

Start the Season Right with In-furrow and Seed Piece Treatments for Pest Management

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It seems as though almost everything continues to get more expensive, and who knows this better than those in agriculture who have watched prices of fertilizer and other inputs fluctuate from expensive to outrageous and back to merely expensive again. One of the more expensive inputs for the potato producer is seed potatoes, but how do you get the most “bang for the buck” from seed potatoes? Naturally, the purchase and use of certified seed is a good place to start. Certified seed has been produced by a dedicated seed grower and has been subjected to a battery of inspections. That’s a good start, but what else might be recommended?

There are a number of potato diseases transferred in seed that have the potential to cause problems, and management practices need to be implemented to combat these possible problems. Several of the most important of these diseases are seed-borne *Fusarium* dry rot, *Rhizoctonia* (stem canker and black scurf), late blight and silver scurf. There are other seed-borne diseases, but all those included here can be managed by using an effective seed piece treatment.

Not only are these diseases the sources of potential problems, growers also need to deal with the inherent risks of cutting tubers into seed pieces. Growers are well aware that potato tubers should not be damaged and diligently work to avoid bruising and other types of injury during harvest and handling. It almost goes against the grain then, when we cut seed tubers to make seed pieces. Making tubers into seed pieces creates some of the most serious wounds that tubers will ever suffer! It’s still good advice after cutting to continue treating seed pieces gently to avoid further damage, but there may be other

practices that could be beneficial – like the aforementioned seed piece treatments.

Use of a seed piece treatment makes sense on several levels. From the strictly physiological side of things, applying a seed treatment can help speed up the wound-healing process by drying out the newly cut surface and improving oxygen exchange, which is necessary for healing. The drying can also help prevent attack by the soft rot bacterium by creating an environment less favorable for the pathogen. From the disease control angle, most seed treatments also contain active ingredients that combat the diseases mentioned above. Two of those diseases, dry rot and late blight, can attack freshly-wounded tissues of cut seed pieces. Late blight can also infect newly developing sprouts on non-cut areas of tubers. For both of these diseases, an effective fungicide in the seed treatment can prevent infection, seed decay and spread of disease.

The other two diseases, *Rhizoctonia* and silver scurf, are not associated with the cut portion of seed pieces but rather with the intact, undamaged skin of the mother seed tuber. Both diseases are activated in the soil after planting when the pathogen begins growing on the surface of the seed piece. Remember, though, that *Rhizoctonia* can also be found in the soil, so having *Rhizoctonia*-free seed does not guarantee you will not see this disease. *Rhizoctonia* spreads from the seed piece surface to the newly developing sprouts where it causes the all-familiar stem cankers. *Rhizoctonia* can prune stems and stolons below ground and change the tuber size profile of the harvested crop. *Rhizoctonia* can also form black blemishes on harvested tubers.

The silver scurf fungus forms spores on the seed piece that in some unknown

way spreads to the daughter tubers. Silver scurf is not very good at surviving in the soil and does not affect yield or harvested tuber size profile, but causes blemishes that are mostly cosmetic in nature. The presence of *Rhizoctonia* or silver scurf disease can downgrade the appearance of the crop and cost a lot of money, especially in markets where appearance is paramount.

How much seed treatment should you attempt to apply? Read the label. Many seed treatments are labeled to be applied at 1 lb/cwt while there are some that are applied at 0.5 lb/cwt. We performed a series of experiments at the University of Idaho several years ago wherein we measured the actual amount of seed treatment that adhered to seed pieces when we attempted to apply 1.0, 0.75 and 0.5 lb/cwt to cut seed. Here are the actual amounts we measured adhering to cut Russet Burbank seed. If we attempted to apply 1 lb, we actually got 0.57 lb to stick. When we attempted to apply 0.75 lb, we got 0.41 lb to stick. Finally, when we attempted to apply 0.5 lb, we got 0.27 lb to stick. As you can plainly see, the more you attempt to apply, the more you will get on the seed.

Incidentally, when we attempted to apply 1 lb/cwt to single drop seed, we measured 0.47 lb actually sticking, an amount very close to the amount adhering to cut seed. Treatment of single drop seed for management of *Rhizoctonia* and silver scurf is recommended. We also routinely observed some unexpectedly high levels of *Fusarium* dry rot in single drop seed during our trials, another reason to consider seed piece treatment on whole seed.

Treatments can also be applied in-furrow or even pre-plant for some pests of potato. In addition to being seed-borne, *Rhizoctonia* can also be soil-borne. While

the silver scurf organism is not a very good soil survivor, some in-furrow materials may help to keep this disease off the daughter tubers. Insect management programs can also start with seed treatment or in furrow applications. Colorado potato beetle and green peach aphids can be managed for much of the early part of the season in this manner.

You could almost think of using seed piece treatments on cut seed as a form of relatively inexpensive insurance considering the alternatives of not using one. In-furrow applications place the active ingredient where it can do the most good for the

longest time. Consider using one of both of these treatment options – on the seed or in-furrow. It just makes good sense to spend a little time and effort protecting the foundation of your crop as well as one of your most expensive inputs.

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Did You Know?

We all know that the Burbank potato was originally developed by Luther

Burbank sometime in the early 1870's. However, the original Burbank potato was not a russet variety. The variety we know as "Russet Burbank" was actually selected from a field of these original Burbanks by Lou Sweet in Colorado in 1914.

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