

Great Lakes Fruit, Vegetable & Farm Market EXPO

December 5-7, 2006

DeVos Place Convention Center, Grand Rapids, MI



Asparagus

Tuesday morning 9:00 am

Where: Grand Gallery (lower level) Room C

Recertification credits: 1 (1A, 1B, Comm CORE, Priv CORE)

CCA Credits: PM(1.0) CM(0.5)

Moderator: Norm Myers, Oceana Co. MSU Extension

9:00 a.m. Labor Outlook

Craig Anderson, Manager, Michigan Farm Bureau Risk Management Services

9:30 a.m. Asparagus Miner Research Trial

Beth Bishop, Entomology Dept., MSU

9:50 a.m. Alternative Planting Methods as Potential Tools for Management of Asparagus Replant

Mathieu Ngouajio, Horticulture Dept., MSU
Buck Counts, Plant Pathology and Horticulture Dept., MSU

10:10 a.m. Asparagus Disease Update

Mary Hausbeck, Plant Pathology Dept., MSU

10:40 a.m. Michigan Asparagus Advisory Board Update

John Bakker, Michigan Asparagus Advisory Board

Asparagus Disease Update

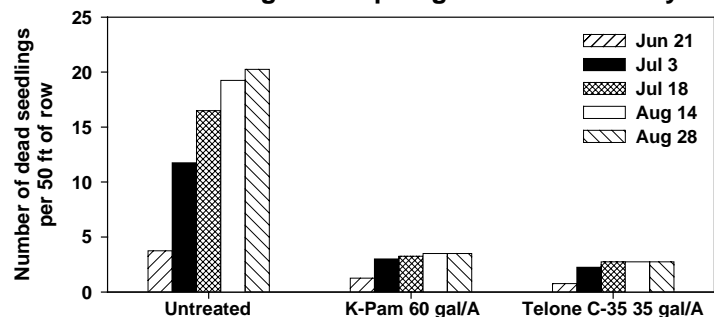
Dr. Mary K. Hausbeck (517-355-4534), Dr. Catarina Saude, and James Counts, Jr.
Michigan State University, Department of Plant Pathology

Fumigation Study

In the fall of 2005 a trial was established on a grower cooperators farm in Oceana Co., MI in a field with a history of asparagus production. The soil type was a Spinks-Benona complex with a zero to six percent slope. Treatments consisted of metam-potassium (60 gal/A; K-Pam), 1-3 dichloropropene (35 gal/A; Telone C-35), and an untreated control which were replicated four times in a randomized complete block design. Treatments were shank applied to a depth of 10-12 in. in rows that were 13 ft wide by 60 ft long on 7 Oct 2005. Treatments were separated by a fumigated (Chloropicrin 100%) raised black plastic mulch covered beds. Beds were allowed to over winter and were planted on 5 May 2006 using disinfested Millennium asparagus seed. Three rows 18 in apart were planted in the center of the treated bed with a seed depth of 2 in and a spacing of 1.5 in. Prior to planting, hydrated lime (1000 lb/A) was spread on the plot to raise the pH to a neutral level. For weed control, Touchdown (1 qt/A) was applied to the untreated plots on 2 May, Lorox (0.5 lb/A) was applied as a pre-emergent to all plots on 25 May. Foliar diseases were controlled by weekly sprays of Bravo Weather Stik 6SC (3 pt/A) and insects were controlled with weekly sprays of Sevin XLR Plus (3 pt/A). Diazinon (1.5 pt/A; 7 Aug, 14 Aug) was applied for asparagus miner control. Prior to fumigating (4 Oct. 2005) soil samples were taken from 5 points in the center of the beds to a depth of 30 in using a JMC soil probe with a plastic liner to maintain the soil profile. Samples were divided into 6 in. increments and allowed to dry for 7 days. After drying soils were diluted to 10^2 in 0.05% water agar solution and then plated onto PPA or Komada's selective media. Plates were then incubated for 7 days and resulting *Fusarium* colonies (CFUs) were counted and isolated for identification. A second set of samples were taken 14 days after fumigation on 21 Oct. 2005, a third set taken before planting on 2 May 2006, and a final set was taken on 10 Oct 2006. Along with the deep cores, shallow (12 in.) soil samples were taken on 10 Oct 2006 from 10 random locations in 18 ft sections of the treatments. Samples were sent to A&L laboratories (Fort Wayne, IN) for pH and nutrient analysis. Plant evaluations consisted of stand counts taken bi-weekly (8 June, 21 June, 3 July, 11 July, 28 July, 14 Aug, 28 Aug, 23 Oct) and a health rating (23 Oct). Soil tests were conducted on the pre-fumigated soil at the different soil depths for pH, lime index, phosphorus, potassium, calcium, magnesium, and organic matter.

Fern growth for the treatments was variable between reps with some reps having short weak yellow fern while others had tall strong dark green fern. This was present in both fumigated and non-fumigated ground. The number of ferns that were yellow or brown was significantly greater for the untreated control (Fig. 1). Rows fumigated with K-Pam (metam potassium) or Telone C-35 (1-3 dichloropropene) significantly reduced *Fusarium* colonies (CFUs) when compared to the untreated control (Fig. 2). Reduced *Fusarium* colonies (CFUs) were also found after the treatments were allowed to overwinter.

Fig. 1. Average Number of Dead Seedlings in a Fumigated Asparagus Crown Nursery



Phytophthora

Early in the season and after considerable rainfall, asparagus spears were submitted for diagnosis. Most of the spears were symptomless but a few showed soft rots and or water-soaked lesions and few others were curved and/or shriveled. Crowns from a 3-year-old field, spears from an irrigation plot, and seedlings were also sampled.

