Potato Progress

Research and Extension for Washington's Potato Industry
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Managing Potatoes in the Future*

Bryan G. Hopkins, Jason W. Ellsworth, and William H. Bohl**

Adapt new potato production methods or face extinction. Sounds harsh, but it's likely more of a reality than some care to think. It's important to not get stuck in a rut of continuing to do things the same way just because it works. Of course we don't want to be tossed to and fro with every "revolutionary" idea that comes along either. One key to successful potato production is "skeptical open-mindedness," which is being receptive to new ways of doing things but looking before you leap. With this in mind, we invite you to think about how potato production might change over the next few years by questioning some of the things we now do.

Let's start by examining why we grow potatoes in 34 to 38-inch rows. In days gone by, row widths were established by the tillage system. A quick check of our grandfather's barnyard would show a striking correlation to our current potato row width with that of a mule's backside. This width also facilitated furrow irrigation that was prevalent in the early days of potato production. Not many growers use furrow irrigation at present, and mules are now mostly used in parades. Why, then, do we continue to grow potatoes at the same row widths that were established under very different circumstances?

Research over the past four years has shown that potatoes grown in beds with narrow rows close the canopy two to three weeks before conventionally planted potatoes (Hopkins and Ellsworth, unpublished data). Potato plants that cover the soil earlier result in cooler soil temperatures, increased sunlight capture, reduced weed pressure, earlier bulking, and increased tuber quality and yield.

Are there problems with beds? Yes, there are always challenges when making changes. The first attempts to grow potatoes in beds resulted in a struggle with reduced tuber size until working out optimal plant spacing scenarios. The key is not to give up on a good idea when it doesn't work perfectly the first time, which is why the whole farm shouldn't be converted over until the kinks are worked out.

Another example of questioning how we do things includes irrigation. As mentioned previously, farmers used flood and furrow irrigation predominately until recent years. With the development of sprinkler irrigation, most farmers dismissed it as a passing fad or an expensive toy. However, the value of sprinkler irrigation has been repeatedly proven. Now another form of irrigation is in the early adoption phase for potato production, drip irrigation. This method of irrigating is becoming common practice with various crops in certain locales. Drip irrigation has the potential to use less water and apply it more uniformly and consistently than other methods of irrigation, especially for shallow-rooted crops like potatoes.

Onions are also shallow-rooted, and growers have discovered the value of drip irrigation with this crop. Many onion growers in the Columbia Basin in Washington and Oregon also grow potatoes, and many of them have begun to realize how well it works for potatoes, too.

Dr. Howard Neibling, irrigation specialist with University of Idaho, has previously shown the effectiveness of drip irrigation for potatoes grown in south central Idaho, and Hopkins and Ellsworth have experimented with drip irrigation in eastern Idaho for the last two years. In general, drip irrigation grows a better quality crop with less water. Like most changes, the first year was a bit of a headache, but this past year has proven to be manageable with many advantages, including better uniformity, no wind skips, and better tuber yields and quality.

A third relatively new management technique is that of variable rate fertilization. Many growers tried variable fertilization with no or minimal positive results in the past, but they didn't have a complete package, so it often failed.

Here's an example of where variable rate fertilization can work, but often fails. The most glaring zonal difference of soil in Idaho fields is usually related to the amount of limestone (calcareousness or "white soil"). Research has shown that the calcareous zones need relatively more phosphorus and some of the micronutrients. However, most people who have tried variable rate fertilization have made the mistake of applying the extra phosphorus as 11-52-0 (MAP) without accounting for the added nitrogen in this fertilizer (most phosphorus fertilizers are accompanied with nitrogen). Unfortunately, research has also shown that calcareous zones have lower yield potential and, thus, need less nitrogen to avoid tuber quality and environmental problems. Recent research in cooperation with several eastern Idaho growers and Valley Wide Cooperative (Idaho Falls, Idaho) has shown that a new method to variably applying nitrogen to potatoes can make substantial increases in yield and tuber quality.

There may be other cutting edge management techniques that might benefit growers. We should likely question everything we do. Do we need to till the soil as often as we do or with the methods we currently use? Should we be adjusting seed piece spacing in different management zones? Are there new fertilizer formulations that are more effective? Are there better ways to determine if and when to apply pesticides? You may have other ideas.

There is a danger, however, of focusing so much on making changes that we don't take care of the basics. Growers should continue using proven methods, but have an open mind and actively seek to make gradual changes over time with the help of qualified advisors and evaluate new management techniques on their own farm.

