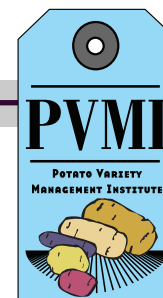


Classic Russet Management Recommendations- Idaho



Special points of interest:

- Petiole guidelines.
- Irrigation management.
- Harvest management
- Fresh Pack management.
- Tuber dormancy.
- Storage recommendations.
- CIPC application timing.

January 2011

Special Edition

A number of studies on the management of Classic Russet have been conducted in southern Idaho and the results of these studies may provide growers in these and other production regions with the basis for developing appropriate management guidelines for their locale.

Seed and Pest Management

Optimal seed size for Classic Russet is about 2 to 3 oz. Dry rot potential of seed lots should be determined and seed should be treated with an effective fungicide when needed. Planting depth should be 6 to 8 inches from the top of the seed piece to the top of the hill. For early harvest, seed piece spacing should be 8 to 9 inches for fresh market use, but spacing should be increased to 9 to 11 inches for processing. For late season harvest for either fresh market or processing, seed piece spacing should be about 7 to 8 inches.

Classic Russet has exhibited good resistance to metribuzin when applied at labeled rates. It has an erect, medium-maturing, medium-sized vine but competes reasonably well with weeds after row closure during early to mid-tuber bulking.

Soils infested with root-knot nematodes or a history of severe early die problems should be fumigated. Fungicide applications should be made as needed to prevent serious early blight infections. Early blight control for tubers in fields scheduled for storage can be facilitated by minimizing tuber skinning and bruising during harvest and subsequent handling and avoiding harvesting in wet weather conditions.

Nutrient Management:

Proper nitrogen management is critical for fresh pack production of Classic Russet. During the past couple of years, late spring conditions and slower crop development delayed crop maturity, particularly in fields with relatively high N application rates. These conditions made it very difficult to develop good skin set on Classic Russet, resulting in more skinning and bruising, which provided more wound areas for pathogens to enter.

The total seasonal nitrogen requirements for Classic Russet are about 30-40% less than Russet Burbank for a given amount of yield produced. For production in southern Idaho, total soil plus fertilizer N recommendations should range from about 150-170 lb N/acre in areas with a 400 cwt/acre yield potential, 180-200 lb N/acre with a 500 cwt/acre yield potential and 210-220 lb N/acre in areas with a 600 cwt/acre yield potential. It is important to note that these amounts include the amount of residual N in the soil prior to planting. About 65% of the fertilizer N should be applied by tuber initiation, with the remaining N applied via sprinkler

WWW.PVMI.ORG

60380 Chickasaw Way
Bend, Oregon 97702

Phone: 541-318-1485
Fax: 541-318-7566

E-mail: jeannedebons@msn.com

irrigation prior to the last week of July. To promote skin set, N applications should be completed at least 30 days prior to harvest. Nitrogen response studies conducted for two years at Aberdeen, Idaho indicate that petiole nitrate levels for Classic Russet should be about 20,000 ppm at the end of tuber initiation and decrease to 12,000 to 15,000 ppm during mid-bulking and 6,000 to 8,000 ppm during late bulking.

Phosphorus, potassium and micronutrient requirements have not been established for Classic Russet. Therefore, it is recommended that growers follow local nutrient management recommendations for Russet Burbank until new guidelines for Classic Russet indicate that petiole nitrate levels for Classic Russet should be about 20,000 ppm at the end of tuber initiation and decrease to 12,000 to 15,000 ppm during mid-bulking and 6,000 to indicate that petiole nitrate levels for Classic Russet should be about 20,000 ppm at the end of tuber initiation and decrease to 12,000 to 15,000 ppm during mid-bulking and 6,000 to 8,000 ppm during late bulking.

Phosphorus, potassium and micronutrient requirements have not been established for Classic Russet. Therefore, it is recommended that growers follow local nutrient management recommendations for Russet Burbank until new guidelines for Classic Russet become available. However, since phosphorus is important for enhancing crop maturity, growers should make sure adequate P is available for their crop.

Irrigation Management:

Seasonal irrigation requirements for Classic Russet are similar to those for Russet Burbank, although Classic Russet is significantly more resistant to water stress-related tuber defects. Therefore, available soil moisture (ASM) should be maintained within the range of 70 to 85% for optimal yield and quality. Plant water uptake decreases appreciably in late August, so irrigation application rates need to be adjusted according to soil moisture measurements to avoid developing excessively wet soil conditions that promote disease and enlarged lenticels. Low soil moisture (<60%ASM) conditions should be avoided during tuber maturation and harvest to minimize tuber dehydration and blackspot bruise. However, since significant amounts of shatter bruise have sometimes been observed in commercial operations when Classic Russet is well hydrated, it should be harvested with a moderate tuber hydration level.