Fourteen *Phytophthora* isolates were recovered from spears. The isolates recovered presented morphological characteristics identical to the *Phytophthora* sp. isolated from asparagus in 2004 and 2005, but the DNA fingerprinting to confirm their identity was not done.

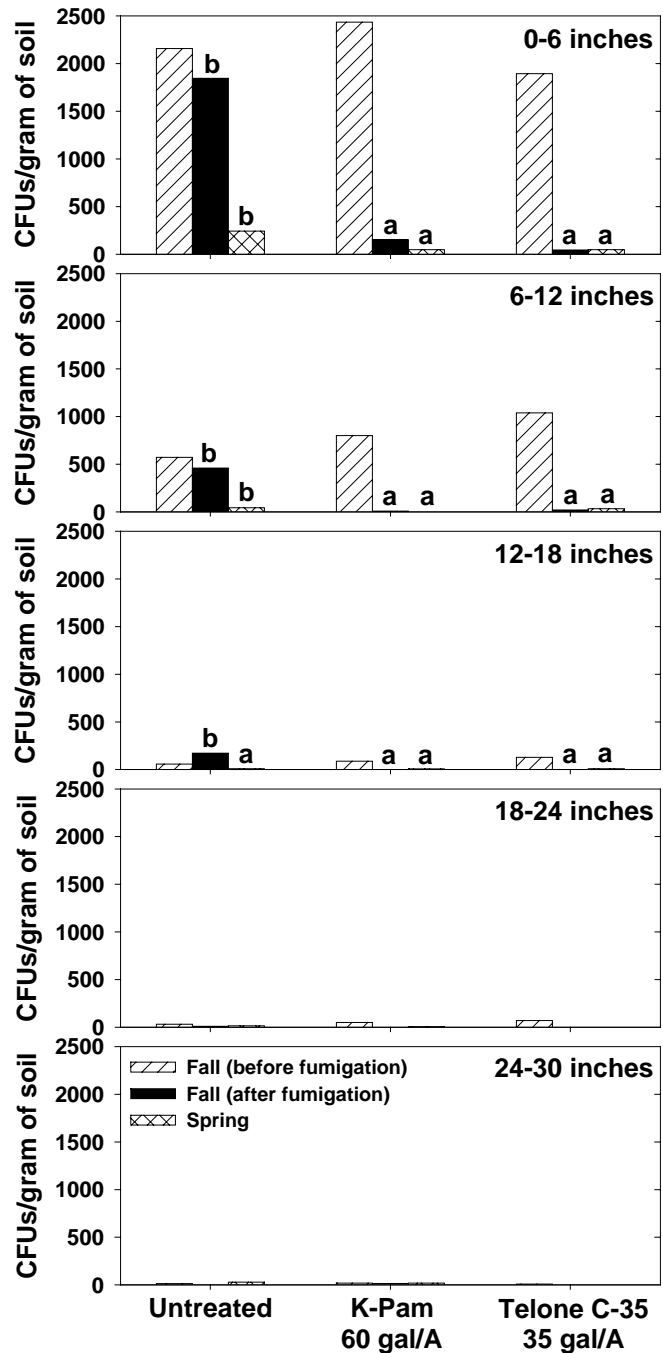
Phytophthora sp. were not recovered from other samples. *Fusarium* spp. were isolated from all samples and *Pythium* spp. were isolated from spears and roots. The spears from which *Phytophthora* was isolated were water-soaked, stunted and/ or shriveled and extremely curved, symptoms observed in previous years.

Evaluation of application methods and rates of the fungicide Cannonball 50WP for control of Fusarium crown and root rot.

This experiment was conducted in a commercial field in Oceana County near the city of Hart, MI. The field has a history of several asparagus production plantings that suffered severe decline caused by *Fusarium*. The soil at the site was a fine sandy loam and the location was planted to zucchini squash the previous year. Treatment plots were arranged in a randomized complete block design. Rows for the experiment were plowed by a single bottom plow to a depth of 12 in. and were spaced 5 ft apart on 1 Jun.

Treatment rows for each rep were 20 ft long and crown spacing was 7.5 in. in the row (27 crowns per row). Before planting ‘Jersey Knight’ one-year old crowns were treated by either soaking in a chemical solution for 10 min or by a soil drench. The drench rate was 100 gal/800 ft² and applied by watering cans after the crown had been placed in the planting trenches. After planting and treatment the crowns were covered with soil and allowed to grow. Foliar diseases were controlled with weekly applications of Bravo Weather Stik (3 pt/A), and insects were controlled with weekly applications of Sevin XLR Plus (3 pt/A). On 29 Sep stand counts for the entire treatment row were taken and each live fern was measured for height. Data were analyzed using Sigma Stat version 3.1 (Systat Software Inc.) and treatments were compared using the Fisher LSD multiple comparison test.

Fig. 2. Soil CFUs for Fall (before and after fumigation) and spring samplings



Disease pressure was moderate to high at the site and the crowns selected for this experiment were sorted to minimize existing infections. The high rate of Cannonball (1.87 g/100 L) had the tallest mean fern height and had significantly more fern per row than all other treatments (Table 1). This difference was noticeable in every replicate of the experiment. No phytotoxicity was noted for any of the treatments.

Table 1. Crown dip versus soil drench.

Treatment and rate	Application	Height (in.)	Fern/20 ft of row
Untreated.....	--	24.9 ab*	68.8 b
Cannonball 50WP 0.374 g/100 L	crown dip	25.2 ab	71.8 b
Cannonball 50WP 1.12 g/100 L	crown dip	24.2 b	70.3 b
Cannonball 50WP 1.87 g/100 L	crown dip	26.2 a	87.3 a
Cannonball 50WP 606 g/ha	soil drench	25.9 a	69.3 b

*Column means with a letter in common are not significantly different (Fisher LSD Method; $P=0.05$).