

MULTI-PURPOSE VARIETIES FOR THE IDAHO POTATO GROWER

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INTRODUCTION

Potato growers must consider many variables when selecting a potato variety to produce. As with all crops, the in-field attributes are a key to variety selection; however, potatoes are a crop that is most often put into storage. The post-harvest characteristics of a potato variety are also vital to its successful utilization in the marketplace. Selecting a variety that can be used in different sectors of the potato industry allows a grower to maximize economic gain from their crop. An Idaho Potato Commission-sponsored research program at the University of Idaho's potato storage research facility evaluates new varieties in storage. Many of these new varieties are multi-purpose, that is, they can be used in two or more of the following categories; fresh, frozen processing or dehydration processing. Each market use has specific quality standards associated with it. The key for fresh market use is generally tuber size and appearance, whereas processing potatoes (both dehydration and frozen) must meet specifications in terms of glucose concentrations and/or fry color. In general, the upper limit for percent glucose on a fresh weight (%fw) basis for dehydration potatoes is 0.2 to 0.25% and for frozen fry processing is 0.05 to 0.1 % depending on the buyer and end-product.

DISCUSSION

The potato variety Russet Burbank is a classic multi purpose variety. It is used in frozen processing, fresh and dehydration systems. At typical storage temperatures, 42-48°F, Russet Burbank glucose concentrations generally stay below 0.2% fw throughout 12 months on storage. Russet Norkotah, typically grown for fresh pack, develops high glucose concentrations in storage, thus making it a poor candidate for multi-purpose use. Nine newly released potato varieties; Bannock Russet, Blazer Russet, Gem Russet, GemStar Russet, Summit Russet, Umatilla Russet, Western Russet, Alturas and A93157-6LS are considered multi-purpose varieties. Some key post-harvest attributes are shown in Table 1. Glucose concentrations at three storage temperatures (one year of data) are shown in Figure 1.

All varieties stored at 42°F would be acceptable for dehydration processing except Russet Burbank and Western Russet may have too high glucose concentrations (>0.2%) in some years. In the data represented, all varieties had acceptable glucose concentrations when stored at 45 and 48°F for frozen processing utilization. In general, potatoes stored at 48°F had lower glucose concentrations compared to potatoes stored at 45°F. All varieties reached unacceptable glucose concentrations for frozen processing when stored at 42°F except A93157-6LS.

CONCLUSION

Data generated from these studies are useful in making variety selection and storage management decisions regarding new varieties. These alternative varieties may enable growers to maximize economic returns by having options in marketing their potatoes.

Table 1. Dormancy length, susceptibility to Fusarium dry rot, sugar ends, mottling and PVY (in field) and suggested storage temperatures (°F) according to intended utilization.

Variety	Dormancy Length	Fusarium reaction	Sugar Ends		Mottling	PVY reaction	Storage temperature by utilization (°F)		
			Yes	No			fresh	fry	dehy
Russet Burbank	long	mod	X		little	susceptible	42	45-48	42-45
Bannock Russet	mod-long	mod-high		X	little	resistant	42	45-48	42
Gem Russet	mod-long	low - mod		X	little	very susceptible	42	45	42
GemStar Russet	mod	high		X	little	very susceptible	42	45	42
Western Russet	short	mod		X	mod	moderately resistant	42	45-48	42-45
Summit Russet	mod-long	low		X	mild - mod	susceptible	42	45-48	42
Blazer Russet	short-mod	mod		X	little	moderately susceptible	42	48	42
Umatilla Russet	mod-long	mod-high		X	mod	moderately resistant	42	45	42
Alturas	short	low		X	little	moderately resistant	-	45-48	42
A93157-6LS	short-mod	mod-high		X	little	very resistant	42	42	42

