

DECIDING IF A NEW POTATO VARIETY IS
SUITABLE FOR YOUR OPERATION

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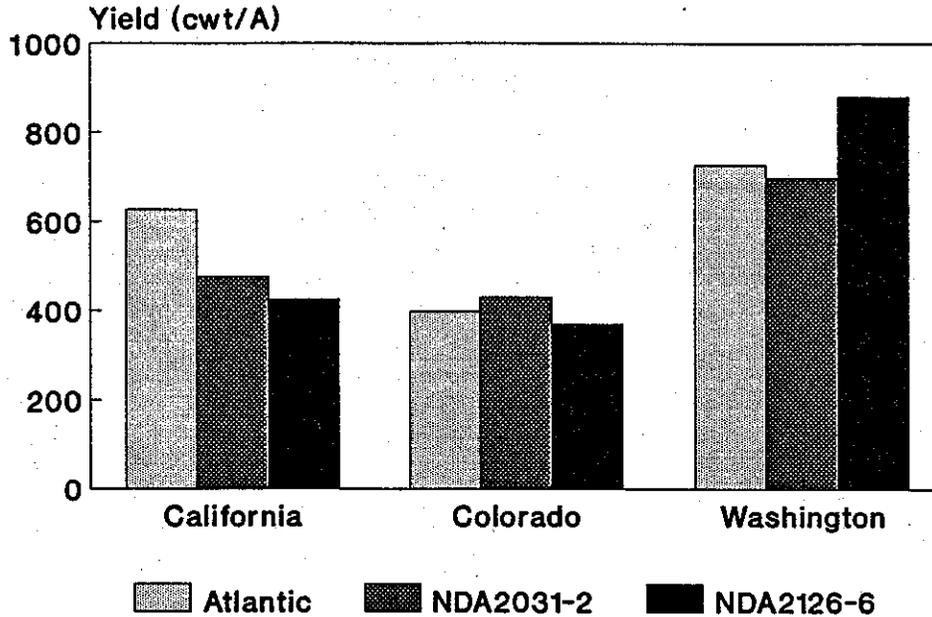
The potato variety picture is constantly changing. This is true both in Washington State and nationwide and is reflected in Table 1, which outlines the changes in the predominant varieties in Washington during the last ten years. Changes will likely accelerate in the future due to increased breeding efforts. Varieties that will likely have an impact on Washington potato production include Shepody, Russet Norkotah, Frontier Russet, Ranger Russet, Norking Russet, Goldrush, and Norqueen Russet. Several advanced breeding selections will also likely be grown including A7961-1, COO83008-1, AO82611-7 and A74212-1E. Add to this confusion a number of new chipping varieties and selections including Chipeta, Snowden, NDA2031-2, and NDO1496-1. All in all, the large numbers of varieties being developed can present a rather confusing scenario for anyone open to the production of these new varieties. In this situation, how can a grower decide if a new variety can profitably contribute to his/her operation? Following a simple set of rules, outlined here, should aid in making the decision correctly.

Table 1. Percent of Washington State potato acreage planted to the four predominant varieties during the last 10 years.

Acreage Rank	Year							
	1983		1986		1989		1992	
	Variety	%	Variety	%	Variety	%	Variety	%
1	R.Burbank	77	R.Burbank	72	R.Burbank	79	R.Burbank	69
2	Norgold R.	15	Norgold R.	15	R.Norkotah	6	Shepody	11
3			Norchip	7	Norgold R.	3	R.Norkotah	8
4			Kennebec	2	Norchip	2	Norchip	3

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Figure 1. Yield of three potato varieties in three distinct growing regions, showing the individual adaptation response.



Reasons for producing a new variety are often based on incorrect or impractical perceptions. Often growers will give reasons such as, "My neighbor grew some and made a killing", or "It's a nice looking potato", or "I know someone who harvested tremendous yields". Although each of these reasons is enough to spark interest, by themselves they should not be enough on which to base a decision. Before planting large acreages of any new varieties, a grower should ask him/herself four basic questions.

1. Is the variety adapted to my growing area?
2. Does the variety have the appropriate quality attributes for the intended market?
3. Is there an accessible market for the variety?
4. Does the management requirements of the variety allow it to easily fit into the existing operation?

A negative answer to any of these questions should indicate caution is warranted and may dictate that a variety not be grown. Let's look at each question more carefully.

Is the Variety Adapted?

Potato varieties differ dramatically in their ability to produce an acceptable crop in various regions. This can be due to any number of environmental and soil conditions, and is illustrated in Figure 1.

Three potato varieties were grown in three states and each produced the highest comparative yield in a different location. This phenomenon can be observed not only for yield but for all important quality characteristics. A variety that is used successfully for processing in the upper Midwest may not be suitable at all for the Northwest.

If a variety is developed near the intended production area, it is usually safe to assume it is adapted. If not, information about adaptation should be obtained from the nearest experiment station that conducts potato variety trials. Occasionally, no information will be available and a grower will need to grow a small acreage of the variety for 2-3 years to provide his/her own information. One aspect of adaptation that is often overlooked is maturity with respect to the intended harvest date. A variety may be well adapted overall, but not fit into the required harvest schedule. No amount of grower expertise can overcome all of the problems associated with an unadapted variety.

Does the variety have appropriate quality characteristics?

Potato buyers have specific quality specifications for potatoes depending on the intended use. These quality characteristics are inherited and are expressed differently in every variety. Two varieties can look identical but be very different for any given quality trait.

The three major uses of potatoes in Washington are fresh market, frozen processing and chipping. The important quality characteristics for each category are listed in Table 2.

Table 2. Essential quality characteristics of potato varieties used for the three major markets in Washington.

Fresh Market	Frozen Processing	Chipping
Appearance	High specific gravity	High specific gravity
Freedom from defects	Low sugar content	Extremely low sugar
Freedom from defects content		
Culinary acceptance	Freedom from defects	Freedom from internal
defects		
	Storability	Round shape
	Long shape	Thin skin

As with adaptation, information on quality characteristics must be obtained or created for any new variety. Basing a decision to grow a variety on appearance alone can be disastrous.

Is there an accessible market?

This is probably the most important question of the four, but also the easiest to manipulate if the initial answer is negative. Important things to consider are variety acceptance, transportation routes and methods, and potential return. A variety may have all necessary adaptation and quality attributes and still not find market acceptance. The reasons for this are often not predictable. A solution is to grow small acreages of a new variety while cooperating with the intended buyer in conducting small-scale evaluations. If transportation is available and the potential return high, it is worth the effort to create market acceptance.

Does the variety fit into the operation?

Every farming operation has its own unique set of available equipment and schedules to keep. The addition of a new variety may cause unacceptable management conflicts or inversely, allow more efficient use of existing resources. For example, the addition of an early maturing variety may fit well into an operation and allow a grower to extend the use of otherwise idle equipment. On the other hand, it may cause planting and harvest conflicts with other crops. Additionally, for seed growers, a new variety may cause certification and rotation problems due to overwintering volunteers.

An easily overlooked aspect of using a new variety is the compatibility of management schemes for multiple varieties within the same operation. Each variety differs in optimal practices for seed spacing, fertilization, irrigation, weed control, storage and other factors. If requirements of a new variety differ too drastically, it may not be profitable to produce.

The only person that can make the final decision concerning the suitability of a new variety is the grower. However, if a grower properly educates him/herself about the potential of any variety, and bases the decisions on good information, the chances for success will be much greater.