

SHELF LIFE STUDY OF EGGPLANT AND BELL PEPPER USING VARIOUS METHYL BROMIDE ALTERNATIVE WEED CONTROL TACTICS 2005

Paul E Sumner¹ and Stanley Culpepper²

University of Georgia Cooperative Extension

Departments ¹Biological and Agricultural Engineering and ²Crop and Soil Science

Tifton, GA 31793

psumner@uga.edu

Introduction

Alternative weed control measures for methyl bromide fumigation have been evaluated for weed control, yield and plant growth. These alternatives are Dimethyl Disulfide, Vapam or K-Pam, Telone C35, Telone II, MIDAS and chloropicrin.

Objective

The objective for this study was to evaluate shelf life of pepper and eggplant with respect to various alternative weed control measures.

Materials and Methods

The eggplant was grown in the spring of 2005 at the Ponder Farm located near TyTy, Georgia. Soil type is Tifton sandy loam. Treatments included 5 fumigant options listed below:

1. Methyl bromide (67:33 at 400 lb/A broadcast) plus chloropicrin (150 lb/A broadcast) injected 6-8" in the bed with a super-bedder plastic layer.
2. Telone II (12 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with Vapam (75 gal/A broadcast pulled into a 32 inch bed top equaling 169 gal. rate in the bed) incorporated 3-4 inches deep with a tilrovator and followed with chloropicrin (150 lb/A broadcast) injected 6-8 inches in the bed with a super bedder plastic layer.
3. Telone C35 (35 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with chloropicrin (150 lb/A broadcast) injected 6-8 inches in the bed with a super-bedder plastic layer.
4. Telone II (12 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with Vapam (75 gal/A broadcast pulled into a 32 inch bed top equaling 169 gal. rate in the bed) incorporated 3-4 inches deep with a tilrovator and followed with a super-bedder plastic layer.
5. MIDAS (50:50 at 400 lb/A broadcast) plus chloropicrin (150 lb/A broadcast) injected 6-8" in the bed with super bedder plastic layer.
6. Dimethyl disulfide (DMDS) (87.5:12.5 at 700 lb/A broadcast) plus chloropicrin (150 lb/A broadcast) injected 6-8" in the bed with a super bedder plastic layer.
7. No fumigant control.

Fumigants were applied on February 16 and Santana eggplant were transplanted on March 15 (holes were poked to air fumigant prior to transplant). Eggplant were placed 18 inches apart with one row per 32 inch wide bed top. Normal production practices were used to produce the crop.

Pepper was grown at the Tifton Vegetable Park in the Spring 2005. Tifton sandy loam is the soil type. The seven fumigant treatments are listed below.

1. Methyl bromide (67:33 at 400 lb/A broadcast)) plus chloropicrin (150 lb/A broadcast) injected 6-8" in the bed with a super bedder plastic layer.
2. MIDAS (50:50 at 400 lb/A broadcast)) plus chloropicrin (150 lb/A broadcast) injected 6-8" in the bed with super-bedder plastic layer.
3. Telone II (12 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with Chloropicrin (150 lb/A broadcast) injected 6-8 inches in the bed with a super bedder plastic layer (Years 1 and 3). Methyl bromide (67:33 at 400 lb/A broadcast) injected 6-8" in the bed with a super-bedder plastic layer Years 2 and 4).
4. Telone II (12 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with Chloropicrin (150 lb/A broadcast) injected 6-8 inches in the bed with a super bedder plastic layer.
5. Telone C35 (35 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with a super-bedder plastic layer.
6. Telone II (12 gal/A broadcast) injected 10-12 inches deep with a Yetter rig followed with K-Pam (60 gal/A broadcast pulled into a 32 inch bed top equaling 135 gal. rate in the bed) incorporated 3-4 inches deep with a tilrovator and followed with a super bedder plastic layer.
7. K-Pam (60 gal/A broadcast pulled into a 32 inch bed top equaling 135 gal. rate in the bed) incorporated 3-4 inches deep with a tilrovator and followed with a super bedder plastic layer.
8. No fumigant control.

