

## Mulching Ornamentals with Pesticide Treated Turfgrass Clippings

D. W. Lickfeldt, T. R. Wright and B. E. Branham  
Crop and Soil Sciences

Landfills in Michigan and across the United States are becoming filled to capacity, and landfill space is a scarce resource. Legislators are investigating ways to regulate what types of waste can be deposited in landfills, and how much of the waste is acceptable. Grass clippings are one of the forms of solid waste which has come under scrutiny for taking up too much of this valuable space. The ban on clippings in landfills will cause the turfgrass industry to develop alternative uses for clippings. One possibility is to use the clippings as a mulch around ornamental plants to help control weeds. This study was conducted to determine what effect pesticide treated clippings might have upon the mulched plants.

In this study we treated 2000 ft<sup>2</sup> of low maintenance turf with the following 5 pesticides at recommended label rates: Turflon II Amine, Confront, Gallery 75DF, Dursban 4E, and Cutless 50W. A block of untreated turf was included as a control. The clippings were then used as a mulch around the following 4 species of plants: Tomatoes, Lycopersicon esculentum var. Advantage, Cranberry Beans, Petunia 'Grandiflora' and Impatiens 'Impulse Red'. All treatments were applied on June 12, 1991, and the plots were mowed at 2 days after treatment (DAT)(6-14-91), 1 week after treatment (WAT)(6-20-91) and 2 WAT (6-26-91). The clippings were immediately placed in a 2-3 inch layer around the base of the plants extending 6-8 inches out from the stem. The plants were then rated for quality on a scale from 0 to 100 (0 = no injury and 100 = dead) throughout the growing season.

Confront was the most injurious to all 4 species of the 5 pesticides studied (Tables 1-4, Fig. 1). The tomato and bean plants that were mulched 2 DAT were completely dead within 2 weeks after mulching. The impatiens and petunias that were mulched 2 DAT along with the tomato and bean plants that were mulched 1 WAT were dead within 6 weeks after treatment. The impatiens and petunias mulched 1 WAT and all plants mulched 2 WAT showed some injury within 1 week after treatment, but the plants were able to survive. When injury did occur due to mulching, the effects were evident within 1-2 days after the plants were mulched.

Turflon II Amine was fatal to the tomato and petunia plants mulched 2 DAT and significantly injurious to the bean plants mulched 2 DAT and tomatoes mulched 1 WAT (Tables 1-4, Fig.2). All other plants at all other mulchings did not show any injury that could be attributed to the herbicide. Again when injury did occur it was usually within 1-2 days after the plants were mulched.

Gallery 75DF was damaging to all plants excluding petunias when mulched 2 DAT (Tables 1-4, Fig. 3). The mulching with the treated clippings 1 WAT was also damaging to the tomatoes, impatiens and beans. The third mulching with this herbicide did not injure any of the 4 species. Injury from Gallery treated grass clippings did not occur as rapidly as the injury from Confront and Turflon II Amine, but it was evident within 2 weeks after the plants were mulched.

The plant growth regulator Cutless 50W was also injurious to the plants, but the injury was distinctly different than that of the above three herbicides

(Tables 1-4, Fig. 4). Injury caused by Cutless was a dwarfing of the entire plant, reduced stem growth and a distinctly darker green color of the leaves. This injury was most noticeable in the beans, tomatoes, impatiens mulched 1 DAT and 1 WAT. The damage was not noticeable until 3 weeks after mulching on all affected plants.

Grass clippings treated with Turflon II Amine, Gallery 75DF, and Cutless 50W should not be used for mulching purposes until at least 2 weeks after treatment (with 3 mowings during that time interval), and grass clippings treated with Confront should not be used for mulch during the 3 weeks following its application to the turf (with 3 mowings during that time interval). With each successive mowing after the pesticides were applied the corresponding injury was not as severe on the mulched ornamentals. Dursban 4E was not injurious to any of the plants studied. Of the 4 species studied the tomato plants were always first to show injury, and the injury was always more severe than on the other species. The impatiens and petunias were slower in their response to the treated mulch, but injury eventually developed as described above. Mulching with turfgrass clippings is an effective way to organically control weed populations, but when the clippings are treated with Confront, Turflon II Amine, Gallery 75DF and Cutless 50W unacceptable injury to the mulched plants can be expected.