Harvest Management:

Growers should not consider growing Classic Russet for early harvest unless they make appropriate adjustments in management to allow for adequate maturation and skin set. This includes using the moderate N rates described above, completing N applications at least 30 days prior to harvest and allowing at least 21 days after vine kill before harvesting.

Classic Russet should be handled as gently as possible to minimize bruising and skinning. Irrigation rates should be gradually reduced during the last couple of weeks prior to vine kill to about 65% ASM to allow tuber hydration to decrease to an intermediate level during skin set. This will also minimize the potential for producing swollen, open lenticels that can provide entry points for disease organisms.

To minimize shatter bruise and skinning:

1. Complete N fertilizer applications at least 30 days prior to harvest.
2. Tubers should be allowed to dry to a moderate moisture level (medium turgidity – not firm or well hydrated but not flaccid where the surface is easily depressed)
3. Warm temperatures and moderate soil moisture facilitate dehydrating tubers
4. Allow at least 21 days after vine kill prior to harvest
5. If possible, irrigate a few days prior to harvest to reduce bruising from clods, etc.
6. It is best to harvest tubers when pulp temperature is warm, but not greater than 60°F to minimize disease development

Storage:

Fresh Pack Management:

Grower experience in 2010 has shown that it is best not to pack Classic Russet out of the field, particularly when growing conditions and management practices have not allowed for adequate skin set to develop. Growers that did have good skin set at harvest generally had fewer disease problems during packing and shipping operations than those that did not, particularly when tubers were allowed to go through the wound healing process in storage prior to packing.

Growers should monitor Classic Russet often during the first couple of months of storage to determine the potential for rot development, which should be based on the amount of shatter bruise, leak or soft rot going into storage.

A key factor in the management of soft rot in fresh pack operations is tuber pulp temperature. Soft rot progress is greatly retarded, even stopped completely, when pulp temperatures approach 50 F. Often, tuber temperature is much warmer than this critical temperature while they were being handled, washed and packaged. Realistically, 50 F may be difficult to achieve, especially in the early part of the harvest season. However, tubers should be cooled as rapidly as possible to get them to 55 F or cooler, to greatly help reduce this rot problem.

The soft rot bacterium is also favored by wet conditions on the tuber surface, something that is impossible to avoid when washing potatoes. Wounds or natural weak areas in the skin of the tuber, like the lenticels, are particularly vulnerable to soft rot invasion. The bacterium has the ability to thrive either with or without oxygen and by immediately placing wet tubers into poly bags, an environment very conducive to soft rot is created. Add to this scenario the excessively high pulp temperatures and the result is a lot of rotted potatoes. This situation can be remedied to some extent by maximizing the chlorine content of the wash water but tuber pulp temperatures are probably the major contributing factor.

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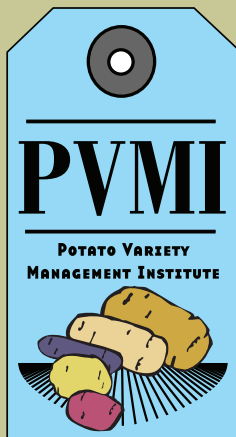
60380 Chickasaw Way
Bend, Oregon 97702

60380 Chickasaw Way
Bend, Oregon 97702

Phone: 541-318 1485
Fax: 541-318-7561

E-mail: jeannedebons@msn.com

WWW.PVMI.ORG



Storage Recommendations

The following recommendations are based on data collected over a three-year period at the University of Idaho Kimberly R&E Center on Classic Russet potatoes grown in Southern Idaho.

Curing Conditions: Cure at 55°F and 95% relative humidity for 14 days

Storage Conditions: Maintain 95% relative humidity throughout storage. Weight loss is about 1.5 times higher in Classic Russet than Russet Burbank.

- Frozen Processing:** hold at 48°F
- Fresh Market:** hold at 42 to 45°F
- Dehydration Processing:** 42 to 45° F depending on intended product

Sprout Inhibition: Apply CIPC before dormancy break but after curing

- 42°F - apply CIPC between 14 and 155 days after harvest
- 45°F - apply CIPC between 14 and 130 days after harvest
- 48°F - apply CIPC between 14 and 100 days after harvest

Because this is a shorter dormancy potato, CIPC residues should be checked to ensure long season sprout inhibition

Duration of Storage: High processing quality persists throughout 250 days after harvest when stored at 48°F.

Fry mottling: Mottling occurs in Classic Russet at lower storage temperatures. Store at 45 to 48°F to minimize mottling.

Fusarium Dry Rot: Moderate susceptibility similar to Russet Burbank.



Information provided by the Tri-State
Research & Breeding Program.