



Potato Progress

Research and Extension for Washington's Potato Industry
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Volunteer Potato Outlook for 2005

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Volunteer potatoes are expected to be abundant in the Columbia Basin again in 2005. Potatoes normally are killed when they reach temperatures below 28° F. Soil temperatures at the 2 inch depth reached 26° F December 1st at Odessa, WA - adequate to kill shallow potato tubers (Fig. 1). In the lower Columbia Basin, soil temperatures at 2 inch depth never reached lower than 30° F the entire 2004-05 winter season (Hermiston OSU Agrimet station data).

Based on AGWeatherNet in Prosser, WA, and Agrimet weather station data from Odessa, WA and Hermiston, OR, the coolest air temperatures occurred early- to mid-January in the Columbia Basin. However, significant snow cover during this period prevented soil temperatures from dropping below 31° or 32° F, depending on location (Fig. 2).

Examination of potato fields near Prosser and Paterson, WA on February 8, 2005 revealed that potato tubers left after harvest were killed only to 2.5 inches deep and tubers buried 3 inches deep or more were intact and viable. Soil temperatures respond to ambient air temperatures, but can vary widely between locations because of the presence of snow cover, which was substantial in the Columbia Basin this winter. Growers can sample fields to determine the precise depth of freezing injury to tubers. Tubers killed by cold temperatures are soft and often leak fluids under pressure, although internally appear relatively normal after cut open. Viable tubers that have escaped cold injury are firm. Tubers that are firm on the underside and soft and leaking on the upper side can often be found which mark the depth that killing temperatures reached.

We estimate that tuber mortality in the lower Columbia Basin will be minimal and we predict major volunteer potato populations in 2005.

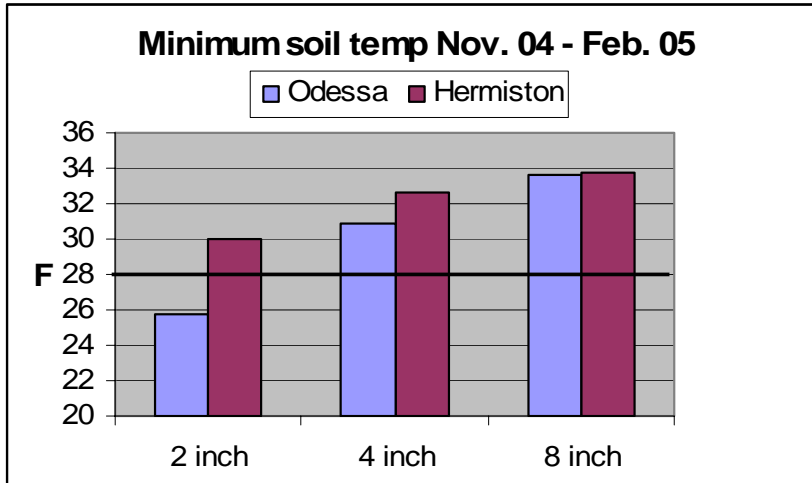


Figure 1. Minimum soil temperatures at three depths at two Agrimet weather station locations from November 1, 2004 through February 9, 2005. Only shallow tubers at Odessa reached killing temperature of 28° F.

Soil Temperatures WSU Prosser

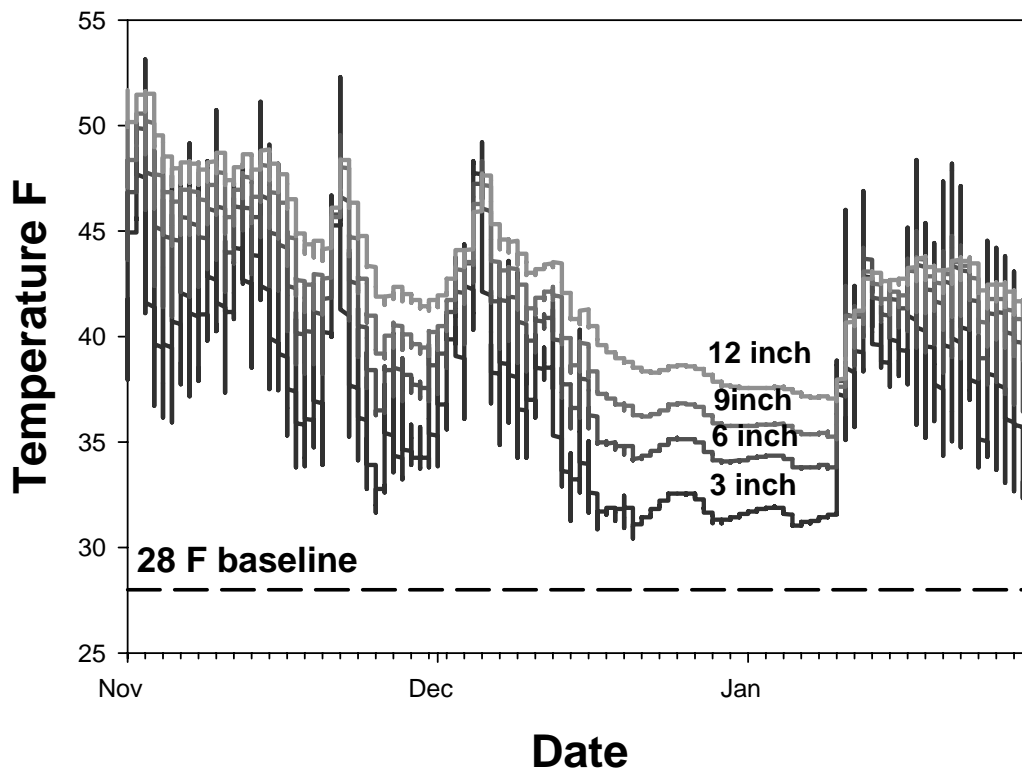


Figure 2. AGWeatherNet soil temperature data from four depths at Prosser, WA. Note lack of diurnal variation in soil temperatures following snow that occurred in late December and persisted through January 20, 2005.