TABLE 1 - MULCHING TOMATOES WITH TREATED TURFGRASS CLIPPINGS  
PLANT QUALITY (0-100)<sup>1</sup>

TREATMENTS TO TURF <sup>2</sup>	DATE OF MULCHING <sup>3</sup>	6/20	6/24	6/27	7/2	7/9	7/12	8/6
UNTREATED CONTROL	6/14/91	3	5	10	0	3	7	0
UNTREATED CONTROL	6/20/91	NA	3	3	3	7	10	0
UNTREATED CONTROL	6/26/91	NA	NA	0	0	0	10	0
DURSBAN 4E	6/14/91	0	8	0	0	0	3	0
DURSBAN 4E	6/20/91	NA	16	3	0	0	16	0
DURSBAN 4E	6/26/91	NA	NA	0	0	3	7	0
TURFLON II AMINE	6/14/91	68	63	81	94	100	100	100
TURFLON II AMINE	6/20/91	NA	33	7	29	13	40	0
TURFLON II AMINE	6/26/91	NA	NA	0	7	0	7	0
CONFRONT	6/14/91	81	90	99	100	100	100	100
CONFRONT	6/20/91	NA	60	70	73	89	92	93
CONFRONT	6/26/91	NA	NA	16	30	39	36	49
GALLERY 75DF	6/14/91	13	60	71	76	77	80	67
GALLERY 75DF	6/20/91	NA	23	26	48	55	55	33
GALLERY 75DF	6/26/91	NA	NA	0	3	16	13	0
CUTLESS 50W	6/14/91	0	11	3	40	26	39	28
CUTLESS 50W	6/20/91	NA	15	3	23	23	46	20
CUTLESS 50W	6/26/91	NA	NA	2	3	10	18	0
LSD (P=0.05)		8.2	12.7	12.7	14.1	14.6	14.8	15.7

<sup>1</sup> Rating system is a progressive scale ranging from 0=no injury and 100=completely dead

<sup>2</sup> Treatments were applied to 2000ft<sup>2</sup> of low maintenance turf on 6/12/91

<sup>3</sup> 6/14/91, 6/20/91 and 6/26/91 are the 1st, 2nd and 3rd mowings respectively, and they correspond with 2 days after treatment, 1 week after treatment and 2 weeks after treatment

TABLE 2 - MULCHING IMPATIENS WITH TREATED TURFGRASS CLIPPINGS

PLANT QUALITY (0-100)<sup>1</sup>

TREATMENTS TO TURF <sup>2</sup>	DATE OF MULCHING <sup>3</sup>	6/20	6/24	6/27	7/2	7/9	7/12	8/6
UNTREATED CONTROL	6/14/91	0	5	3	3	3	7	0
UNTREATED CONTROL	6/20/91	NA	7	0	7	7	6	0
UNTREATED CONTROL	6/26/91	NA	NA	6	10	10	13	0
DURSBAN 4E	6/14/91	0	0	0	3	10	7	0
DURSBAN 4E	6/20/91	NA	0	0	0	10	7	0
DURSBAN 4E	6/26/91	NA	NA	7	3	13	11	0
TURFLON II AMINE	6/14/91	10	3	6	13	10	10	0
TURFLON II AMINE	6/20/91	NA	0	23	16	13	10	7
TURFLON II AMINE	6/26/91	NA	NA	7	7	10	20	0
CONFRONT	6/14/91	56	61	79	76	83	83	100
CONFRONT	6/20/91	NA	10	23	33	33	35	45
CONFRONT	6/26/91	NA	NA	7	15	19	23	17
GALLERY 75DF	6/14/91	7	13	13	16	30	26	17
GALLERY 75DF	6/20/91	NA	3	0	12	16	16	7
GALLERY 75DF	6/26/91	NA	NA	10	7	10	10	0
CUTLESS 50W	6/14/91	7	10	0	20	23	24	30
CUTLESS 50W	6/20/91	NA	6	3	20	16	18	0
CUTLESS 50W	6/26/91	NA	NA	0	12	10	15	0
LSD (P=0.05)		8.2	12.7	12.7	14.1	14.6	14.8	15.7

<sup>1</sup> Rating system is a progressive scale ranging from 0=no injury and 100=completely dead