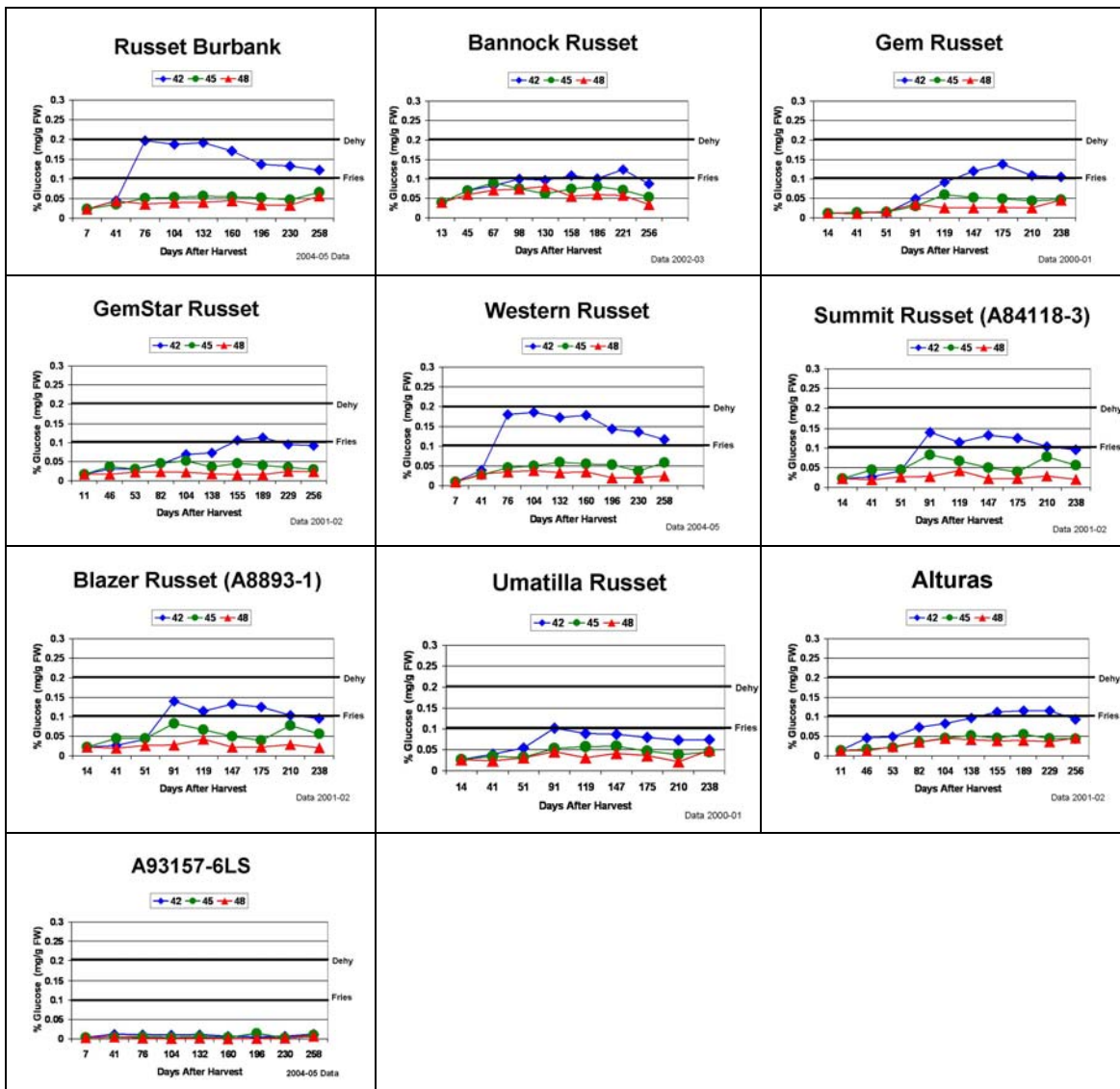


Figure 1. Percent fresh weight glucose concentration in stored tubers of ten varieties at three storage temperatures. The heavy lines at 0.1% and 0.2% fw glucose indicate upper thresholds for acceptability for frozen French fry processing (contract dependent) and dehydration markets, respectively.