Recommendations for Volunteer Potato Control

With volunteer potatoes likely to be plentiful in the Columbia Basin this year, control measures will be necessary to minimize competition with rotational crops and formation of new tubers that can carryover into later crops. Controlling volunteer

potatoes requires an integrated approach. Several components of volunteer potato management are listed below.

- On higher value crops with nematode problems such as carrots or onions, spring fumigate with metam sodium (Vapam, Busan, and others) and 1,3-dichloropropene (Telone II). Field studies indicate about 70 to 75% of tubers are killed by a combination of Telone II at 10 GPA applied with shanks plus Vapam at 30 GPA applied by center pivot. Lower rates of fumigants are less effective in killing tubers. Follow labels for proper rates, soil temperatures, soil moisture, and time required between fumigation and planting of subsequent crop.
- If possible, delay planting of the rotation crop to allow maximum early volunteer potato emergence and apply glyphosate (Roundup) or remove with tillage.
- Use herbicides that are active in reducing volunteer potatoes in rotation crops. Several herbicides can be very effective in killing potato plants and reducing daughter tuber weight, including mesotrione (Callisto), fluroxypyr (Starane), atrazine (Aatrex, Atrazine), glyphosate (Roundup), dicamba + diflufenzopyr (Distinct), and dicamba (Banvel, Clarity). Repeated applications of contact herbicides such as oxyfluorfen (Goal), carfentrazone (Aim), pyridate (Tough), glufosinate (Rely), and paraquat (Gramoxone) can also be effective. Follow labels closely for labeled crops, proper rates, timing of applications, and crop rotation restrictions.
- When possible, apply postemergence herbicides when potatoes are just beginning to initiate tubers. If applications are made earlier, mother tubers often re-sprout and the volunteer plants will require additional herbicide applications. If applications are made later, yield loss may have already occurred and many new tubers will have already formed which will infest next year's crop.
- Previous USDA-ARS research demonstrated that cultivation about 1 week after postemergence applications of Starane, Goal, Roundup, and Banvel greatly reduced the number of daughter tubers formed compared to herbicides alone. In corn, Callisto herbicide has reduced new daughter tuber formation greater than other postemergence herbicides. Cultivation after Callisto application may not improve volunteer potato control.
- Select competitive crops and those with effective herbicide and cultivation options like field corn. Crops like carrots have no effective herbicides registered for volunteer potato control, so avoid planting such crops in fields where volunteers will be plentiful. Winter wheat is a very competitive crop and delays volunteer potato emergence in the spring. However, cultivation is not practical in wheat and there are limited opportunities for timing effective herbicide applications in winter wheat prior to new tuber set on volunteer potatoes.
- Repeated cultivations and hand weeding can control volunteer potatoes, but they are most effective and economical when combined with other control methods.
- Grazing fields with hogs, sheep, or cattle may also reduce the number of tubers available to sprout.

For more detailed control information contact Rick Boydston, USDA-ARS, 24106 N Bunn Road, Prosser, WA 99350. (509) 786-9267. Email: boydston@pars.ars.usda.gov

2005 Commercial Seed Lot Trial Information

Mark J. Pavek, Washington State University

Commercial potato seed samples are requested for the 2005 Washington Seed Lot Trial. Two to three hundred whole (single drop) seed is an acceptable sample size, or 50 lbs of 4 oz single drop seed. This seed should not be treated with insecticide or fungicide. Seed tubers need to be uniformly small (not larger than 4 oz) because no seed cutting is done and a cup-type planter is used. A sample randomly taken that represents the entire seed lot received is most desirable. Sampling the first (or last) 300 seed from the truck is not likely to provide a representative sample of the lot. Sample tags may be obtained by calling the Potato Commission at 509.765.8845.

Due to the retirements of Erik Sorensen and Gary Pelter, your assistance with collection and drop off of seed samples is needed. Seed samples may be taken to the WSU Othello Research Unit (509.488.3191), south on Booker Road from State Highway 26 about five miles east of Othello. Alternatively, sample pickup can be arranged by calling Mark Pavek (509-335-6861) or Ed Driskill (509-335-6859).

In the North Basin, two seed "drop-offs" have been established. One is at the Bob Holloway storage just north of Road 3 NW and east of Dodson Road; place samples in northern most storage nearest Dodson Rd in the west end door. The second is at CW Potato Services, south of I-90 about six miles east of Moses Lake (just east of the Moses Lake Simplot Soilbuilders). Samples need to be at these locations by 2:00 pm the day before each planting date to be included.

The planned seed lot planting dates for 2005 are:

1st (Early)	March 22
2nd	April 5
3rd	April 19
4th (Late)	May 3

This year's virus reading of the seed lots will take place on June 7 and 21.

The 2005 Potato Field Day is scheduled for Friday June 24.