<sup>2</sup> Treatments were applied to 2000ft<sup>2</sup> of low maintenance turf on 6/12/91

<sup>3</sup> 6/14/91, 6/20/91 and 6/26/91 are the 1st, 2nd and 3rd mowings respectively, and they correspond with 2 days after treatment, 1 week after treatment and 2 weeks after treatment

TABLE 3 - MULCHING PETUNIAS WITH TREATED TURFGRASS CLIPPINGS

PLANT QUALITY (0-100)<sup>1</sup>

TREATMENTS TO TURF <sup>2</sup>	DATE OF MULCHING <sup>3</sup>	6/20	6/24	6/27	7/2	7/9	7/12	8/6
UNTREATED CONTROL	6/14/91	3	0	0	0	0	0	10
UNTREATED CONTROL	6/20/91	NA	0	0	0	0	0	0
UNTREATED CONTROL	6/26/91	NA	NA	0	0	3	5	0
DURSBAN 4E	6/14/91	2	3	0	0	0	0	0
DURSBAN 4E	6/20/91	NA	0	0	0	0	8	0
DURSBAN 4E	6/26/91	NA	NA	0	3	0	3	0
TURFLON II AMINE	6/14/91	13	29	19	26	100	100	100
TURFLON II AMINE	6/20/91	NA	20	17	17	35	40	0
TURFLON II AMINE	6/26/91	NA	NA	0	0	0	0	0
CONFRONT	6/14/91	10	19	16	26	79	93	100
CONFRONT	6/20/91	NA	3	3	12	10	18	58
CONFRONT	6/26/91	NA	NA	5	3	7	12	12
GALLERY 75DF	6/14/91	3	0	0	5	0	6	0
GALLERY 75DF	6/20/91	NA	0	0	5	3	7	0
GALLERY 75DF	6/26/91	NA	NA	0	0	0	0	0
CUTLESS 50W	6/14/91	0	3	0	8	0	5	0
CUTLESS 50W	6/20/91	NA	0	3	10	0	5	0
CUTLESS 50W	6/26/91	NA	NA	0	0	3	8	0
LSD (P=0.05)		8.2	12.7	12.7	14.1	14.6	14.8	15.7

<sup>1</sup> Rating system is a progressive scale ranging from 0=no injury and 100=completely dead

<sup>2</sup> Treatments were applied to 2000ft<sup>2</sup> of low maintenance turf on 6/12/91

<sup>3</sup> 6/14/91, 6/20/91 and 6/26/91 are the 1st, 2nd and 3rd mowings respectively, and they correspond with 2 days after treatment, 1 week after treatment and 2 weeks after treatment

TABLE 4 - MULCHING CRANBERRY BEANS WITH TREATED TURFGRASS CLIPPINGS

PLANT QUALITY (0-100)<sup>1</sup>

TREATMENTS TO TURF <sup>2</sup>	DATE OF MULCHING <sup>3</sup>	6/20	6/24	6/27	7/2	7/9	7/12	8/6
UNTREATED CONTROL	6/14/91	0	0	0	0	10	15	0
UNTREATED CONTROL	6/20/91	NA	5	3	13	10	12	0
UNTREATED CONTROL	6/26/91	NA	NA	0	0	3	5	0
DURSBAN 4E	6/14/91	2	6	0	6	5	5	0
DURSBAN 4E	6/20/91	NA	3	0	13	7	18	0
DURSBAN 4E	6/26/91	NA	NA	0	0	3	13	0
TURFLON II AMINE	6/14/91	53	48	35	52	36	40	13
TURFLON II AMINE	6/20/91	NA	12	8	32	13	13	0
TURFLON II AMINE	6/26/91	NA	NA	6	21	17	11	0
CONFRONT	6/14/91	66	83	92	100	100	100	100
CONFRONT	6/20/91	NA	48	34	79	85	93	100
CONFRONT	6/26/91	NA	NA	3	38	60	68	48
GALLERY 75DF	6/14/91	17	27	20	45	29	46	17
GALLERY 75DF	6/20/91	NA	18	15	25	23	38	12
GALLERY 75DF	6/26/91	NA	NA	0	10	10	20	0
CUTLESS 50W	6/14/91	3	13	7	42	35	41	38
CUTLESS 50W	6/20/91	NA	6	0	32	26	35	15
CUTLESS 50W	6/26/91	NA	NA	0	0	3	10	0
LSD (P=0.05)		8.2	12.7	12.7	14.1	14.6	14.8	15.7

