**Weed Control in Onion 2017**

**Research Report**

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Preemergence and postemergence onion weed control trials were conducted on Houghton Muck soil on the Keilen Farm (Lansing) in 2017. Another weed control trial was conducted on Pipestone sand on the Vogel Farm in Fremont. A green onion and leek experiment was conducted at the Schreur Farm in Hudsonville. A seeded green onion and chive trial was conducted at the Van Drunen Farm in Momence, IL, and an established chive trial also was conducted at Momence.

In the Preemergence trial on muck, we obtained crop safety and ladysthumb (LATH) control data from applications of Zidua, bicyclopyrone (BIR), and Prowl H2O, plus Buctril 0.187 lb (12 fl oz) preemergence (PRE) or delayed preemergence (DPRE) applications. Onions were seeded 4/22/17, PRE treatments were applied 4/25/17, DPRE treatments were applied 5/3/17 at the emergence to early loop stage, and Postemergence 1 and Postemergence 2 treatments were applied on 5/23/17 (1 LS) and 6/1/17 (2 LS). LATH was the primary broadleaf weed in the field.

At the second rating on 6/5/17, none of the PRE treatments had caused serious onion stunting. At the third rating (7/3/17) all of the DPRE treatments had caused less onion injury than the PRE treatments. All of the DPRE treatments had reduced barley stand on 5/17/17 and had better LATH control. It appears that the reduced vigor of the onion plants in the PRE treatment plots on 7/3/17, and subsequent lower yields, was a result of competition from barley and LATH more than herbicide injury. The stand reduction of barley is interesting because it was well established by the time of the DPRE application on 5/3/17. From the results of this experiment, it is obvious that delaying the PRE herbicide plus Buctril application is critical to obtain good LATH control, a vigorous onion stand, and maximum yield. **Zidua** was most effective when applied DPRE with Buctril. **BIR** also was most effective when applied DPRE plus Prowl H2O plus Buctril. Chateau plus BIR was safe and effective in the PO1 and PO2 applications after Prowl H2O plus Buctril were applied DPRE.

In the postemergence (POST) experiment on muck, GoalTender (GT) was most effective when first applied at the onion one leaf stage (1 LS). Waiting until the 2 LS for first application (8 days later) resulted in reduced LATH control and reduced onion yield. GT applied with Chateau or BIR improved LATH control and onion yield. Onion injury increased and yield decreased when GT was applied with BIR plus nonionic surfactant (NIS). However, LATH control was excellent.

GT plus Chateau PO1 (1 LS) and PO2 (2 LS), followed by Reflex PO3 and PO4 plus Chateau PO3 was effective against LATH and had good onion yield. GT 0.125 lb x4 plus Chateau 0.032 lb x3 resulted in good LATH control and good onion yield. GT 0.125 lb x4 plus Starane 0.123 lb x2 also had good onion yield. GT 0.125 lb plus Buctril 0.187 lb x3 postemergence PO2,3, and 4 had good LATH control, but caused onion injury and yield reduction. In general, Buctril should not be used on emerged onion because of potential yield reduction. Onions seldom grow out of Buctril injury. It is safe preemergence to the onions.

Spotted spurge (SPSP) emerged in the field in July. The only treatments with moderate to good SPSP control were GT 0.25 lb x4, GT 0.125 lb x4 plus Chateau 0.032 lb x3, GT 0.125 x 3 plus Chateau 0.032 lb x3, and GT 0.125 x4 plus Starane 0.123 lb x2. BIR did not suppress SPSP sufficiently.

On mineral soil, **Prowl H2O** at 0.5, 0.75, and 0.95 lb ai/acre x2 was safe on onion and yields were not reduced. At 0.95 lb/acre, onion injury was significant on some rating dates. Yield was not reduced significantly. Addition of BIR at 0.016 lb ai/acre PRE caused slight reduction in yield. BIR at 0.016 lb POST did not reduce yield.

**Nortron** 0.5 or 1 lb/acre applied PRE with or without Prowl H2O 0.5 lb did not improve weed control or yield.

**Zidua** 0.067 lb PRE, DPRE, or POST did not reduce onion yield. At that rate, weed control was good with moderate control of common lambsquarters (COLQ) and good control of hairy nightshade (HANS).

**Zidua** on onion is a company registration project. It should be labeled within 2 years. **BIR** on onion is an IR4 project, being managed by Canada. **Prowl H2O** is labeled for DPRE application to onions on mineral soils in several states, but not in Michigan. **Satellite Hydrocap** 3.8 CS (pendimethalin, same as Prowl H2O) is labeled for use preemergence on dry bulb onions on mineral soil. The label allows use of 1.5-3 pt (0.71-1.43 lb ai) per acre on mineral soil. There is a warning about potential injury if heavy rain follows application.