

## NEW POTATO VARIETIES ON THE WESTERN HORIZON

by

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### FORMATION OF WRCC-27

Until proper trial procedures are developed, it will be difficult to determine whether new lines offer significant improvements over varieties currently grown. A Western Regional Coordinating Committee on potato variety development, WRCC-27, was organized in conjunction with the 1978 Washington State Potato Conference at Moses Lake. State and federal researchers involved in varietal development in the West met during a day-long session to discuss the need for program coordination and the conducting of unified regional variety trials. There was a consensus of opinion that such coordination and trials would be highly desirable.

Procedures were worked out to select about 15 new lines that have shown promise in western trials, have seed of them produced at Redmond, Oregon, and then plant them in replicated trials conducted at 12 locations in Washington, Oregon, Idaho, California, Colorado and Wyoming. Seed of another 40 to 50 lines is to be produced and submitted by variety people in the various states for a preliminary, single-plot, observation trial at each location. When production, quality and disease resistance data from the replicated trials is consolidated over a two or three year period, it should identify lines worthy of being increased by seedsmen in each state for grower and processor trials. These commercial trials, in turn, would identify those to be increased in large quantities and released as varieties.

The WRCC-27 group will meet annually on the opening day of the Washington State Potato Conference and then, that evening, participate in a public variety discussion so the potato industry personnel in the Western States can keep current on changes in the variety picture and prospects of new varieties.

### CURRENT COOPERATIVE TRIALS

Although the benefits of these unified Western Regional Trials is still in the future, informal cooperative trials of various kinds have been conducted during the past few years. In addition, horticulturists in most western states have more recently been conducting extensive trials of numerous new clones, each selecting those that show promise in their respective states. From each of these state-sponsored programs exciting clones are coming forth that offer major improvements over current varieties. We will have little trouble finding lines that should be included in regional trials. These cooperative and in-state trials during the past few years have provided a thorough look at some older experimental clones and several new varieties, some that have had only limited previous testing in the West.

### CURRENT OUTLOOK ON VARIETIES FOR THE WEST

Over 150 potato industry people attended a public evening meeting on January 31 where a representative of each of the potato growing areas in the West reported on the variety situation in their area, emphasizing new varieties or lines that are showing particular promise.

James Twomey, San Luis, Colorado, developer of Centennial, reported this variety is still well accepted by fresh market buyers and is making good money for several growers in Southern California, its main area of adaption. It's greater % 1's often returns the grower \$1/cwt more than other varieties. Twomey described other new fresh market lines that are promising in Southern California:

1. WnC 316-1: This line has been evaluated on a large scale and found to produce higher yields of a better quality potato than Centennial. It is an early, blocky russet which will be released because it is an improvement over other early varieties in Southern California. About 1500 cwt of this line will be planted in foundation increase this year and 500 cwt will be sent to Southern California for trial. WnC 316-1, in contrast to Centennial, has performed well in Washington trials and processes well. It will be in 1978 regional trials, which should better define its area of adaptability.
2. BC 8370-4: In advanced trials the performance of this line has been second only to that of WnC 316-1. It will also be put in regional trials. It has been promising in other western trials, but often has hollow heart.
3. WnC 285-18: This line has attracted some interest in Southern California and some growers would like to see it released. It probably will not be, however, because of a bad elephant skin and an extreme susceptibility to leafroll.
4. WnC 230-14: A line with immunity to PVX, some resistance to leafroll and good production potential. It will probably not be released because of poor emergence resulting from seed rot.
5. A67560: A long red line that is very productive and looks promising. It will be put in the 1978 regional trials.

Ron Voss, Davis, California, has been conducting extensive variety trials throughout the state of California for the past four years, looking at material from Idaho, Colorado, North Dakota and Washington. A wide range of varieties are needed in California since there are seven growing districts producing potatoes year around. They need early and late russets, round reds, long whites and round white chipping varieties. Varieties discussed by Voss included:

1. Centennial: Some are having troubles with hollow heart, growth cracks and low yields but it is well adapted to Southern California and will continue to be grown there as an early russet.
2. Nooksack: Now that growers are learning how to grow it, there is renewed interest in this mid-season russet variety which produces a medium yield of high quality tubers adapted to either fresh market or processing.
3. Atlantic: A round white chipping potato with very high solids and low sugar. It has a reputation for hollow heart and heat necrosis but these problems were not noticed in California.
4. Targhee: A small area in Northern California is interested in this variety but it tends to produce low yields.
5. WnC316-1: This line looks good throughout the state but has a severe hollow heart problem. It will probably replace Centennial.
6. A503-42: This rough, round white line produces very high yields and processes acceptably but is being discontinued in California trials because of hollow heart, scab susceptibility and sticky stolons.
7. A68678-1: A long russet line which shows much promise as either a fresh market or processing variety in California. It produces high yields of high quality tubers. This line has a reputation for hollow heart but this problem hasn't developed much in California trials. The industry is anxious to get enough seed for large trials.

8. A66122-3: A high yielder that tends to be very rough and has only mediocre quality. It will be discontinued in California trials.
9. BC - 8370-4: This line looks like a good russet in California trials but has a bad hollow heart problem.
10. ND 8891-3: A blocky, white line that produces very good yields but has low solids and makes only fair chips.

Joe Pavek, Aberdeen, Idaho, described their USDA breeding program and discussed two new lines being released by Idaho.