<sup>1</sup> Rating system is a progressive scale ranging from 0=no injury and 100=completely dead

<sup>2</sup> Treatments were applied to 2000ft<sup>2</sup> of low maintenance turf on 6/12/91

<sup>3</sup> 6/14/91, 6/20/91 and 6/26/91 are the 1st, 2nd and 3rd mowings respectively, and they correspond with 2 days after treatment, 1 week after treatment and 2 weeks after treatment

# TOMATOES

## CLIPPINGS TREATED WITH CONFRONT

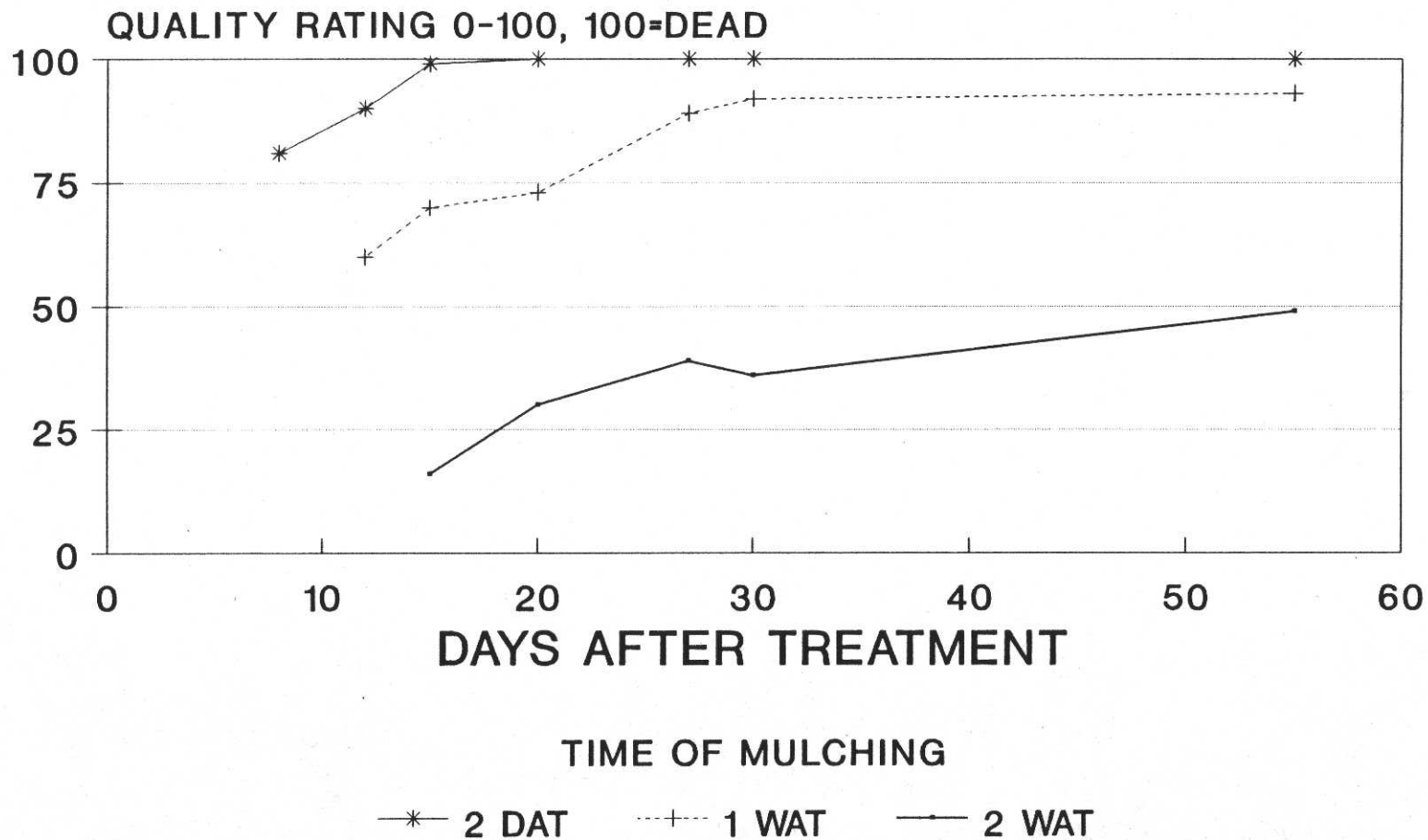


FIGURE 1

