# FUMIGANT/HERBICIDE COMBINATIONS FOR POLYETHYLENE MULCHED TOMATO

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Results of fumigant research in Florida indicate that Telone C-17 provides the most consistent nematode and soil-borne disease control in tomato of the methyl bromide alternatives tested to date; however, it, like all of the alternatives, provides little to no control of yellow and purple nutsedge. Nutsedge is a serious weed pest in many fields in Florida and will continue to increase in importance as crop rotation cycles shorten. Urbanization and water use issues are limiting the amount of new land available for crop production, thus growers are farming land longer and soil-borne pests are becoming more important. Heavy infestations of purple nutsedge have greatly reduced tomato yields in fumigant field trials demonstrating the importance of nutsedge control with any fumigant. Although Vapam and Basamid provide weed control in some areas of the world, they have not provided control of nutsedge equal to that obtained with methyl bromide in Florida. Telone C-17 seems to stimulate tuber sprouting at times and provides very little nutsedge control even under the best of conditions. No nutsedge control has been observed with chloropicrin.

Research was conducted during 1994 and 1995 to identify herbicides which could be applied to the soil under polyethylene mulch in combination with alternative fumigants to control nutsedge in tomato production in Florida. Emphasis has been placed on evaluating herbicides which are already registered for use on tomato in consideration of the brief time available before 2001 and the lengthy time normally involved in registration of new products.

Three experiments were conducted (spring 1994, fall 1994, and spring 1995) comparing purple nutsedge control with various herbicides in combination with Telone C-17. Pebulate was applied at 2 and 4 lb.a.i./acre in the first two experiments and 4 lb. in the third experiment. Trifluralin was applied at 1 and 2 lb.a.i./acre in the first experiment and was not included in subsequent tests due to poor performance. Napropamide was applied at 2 lb.a.i./acre in all tests. Lactofen was applied at 1 lb.a.i./acre in the

first two experiments and at 2 lb.a.i./acre in the last two trials. Metolachlor was included in the last test at 1 and 2 lb.a.i./acre. All herbicides were incorporated into the top 2 to 4 inches of the raised beds immediately after application with a tractor-powered rototiller. Telone C-17 was applied 8 inches deep in the soil through three chisels per bed following herbicide incorporation and beds were covered with polyethylene mulch within 1 minute of fumigant application.

Trifluralin provided no control of purple nutsedge. Lactofen performed erratically with good nutsedge control one season and none the next. Metolachlor provided good nutsedge control, especially at the 2 lb.a.i./acre rate; however, it was injurious to tomato plants. Pebulate consistently controlled nutsedge when combined with Telone C-17, although the level of control was not always as great as one would expect with methyl bromide.

An experiment was conducted in the spring of 1995 to determine if pebulate would control nutsedge as well as methyl bromide when combined with each of the alternative fumigants and to determine crop response to the combinations. Pebulate (4 lb.a.i./acre) was incorporated into the bed for all fumigants, except methyl bromide. Fumigants (methyl bromide (67/33), Telone C-17, Vapam, Basamid, and chloropicrin) were applied, and beds were covered with polyethylene mulch immediately after fumigant application.

Control of purple nutsedge with pebulate/fumigant combinations was as good as that obtained with methyl bromide. Tomato plant vigor was not affected by treatment when evaluated 2 weeks after transplanting. Combinations of pebulate with chloropicrin, Basamid or Telone C-17 produced fresh market tomato yields equivalent to methyl bromide. The combination of Vapam and pebulate produced more marketable fruit.