



Potato Progress

Research and Extension for Washington's Potato Industry

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Planting Dates for Mustard Green Manures

Andy McGuire, Agricultural Systems Educator, Grant-Adams Counties

An early planting date is critical in producing large amounts of biomass from a mustard green manure. This biomass provides both the soil quality and pest control benefits that growers desire.

Research Results

We have completed two years of planting date trials near Moses Lake. The results (Figures 1 and 2) show that growers in the upper Columbia Basin can expect to lose over half of the crops production potential by planting after the 1st of September.

Upper vs. Lower Columbia Basin

Although the lower Columbia Basin is warmer than the Moses Lake area, the difference is not that great. For instance, during the period Sept. 1 to Sept. 5, the average difference (1995-2002) in the accumulated heat units (base 40°F) between Pasco and Moses Lake was only 19.6, just a little over one day at that time of year. The cumulative heat units for Pasco for that same period was 143 which is what a crop would lose if planting was delayed for those five days. Although the cumulative difference would continue to increase and the crop may be able to grow longer into the fall in Pasco, it is difficult to make up for days lost in August when the heat units are high by extending the season into October when heat units are low.

Another reason to plant as early as possible is to obtain canopy closure early when heat units are high. Early plantings will minimize the days to canopy closure and thus maximize biomass production.

Planting in July and Early August

One possible problem with planting in July and early August is the production of viable mustard seed. Mustard planted in July will bloom rapidly and begin to set seed. Whether these late summer produced seeds will be viable or not has not been determined, but it is better to be cautious than have to deal with a mustard weed the following year. August 1st plantings have not been a problem in the upper Columbia Basin if the crop does not bloom early due to stress from lack of water or nutrients. However, early August plantings in the lower Columbia Basin could pose some risk. If you do plant this early, do not allow the crop to become stressed, and watch the seed pod formation. Incorporate the crop before viable seed is produced.

We are now screening mustard varieties for delayed bloom, and plan to conduct an early season (July-early August) planting date trial in 2003.

Fig. 1. Planting date effect on mustard biomass production-2001

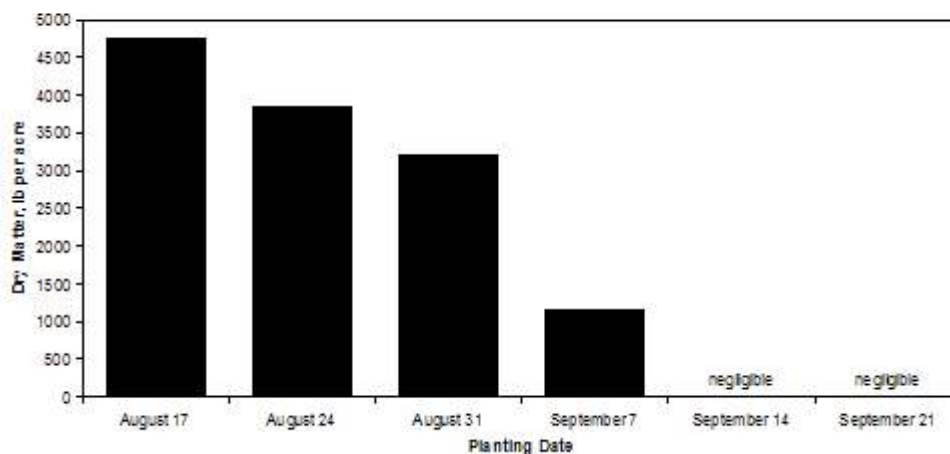
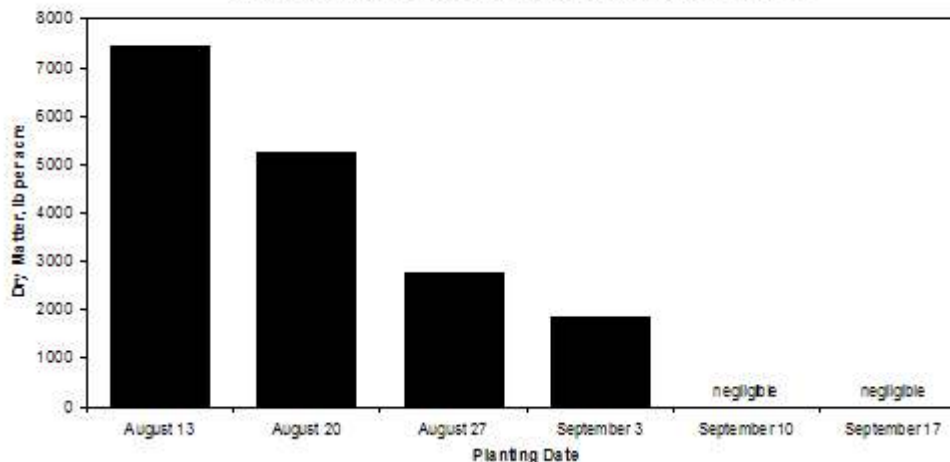


Fig. 2. Planting date effect on mustard biomass production-2002



Recommendations

1. Growers in the upper and lower Columbia Basin should try to plant mustard green manures in August.
2. One way of reducing the time required to plant is to drill the mustard seed through the wheat stubble right after harvest. This eliminates having to incorporate or remove the straw and generally gives better results than flying the seed on before wheat harvest. Under center pivots, the seed only need be planted 1/8-1/4" deep and kept wet until emergence.
3. Maintain adequate levels of soil water and nutrients. This will keep the mustard in the vegetative state for as long as possible.
4. Look for new varieties with delayed bloom.

