MOLDS IN SNAP AND LIMA BEANS

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SNAP BEANS – WHITE AND GRAY MOLDS

Pod mold control was rated among the highest priorities for research in 2012 by members of the New York State Vegetable Research Council and Association. The objective of our 2012 trial was to evaluate fungicide treatments for control of white mold (caused by the fungus *Sclerotinia sclerotiorum*) and gray mold (caused by the fungus *Botrytis cinerea*). Snap bean blossoms are the preferred food source for both fungi, which means that protecting the blossoms from infection is a top priority. Fungicide applications must coincide with the opening of the blossoms in order to be most effective. The 2012 trial was conducted at the Agricultural Experiment Station in Geneva, NY, in a Honeoye silt loam soil with a pH of 6.6. On May 24, snap beans (variety = Gold Mine) were seeded using a Monosem planter at 8.7 seeds per ft with 30-in. row spacing. The fungicide treatments were arranged in a randomized complete block design with four replications. The fungicides were applied using a CO_2 backpack single-row sprayer calibrated to deliver 68 gal/A at 50 psi with three 8002 flat fan nozzles. The sprayer was configured with one nozzle over the top of the row and a 9-in. drop nozzle on each side of the row angled into the canopy. Fungicide sprays were applied on July 12 at 38% bloom and July 21 at 100% bloom to pin pod stage. The same CO_2 sprayer configuration was used to apply spores of white and gray molds (*Sclerotinia sclerotiorum* and *Botrytis cinerea*) on July 18 and July 23. Following the spore applications, Aluminet (double-faced aluminum-coated shade cloth with a 40% shade factor) was placed over the entire plot until harvest. The shade cloth was used to keep the plants cool and maintain moisture in the plant canopy to encourage disease development. The crop was irrigated to encourage disease development. Snap bean pods in 10 ft of row were hand harvested and evaluated August 14-16.

Disease incidence was moderate for both gray mold (5.3%) and white mold (6.8%) on the pods in the control plots. Ideally we aim for 20% disease on the pods in the control plots. But this year, overall disease incidence was low due to the hot dry conditions during the growing season. Gray mold pod incidence was statistically less than the control in the Fontelis, Quash and Tazz treatments. Nine treatments - Endura, Proline, Propulse, Rovral, Switch, Luna Tranquility, Topsin XTR, Topsin + Meteor and Meteor - achieved very good control (less than 2% incidence) of white mold on pods.

We plan to repeat this experiment in 2013 hopefully under ‘normal’ temperatures and rainfall. This information will be very useful for obtaining registrations for the new products and will help us develop our recommendations for growers.

Some of the materials in the table below are NOT REGISTERED for commercial use on snap beans. Please refer to official state and federal product labels before using any fungicides for disease control.

Treatment, rate/A	Gray mold (%)	White mold (%)	Marketable yield (t/A)	Total yield (t/A)
Untreated Control	5.3 abcd *	6.8 a	1.8 ab	1.9 ab
Topsin 4.5FL, 20 fl oz	5.2 abcd	2.6 abcd	2.4 ab	2.4 ab
Endura 70 WDG, 11 oz + 0.125 v/v NIS	4.5 bcde	1.9 bcd	2.7 a	3.0 a
Proline 480 SC, 5.7 fl oz + 0.125 v/v NIS	2.7 cde	1.4 bcd	2.1 ab	2.2 ab
Propulse, SC 8.6 fl oz + 0.125 v/v NIS	5.4 abcd	1.0 cd	2.0 ab	2.1 ab
Quadris F, 15.4 fl oz	3.0 cde	4.5 abcd	2.4 ab	2.6 ab
Cannonball WP, 7 oz	2.1 de	2.3 abcd	1.8 ab	1.9 ab
Polyoxin D SC (CX-10440), 6.5 fl oz	3.5 cde	5.9 ab	2.1 ab	2.2 ab
Polyoxin D SC (CX-10440), 13 fl oz	3.4 cde	4.4 abcd	1.7 ab	1.8 b
Fontelis SC, 30 fl oz	1.9 e	6.7 a	1.9 ab	2.0 ab
Quash WG 4 oz	1.7 e	5.4 abc	2.3 ab	2.5 ab
Rovral 4F, 2 pt	4.4 bcde	0.9 cd	1.4 b	1.5 b
Picoxystrobin SC (Aproach), 12 fl oz + 0.125 v/v NIS	2.8 cde	4.8 abcd	2.5 ab	2.6 ab
Bravo WS, 3 pt	5.3 abcd	5.8 ab	2.3 ab	2.4 ab
Switch WG, 14 oz	2.7 cde	1.4 bcd	2.0 ab	2.1 ab
Luna Tranquility SC, 11.2 fl oz	2.6 cde	0.7 d	2.1 ab	2.2 ab
Cueva F, 2 gal/100gal + DN55 WDG, 3 lb	5.7 abc	3.1 abcd	2.2 ab	2.3 ab
Gavel 75DF, 2 lb	7.5 ab	4.8 abcd	2.3 ab	2.6 ab
Topsin XTR, 30 fl oz	4.8 bcde	1.8 bcd	2.2 ab	2.3 ab
Topsin 4.5FL, 20 fl oz + Meteor F, 1.5 pt	8.3 a	1.9 bcd	1.9 ab	2.1 ab
Meteor F, 2 pt	2.8 cde	1.2 cd	1.6 b	1.7 b
Tazz F, 4 pt	1.8 e	2.3 abcd	2.2 ab	2.3 ab
LSD (p = 0.05)	3.2	4.6	1.0	1.1

*Means within a column followed by the same letter are not significantly different according to Fisher's LSD test (p = 0.05).

SNAP BEANS – PHYTOPHTHORA BLIGHT

In 2012 we surveyed several fields of snap beans (*Phaseolus vulgaris*) for presence of blight caused by *Phytophthora capsici*. A total of 30 snap bean fields were scouted in Genesee (18), Monroe (6) and Orleans (6) counties. The varieties in these fields were BBL-156 (3), Caprice (11), Huntington (9) and Venture (7). We found no evidence of Phytophthora blight in commercial fields, most likely due to the hot dry weather during the growing season. We did see damping off in some fields, but *P. capsici* was not detected.

LIMA BEANS – PHYTOPHTHORA BLIGHT

In 2012 we looked at nine fields of lima beans in Genesee (3), Monroe (2) and Wyoming (4) counties. We had one confirmed case of Phytophthora blight in baby lima beans. Phytophthora blight in lima beans (*Phaseolus lunatus*) can be caused by two species of Phytophthora: *P. capsici* and *P. phaseoli*. Holly Lange in Chris Smart's laboratory extracted DNA from the lima bean sample and using *P. capsici* specific primers obtained a strong band matching the positive control, indicating that the blight on the lima beans was caused by *P. capsici*.

LIMA BEANS – WHITE MOLD

In our lima bean field surveys we found a high incidence of white mold in some irrigated fields. White mold is caused by the fungus *Sclerotinia sclerotiorum* and it is known to attack over 400 species of plants. The strategy for disease control in lima beans is similar to the strategy in snap beans…use labeled protectant fungicides to protect the blossoms. The problem is that lima beans are in bloom for a longer period of time. In addition, the canopy is dense and the stems on which the pods are produced become heavy with the weight of the pods and often fall over and lay on the ground. Pods that are lying on the ground are susceptible to rots caused by many opportunistic pathogens, including *S. sclerotiorum*. Not all fungicides registered on snap beans can be used on lima beans. Labels must be carefully read and adhered to.

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White mold on snap beans

White mold on lima beans

Phytophthora blight on snap beans

Phytophthora blight on lima beans