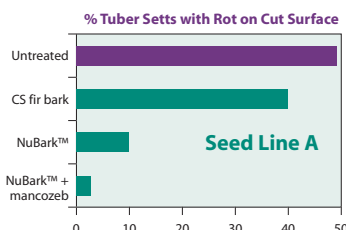
CS Fir Bark Only



NuBark™ Only



NuBark™ + 6% Mancozeb



### Study 2

Russet Burbank tuber seeds from a commercial crop were hand cut and treated within one hour after cutting. NuBark™ or PM fir bark was then dusted onto the cut seeds at the rate of 4kg/tonne seed. After a 2 month storage period, sunken rot due to *Rhizoctonia* fungal growth was noted on untreated seeds and PM fir bark treated seeds (see photo below). Seeds treated with NuBark™ showed excellent healing on the cut surfaces, with little moisture loss and no fungal growth.



### Study 3

Russet Burbank tuber seeds from a commercial seed line were machine cut, and fir bark was mechanically dusted in a commercial application process onto the cut seeds.

Samples of treated cut tubers were collected, placed in a sealed plastic bag, sprayed with spore suspension of *Fusarium sulphureum*, and stored at an ambient temperature (23-28°C). After 10 days, the number of seed pieces with *Fusarium* dry rot on the cut surface was recorded.

In this study, NuBark™ treated tuber seeds again resulted in a much lower percentage of rot on cut surfaces (Table 1).

Table 1: The effects of different Douglas fir bark products on machine-cut tuber seeds.

Treatment	Product application rate/tonne seeds	Mean % tuber seeds with rot on cut surface
NuBark™	2kg	10
NuBark™	3kg	29
CS fir bark	3kg	100



CS fir bark - 3kg



NuBark™ - 3kg



NuBark™ - 2kg

### Conclusion

The results of the three separate studies indicate that NuBark™ consistently reduces bacterial and fungal invasion of cut tuber surfaces.

### Outcomes

As a result of these studies, Serve-Ag arranged for a small shipment of NuBark™ to be brought to Tasmania on behalf of the processing companies for use in December 2000. NuBark™ is also available again for the 2001-2002 planting season.



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