1. Butte: A new variety that yields about the same as Russet Burbank, has 25% more 1's, slightly higher solids, higher protein, much higher Vitamin C and less alkaloids. It is immune to PVX, resistant to net necrosis, and is less susceptible to Sencor damage, jelly end rot and hollow heart. Butte may be more susceptible to blackleg than Russet Burbank and it sprouts sooner in storage. Both the processing and fresh market industries like Butte. It will be available through seedsmen for limited plantings in 1978 and 1979 and should be generally available by 1980.
2. A68678-1: This line, known as dash-1, has gained much attention throughout the U.S. as a superior russet for both early and late production and for either fresh market or processing. This widely-adapted line consistently outyields Russet Burbank and has higher solids, lower sugar and greater % 1's. Its responses to potato diseases is similar to Russet Burbank but it is resistant to net necrosis and less susceptible to Verticillium wilt. It sprouts sooner in storage and can show severe hollow heart under certain conditions. It is being increased as rapidly as possible and will be named and released. Seed will not be available for commercial plantings for at least two years and even then on a very limited scale for two or three years.

Bob Kunkel, Pullman, Washington, described advanced variety trials he has been conducting in the Columbia Basin. He indicated 14 lines looked good enough over a period of years to merit a 1977 seed increase by seedsmen in Northwest Washington. Those being increased are Butte, Snowchip, Pioneer, A66102-16, A6830-3, A68113-4, A69327-5, A69657-4, A503-42, B6987-57, B6987-184, B6987-201, B7024-81, B7151-4. It is hoped that sufficient seed of each of these will be available by 1979 to plant three or six rows through a few circles and then, at harvest, follow a truck load of tubers through the plant to see how they process.

Malcolm Johnson, Redmond, Oregon, described the variety trials now being conducted at four locations in Oregon and mentioned a few lines that look very promising.

1. A68678-1: A very promising line in Oregon, as either a fresh market or processing variety, but have seen a few examples of severe hollow heart.
2. A69868-2: This line produces a moderate yield but has very good solids and golden nematode resistance.
3. A70383-24: This is a good main season line but has growth crack problem.
4. A70365-6: This is a very promising line that yields and processes well and can be harvested early.
5. Centennial: It has not looked good in Oregon.
6. Targhee: A good fresh market variety, having good internal quality and scab resistance. There is some interest in Targhee among Oregon growers but seed is in short supply.

7. Nampa: This variety probably does not have a place in Oregon since it produces low yields, has poor baking quality and is quite susceptible to seedpiece decay.

Mark Martin, Prosser, Washington, described lines that are showing particular promise in his trials in grower's circles. An early trial at Prior Land Co. near Patterson, was planted in early March and harvested in mid-July. Four lines were as early as Norgold and Kennebec and offered improvements over these commercial varieties.

1. NDA 9249-3: This line produces blocky, flattened tubers with a heavy russet skin that was well set by mid-July. Yields are similar to Norgold, but it grows, processes and stores much better than Norgold.
2. A68678-1: A main season line that can be harvested early with yields similar to Kennebec but it will give a better processed product. It has good fresh market-type like Norgold but better yields and eating quality.
3. A70270-3: A high yielding line with good processing quality that looks like an improvement over Kennebec. It is not as susceptible to scab as Kennebec.
4. A70365-6: A high yielding line with good processing characteristics that has a tendency to produce knobs but generally compares very favorably with Kennebec.

In main season trials A68678-1 and A70365-6 again were very promising. Other lines that were noteworthy in main season trials were:

1. B7024-81: A blocky, white potato that yields somewhat less than Russet Burbank but gives very high % 1's and solids and processes very well.
2. WnC 316-1: Does not perform as well in Washington as in Southern California. In general it has produced low yields with erratic solids and bad hollow heart. It is also very susceptible to scab and Verticillium wilt and does not store well.
3. Wn330-1: A line that has a good appearance even under adverse growing conditions. It stores well and processes well but will probably be discontinued because of low yields and a tendency to produce a pear shape.
4. Centennial: This variety has not performed well in Washington trials. It has produced low yields of very flat tubers with severe growth cracks and hollow heart. The solids are low and it does not store well.
5. Butte: This variety has not looked especially promising in our trials, probably because we usually harvest early before this long season variety can express its full potential. For us it has produced low yields of small tubers with a pear shape and poor tuber dormancy. It has a nice appearing skin and processes well.
6. Nooksack: There has been renewed interest in this variety since a few large growers learned how to obtain good stands with resulting good yields of high quality tubers. The tubers have much fresh market appeal and process very well. The unusual upright, compact plant in this variety allows better air circulation and thus reduces losses from sclerotinia and late blight. Its remarkable tuber dormancy is a problem for seedsmen but makes the use of sprout inhibitors much less important. Under certain conditions this variety will produce serious growth cracking.
7. Wn705 series: A series of sister lines that have unusual disease resistance, high yield, good quality and high levels of protein. These lines are being increased for large scale trials to determine their full production potential.

The outlook looks bright for major varietal improvements in the West in the near future. There appears to be even greater prospects of genetic improvement in the large number of newer clones being evaluated. The expanded variety development programs in California, Oregon and Washington are providing a wealth of exciting new material. As these are painstakingly screened through over a period of years, we will find varieties well adapted to the various needs of the fresh market and processing industries. The major varietal development need in the West is methods and facilities for producing larger increases of promising lines for grower and processor trials.