A local farmers' cooperative has a cartoon posted on the wall showing a medieval knight with sword in hand, dismissing a firearms salesman because he was too busy fighting the battle. Would this revolutionary new product help win the battle? We need to seek out the new technologies that will help us become better at what we do. It's not an easy task, but it has to be done to avoid extinction. Feel free to contact us if you would like more information or assistance with any of the technologies mentioned in this article.

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Potato Varieties in the Northwest

Data for the following table were gathered by the National Agricultural Statistics Service (NASS), and summarized here by the editor. In some cases, NASS does not report numbers for certain varieties, and these cases are indicated by the --. Several minor varieties not listed here were reported by NASS on occasion. For a table listing all varieties reported by NASS, contact Andy Jensen at the commission.

State	Russet Burbank	Russet Norkotah	Shepody	Ranger Russet	Umatilla	Alturas	Other
Idaho							
1996	79.7%	3.7%	10.0%	2.7%	--	--	3.9%
1997	79.7%	5.0%	7.1%	4.0%	--	--	4.2%
1998	77.9%	4.8%	5.6%	6.6%	--	--	5.1%
1999	74.4%	8.3%	4.2%	9.1%	--	--	4.0%
2000	74.9%	8.0%	3.9%	7.7%	1.3%	--	4.2%
2001	70.8%	8.4%	3.8%	11.1%	--	--	5.9%
2002	71.0%	7.5%	3.4%	12.0%	--	--	6.1%
2003	69.2%	10.1%	1.3%	12.9%	--	1.2%	5.3%
2004	63.3%	14.2%	1.7%	12.5%	--	2.9%	5.4%
2005	63.1%	11.8%	1.3%	15.1%	--	2.8%	5.9%
Oregon							
1996	35.4%	22.5%	25.8%	3.6%	--	--	7.1%
1997	30.9%	38.8%	18.2%	1.8%	--	--	7.9%
1998	39.5%	24.8%	17.2%	10.3%	--	--	7.2%
1999	42.9%	21.4%	12.5%	12.5%	--	--	8.9%
2000	32.7%	27.8%	9.8%	11.2%	3.1%	--	13.3%
2001	38.9%	12.3%	10.8%	22.5%	1.9%	--	13.6%
2002	24.3%	16.8%	18.8%	19.2%	1.8%	--	19.1%
2003	22.3%	25.6%	13.3%	15.4%	--	5.0%	18.4%
2004	22.8%	16.3%	10.3%	31.3%	--	7.2%	12.1%
2005	15.2%	23.8%	17.1%	25.3%	2.1%	7.7%	8.8%
Washington							
1996	50.3%	17.8%	11.3%	8.7%	--	--	11.9%
1997	50.2%	17.5%	7.6%	15.5%	--	--	9.2%
1998	58.1%	13.2%	8.9%	11.4%	--	--	8.4%
1999	41.3%	15.4%	10.8%	17.6%	6.7%	--	8.2%
2000	33.7%	17.2%	10.8%	20.2%	12.3%	--	5.8%
2001	35.3%	19.3%	6.8%	19.9%	12.1%	--	6.6%
2002	34.8%	11.8%	10.3%	22.3%	8.1%	--	12.7%
2003	34.9%	11.1%	9.3%	22.1%	8.2%	1.5%	12.9%
2004	34.7%	12.9%	8.2%	18.5%	10.7%	3.5%	11.5%
2005	40.6%	14.4%	4.7%	16.0%	10.8%	3.3%	10.2%

45th Washington State Potato Conference and Trade Show

Potato Production Workshop in Spanish

Advanced Technology Education Center (ATEC)
Big Bend Community College
Moses Lake, WA
Tuesday, February 7, 2006
Sponsored by – Edmonton Potato Growers

Moderator - Frank Martinez

8:30 AM **Introduction**
Frank Martinez, Saddle View Farms, Royal City, WA

8:40 AM **Work Really Does Kill!** Ramón Benavides, Consultations & Education, Department of Labor and Industries, Yakima, WA

9:10 AM **Potato Bruising and Post-harvest Management of Diseases**, Lyndon Porter, USDA-ARS, Prosser, WA

9:40 AM **Biology and Integrated Management of the Potato Tuber Moth,** Silvia I. Rondon, Oregon State University, Hermiston Agricultural Research & Extension Center, Hermiston, OR

10:10 AM Break

10:30 AM **Contribution of Genetic Resistance to the Management of Potato Diseases and Pests,** Chuck Brown, USDA-ARS, Prosser, WA

11:00 AM **Weed Identification**, Andy McGuire, Extension Educator, WSU

11:30 AM **Late Blight**, Lyndon Porter, USDA-ARS, Prosser, WA

12:00 PM **WSU Cooperative Extension: Small Farm Programs for Hispanic Farmers,** Malaquías Q. Flores, WSU Small Farms Program, Yakima, WA