

## **Making Sense of New PVMI Varieties and Their Management**

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In 1874, Luther Burbank selected a white, smooth-skinned potato which was later named 'Burbank'. Decades later, a mutation of Burbank with netted skin was found in a Colorado field and eventually given the name 'Russet Burbank' or 'Netted Gem'. Since then more recently released varieties have gained market share and reduced the Russet Burbank acreage in North America. These varieties include, 'Shepody' from New Brunswick, 'Russet Norkotah' from North Dakota, and both 'Ranger Russet' and 'Umatilla Russet' from the Tri-State Research and Breeding Program.

All these successful varieties have certain qualities in common and they include good yield and storability, internal and external quality, and taste. In short, they all include the right characteristics for the market. Less obvious is the ability for growers and industry to be able to learn how to grow, manage, handle and store them; and as the industry has seen, many new varieties have fallen flat on their face because the industry was unable to make them work under "normal operating procedures".

If growers and industry are willing to learn how to handle and grow a new variety, it stands a fair chance of being successful. Ranger Russet is an example of one variety that the industry deemed worthy enough for them to accept the "new variety learning curve". When Ranger first hit the scene there were excessive issues with blackspot bruise. It was a serious issue and threatened the success of the variety. The industry responded by improving harvest and handling practices and now Ranger is grown on over 7,000 seed acres and is presently the third most widely grown commercial variety in the US.. As another example, the success of Umatilla Russet was challenged due to severe dry rot issues in the seed tubers. Seed producers responded by changing harvest and handling practices. Umatilla is now the fifth most widely produced variety in the US.

In deciphering what makes a variety successful, we examine Russet Norkotah. The obvious reasons for its success are nice shape and appearance; it has a high percent of US number ones with adequate yield and it returns profits to everyone in the distribution chain. A less obvious, but very important reason is that it is considered somewhat "bulletproof" in that it resists bruising and typically stores well without significant storage rot.

Since 2008 six named russet varieties have been released by the Tri-State Research and Breeding Program. They include Alpine Russet, Classic Russet, Clearwater Russet, Owyhee Russet and Sage Russet. Another variety currently being considered for release is A0008-1TE (anticipated name beginning in 2011: Teton Russet).

Of these new and potential releases, Classic Russet and A0008-1TE have the most promise to compete with Norkotah. Classic Russet has been increasing in seed growers

fields since 2007. It has a higher pack out rate than Russet Norkotah and an excellent taste with a brilliant white interior. It has low internal and external defects and is more resistant to PVY than Norkotah. During 2010, commercial growers expanded production quickly but several experienced post-harvest issues. In a few cases, Classic harvested directly out of the field and broke down in bags following fresh pack. Lack of proper skin set and susceptibility to shatter and soft rot are likely reasons for the break down. Skin set appears to be an issue with this variety, especially if excess nitrogen is applied prior to harvest. Management guidelines for Classic Russet can be found at [www.pvmi.org](http://www.pvmi.org) to help growers produce a high quality crop. Several other harvest and handling considerations are also addressed on the website for those producing, or interested in producing, Classic. Classic typically produces a low tuber set (~ 1 less tuber/plant than R. Burbank) and has the potential for extremely large tubers. In-row spacing and nitrogen management are crucial to produce a profit maxing tuber size profile. Moreover, if Classic is planted too shallow or the hills are narrowed during cultivation, it may grow sprouts outside the hill (heat runners). As it turns out, Classic may be less “bullet proof” than Norkotah; however, it is possible to concentrate on management that avoids these issues and allows for production of a superior product. Considering Norkotah’s susceptibility to PVY, its controversial flavor and internal appearance, we certainly believe Classic is worthy enough for growers to be patient and learn how to be successful with this variety.

A cross between Classic Russet and Blazer Russet has produced a new line that looks promising: A0008-1TE. It may be the first real dual purpose potato with a higher pack out and fresh market value than Russet Norkotah. It does well both early and late with a similar yield to Ranger Russet at about 110 to 120 day. It has excellent taste and high early yields with low internal and external defects. It is more resistant to PVY than Russet Norkotah and typically has higher post-harvest quality than Russet Burbank. This variety has a specific gravity similar to Russet Burbank. A0008-1TE needs to be grown similarly to Classic Russet with a few exceptions in the Columbia Basin: tubers need to be spaced at 12 inches in-row for an early (100 -130 days) harvest, and 8 – 10 inches for a harvest later than 130 days. Tubers should have fairly low hydration at harvest to prevent shatter. Interested growers should contact PVMI for up-to-date management recommendations.

Finding the right fit in the industry is crucial for several new processing varieties. Alpine Russet has excellent dormancy being slightly longer than Russet Burbank and high yields. Clearwater Russet has high specific gravity and a medium size profile. Owyhee Russet is an excellent processor with a high percentage of US number ones, a medium size profile, high specific gravity and excellent culinary qualities. Sage Russet has excellent yields both early and late and will work well as a processor.

Alpine Russet has high early yields and resists sugar ends. The extra long dormancy and processing qualities are better than Russet Burbank. Due to a low tuber set, tubers can get too large if seed is not spaced properly. The light skin may not be attractive to the fresh market. In the Columbia Basin, growers should plant 12 inches in-row for an early

harvest and 8 – 10 inches for a late harvest. Petiole N values average 2% higher than Russet Burbank in the early season.

Clearwater Russet has high protein and low internal and external defects. Its high specific gravity coupled with its resistance to sugar ends and high percent number ones make it an excellent choice. Aspects to be aware of are a tendency toward extremely high specific gravity, the possibility of a small tuber size profile (need to provide enough room between plants), susceptibility to dry rot, internal brown spot and shatter bruise. In the Columbia Basin, use an in row spacing of 10 – 12 inches for late harvest. The average petiole N values are typically 12% higher than Russet Burbank from early to mid season. As with the other varieties, allow for good skin set prior to harvest and handle with care. Some internal brown spot has been seen in the southern Columbia Basin.

Owyhee Russet has low external defects a good size profile and good specific gravity. It has excellent fry color with high process quality. A Washington State taste panel rated it high. Owyhee also resists common scab and Fusarium dry rot. The things you need to watch for are occasional vascular discoloration, late maturity and hollow heart occurring similarly to, or less than, R. Burbank. Columbia Basin management includes 10 inch in-row spacing for late season harvest. The petiole N values average 13% higher than Russet Burbank in early to mid season. Manage harvest to prevent shatter and prevent hollow heart by avoiding early lush vine growth

Lastly, Sage Russet is resistant to low temperature sweetening and late processes economic values are good. Post-harvest qualities are excellent. Sage can get too large if spaced improperly and is susceptible to blackspot bruising and shatter. This line has a short dormancy and can have a variable shape from one location to the next. In the Columbia Basin, plant at 12 inches in-row for early harvest and 8 – 10 inches for late harvest. Always harvest to minimize shatter and blackspot bruise.

In general all the new varieties have significantly superior characteristics when compared to traditional varieties. They all perform well under Russet Burbank management although many require less nitrogen. Consult [www.pvmi.org](http://www.pvmi.org) for variety specifics. Most of these varieties will have higher petiole N counts than Russet Burbank and may approach Ranger Russet values. Remember, handle with care and pay attention to details. The new varieties require patience and dedication by the industry if they are to succeed.

Remember when considering a new variety, start small to minimize potential risks and losses. Do your homework, there is information regarding all the new varieties available at [www.pvmi.org](http://www.pvmi.org) and at the University Extension Programs, at conferences, and workshops and from industry field consultants. With all new things there is a learning curve involved, expect hiccups and be patient.