Plots were harvested and stored in cardboard boxes. Each 30 foot plot sample was weighed and fruit were counted. Boxes were stored in a refrigerated storage room. The cold room temperature was 48°F and relative humidity of 70 percent (figure 1).



Figure 1. Pepper and eggplant boxes stored in cold storage.

Results and Discussion

Eggplant was harvested on July 8, 2005 and stored for two weeks prior to evaluation. Figure 2 shows a graphical representation of useable eggplant fruit after 14 days in 48°F and 70% relative humidity.

Pepper was harvested on June 27, 2005 and placed in refrigerated storage. Pepper boxes were evaluated 14 and 28 days after place in the refrigerated storage. Figure 3 shows a percent usable pepper verses the type of fumigant used for weed, disease and nematode control.

Effects of Fumigant on Eggplant Shelf Life 14 Days after Harvest

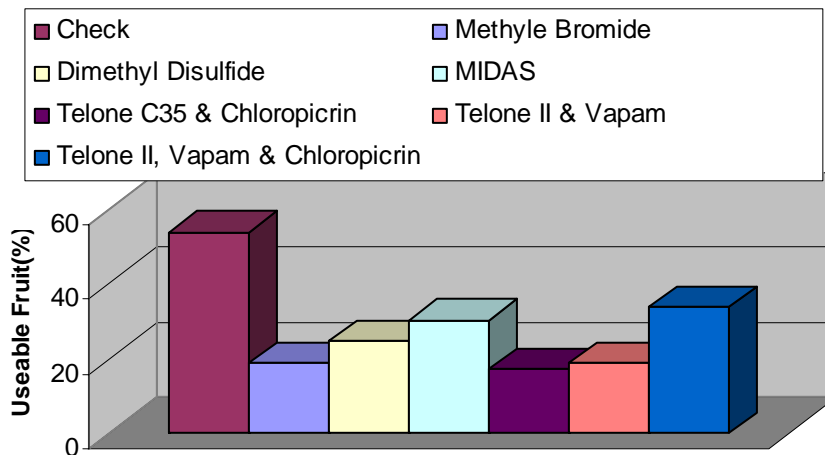


Figure 2. Percent usable fruit for various fumigants on eggplant 14 days after harvest. 48°F and 70% RH.

Effects of Fumigant on Pepper Shelf Life

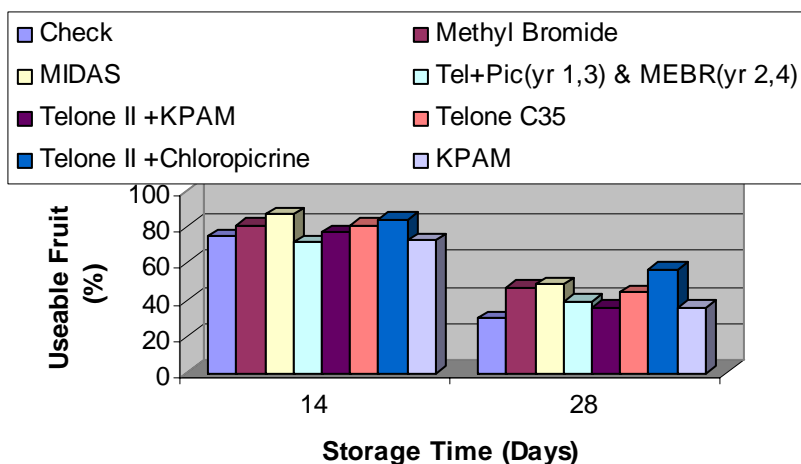


Figure 3. Percent usable fruit for pepper using various fumigants for weed control. 48°F and 70% RH.

Conclusion

In this brief test, MIDAS and Telone II plus Chloropicrin had most usable fruit after 14 days in storage for pepper. MIDAS and methyl bromide had the most useable fruit for eggplant. Shelf life storage studies will be conducted in 2006.