Finally, growers of mustards have a responsibility to either incorporate or otherwise kill plants which survive in fields or field borders to prevent potential cross-pollination with seed crops.

Find more information on mustard green manures at <http://grant-adams.wsu.edu>.

Remember: PAA Spokane August 12th

The Potato Association of America (PAA) is made up of scientists who study potatoes from across North America and beyond. The association holds an annual meeting each August. This year's meeting is in Spokane, August 10-14. The event is being coordinated by a committee of WSU, Potato Commission, and industry personnel. We have created a day of presentations on August 12 specifically for local growers and industry partners. For the day's complete program, see the last issue of *Potato Progress*, or contact the commission. To register for the day, which includes 3 meals and a day program for only \$50, see <http://www.paa2003.wsu.edu/registration.htm> or call the Andy Jensen at the Potato Commission for assistance.

Location: Red Lion Hotel at the Park, 201 W. North River Drive, Spokane, WA 99201 USA
Reservation Line: 1-800-325-4000

Potato Yellows Syndrome Research Project Contacts

If you have a field or any part thereof with symptoms of the yellows syndrome so common in 2002, please contact one of the following individuals. All the folks below are a part of a WSPC-funded research project on this disease. We are planning to better-understand the disease, and hope to learn from fields infected in 2003. **Symptoms of this disease include most or all of the following: curled yellow or purplish leaves similar to leafroll virus, shortened internodes, swollen nodes, aerial tubers, and early plant decline.**

Southern WA and Oregon:	Phil Hamm, 541-567-8321 or 541-561-4724
Southern and Central Basin:	Alan Schreiber, 509-539-4537
North Basin:	Andy Jensen, 509-760-4859
Yakima Valley and Southern WA:	Joe Munyaneza, 509-454-6564

Thrips on Your Potatoes?

Andrew Jensen, Washington State Potato Commission

The latest emerging potato pest problem in a seeming string of them the past few years is **thrips** (the word thrips is used for both plural and singular – similar to the word “sheep”). Thrips are mostly tiny insects in the order Thysanoptera, also known as the fringe-winged insects (Fig. 1). Their wings are feather-like – a characteristic found in some other extremely small insects. Most thrips pests are very small – about 1/10 of an inch (~2 mm) or less. The exact identity of the thrips impacting Washington potatoes has not yet been determined, but work on this is underway.

Thrips are unusual for two additional reasons: 1.) their mouthparts are asymmetrical, and 2.) their life cycle involves two non-feeding stages. Most insects have two biting mouthparts called mandibles. Thrips have almost completely lost one mandible, using their remaining one to pierce plant cells. This



Figure 1. Western flower thrips, *Frankliniella occidentalis* (photo from Texas Tech University).

type of feeding is similar to that of spider mites. The thrips life cycle is shown in Fig. 2. It shows that the generation time for thrips can be very short. Other important aspects of the life cycle from the perspective of pest management are that 1.) the eggs are laid inside plant tissue, which offers them some protection, and 2.) the non-feeding stages usually reside on or in the soil.

Thrips have been reported to cause severe damage in Washington potatoes through their direct feeding. What makes this common insect, found in almost all potato fields, become such a serious problem in some fields is not certain. Another potential problem thrips can bring is the Tomato Spotted Wilt Virus. In some parts of the country this thrips-transmitted virus causes serious damage to potato and others crops. So far the virus has not been demonstrated to be important in Washington. However, there appears to be little reason than it cannot become established as an annual concern. We will keep the industry informed if and when further information develops.

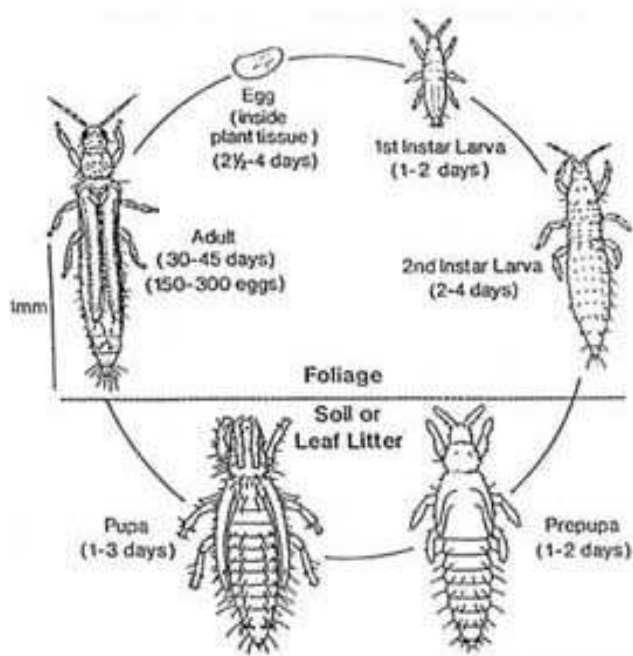


Figure 2. Western flower thrips life cycle (diagram from U. Of Massachusetts).