

Early Planting Risks

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Cool, wet springs - like the one we are currently experiencing, often result in a rush to plant the potato crop as soon as the soil dries enough to get into the field. Most people are aware that running equipment on wet soils is a great way to cause compaction, but that is just one of many reasons to be cautious in determining when to start planting this year.

There is an old rule of thumb that soil temperatures at seed piece depth should be above 45°F and climbing before starting to plant potato seed. A check of Agrimet weather stations across southern Idaho indicates that most regions have not even reached 40°F as of this week. When you plant potatoes you start a race between the disease organisms that are trying to infect the cut surfaces and wounds of the seed piece, and the tuber tissue that is trying to heal those injuries and produce sprouts that will form vigorous plants. The plant actually depends on the seed piece for energy and nutrients for quite a while after emergence. Research has shown that the longer the seed piece remains intact, the more productive the plant will be. Ideally, the seed piece should remain sound until the plant has a chance to utilize all the nutrients and energy stored within it. The seed piece provides a large portion of the plants nutrient and energy requirements up until the time the plants grow to be about 10 to 12 inches tall. At that time they have enough leaf area and root system to support plant growth.

As we mentioned above, seed should not be planted at soil temperatures below 45°F. This temperature threshold is especially important for cut seed because of the large surface area that must undergo wound healing. Soil temperatures below 45°F prevent wound healing and greatly delay emergence. For example, Russet Burbank plants may emerge in 20 to 25 days at 50°F, but can take more than 40 days at 45°F. The bottom line is that the longer a seed piece sits in the cold soil, the more likely that it will decay before producing a healthy plant that will survive and produce a good crop. The effects of cool soils can be partly overcome by warming seed before cutting and planting shallow to promote rapid emergence. Applying a fungicide treatment also helps protect the seed from decay, but it cannot completely overcome poor management decisions that result in the seed piece being planted in unfavorable soil conditions.

One way to minimize the dangers of seed decay for early plantings is to plant whole seed or seed that has been cut and allowed to heal (suberize) before planting. The intact skin of whole seed and the healed surface of suberized seed are very resistant to seed decay and can greatly increase your chances of establishing a good stand. Seed piece treatments are still recommended for control of *Rhizoctonia* and sliver scurf as well as *Fusarium* dry rot in both whole and healed seed. Whole seed may need to be warmed up for a couple of weeks prior to planting to ensure that the seed tubers will produce enough stems.

Early maturing cultivars are usually the first potatoes planted in an effort to obtain high yields for the early market. Unfortunately, some of these cultivars may be very sensitive to the cool, wet soil conditions that commonly occur in early-planted fields. Research at Washington State

University has shown that Shepody and Burbank emerge at about the same rate at 50°F soil temperature, but Shepody takes about five days longer to emerge at 45°F. Combine this with the fact that Shepody tends to wound heal at a slower rate, and it becomes apparent that early planting may not provide the best seed performance when soils remain cool for extended periods. Planting in cold soil can also be hard on Russet Norkotah as slow early growth can translate into reduced leaf production and smaller plants.

Early planting is one way to take advantage of projected high prices for early harvested potatoes, or to increase yield potential in short-season areas. However, growers should be aware that there are some pretty substantial risks involved that may reduce or eliminate any advantage from early planting. Each operation has to decide for themselves when those potential benefits outweigh the risks.