# TOMATOES

## CLIPPINGS TREATED WITH TURFLON II AMINE

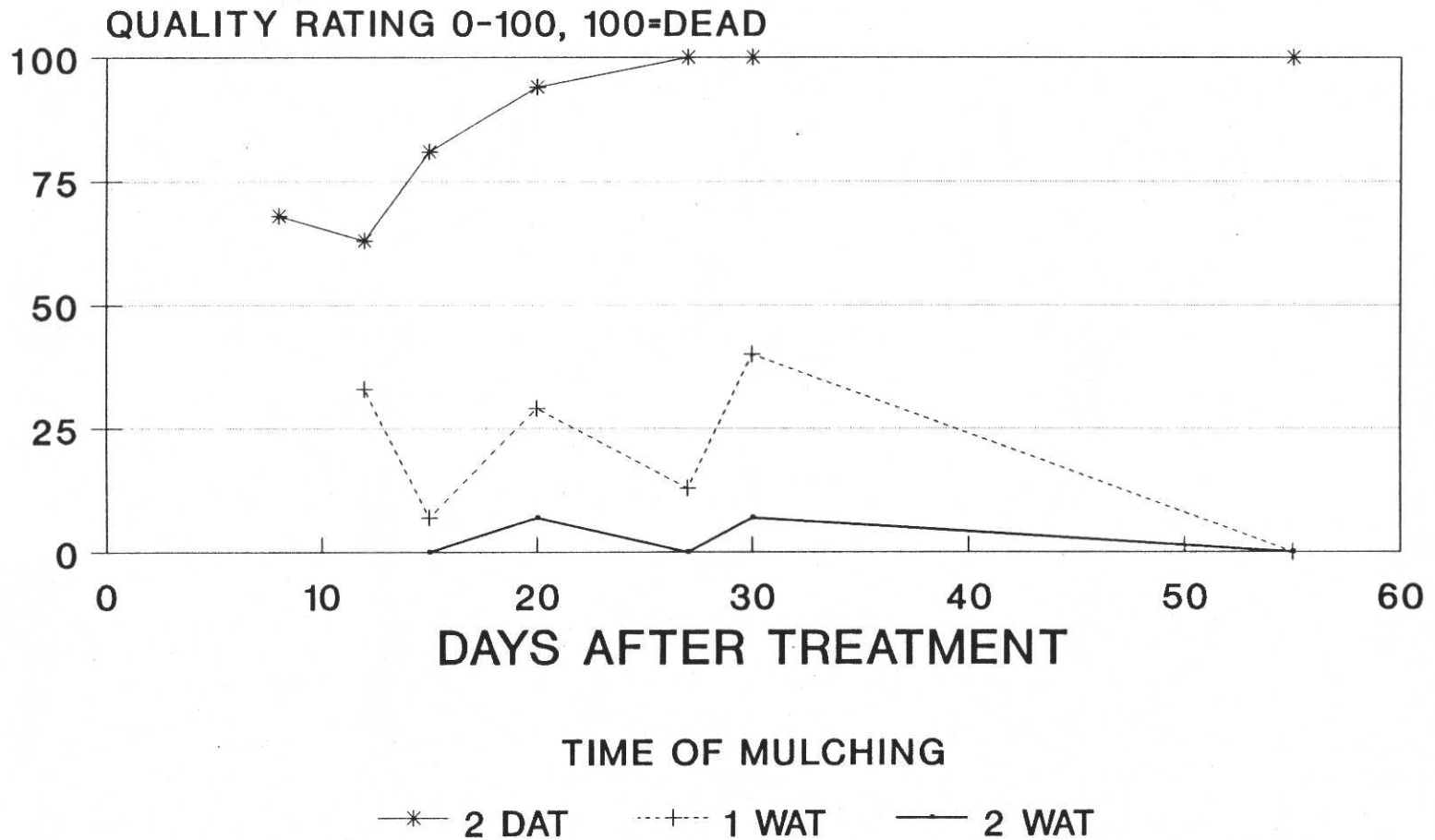


FIGURE 2



# TOMATOES

## CLIPPINGS TREATED WITH GALLERY 75DF

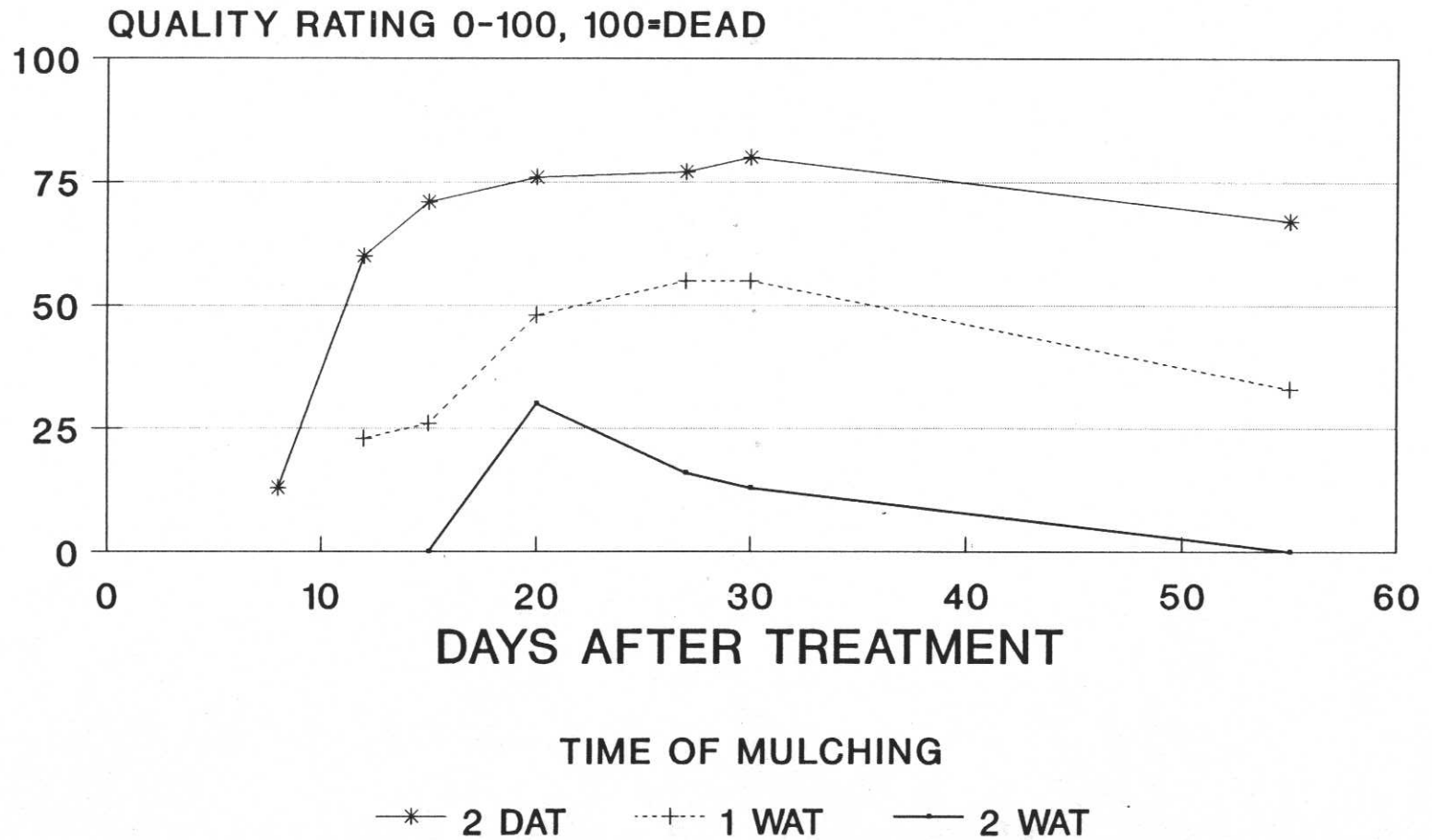


FIGURE 3

# TOMATOES

## CLIPPINGS TREATED WITH CUTLESS 50W

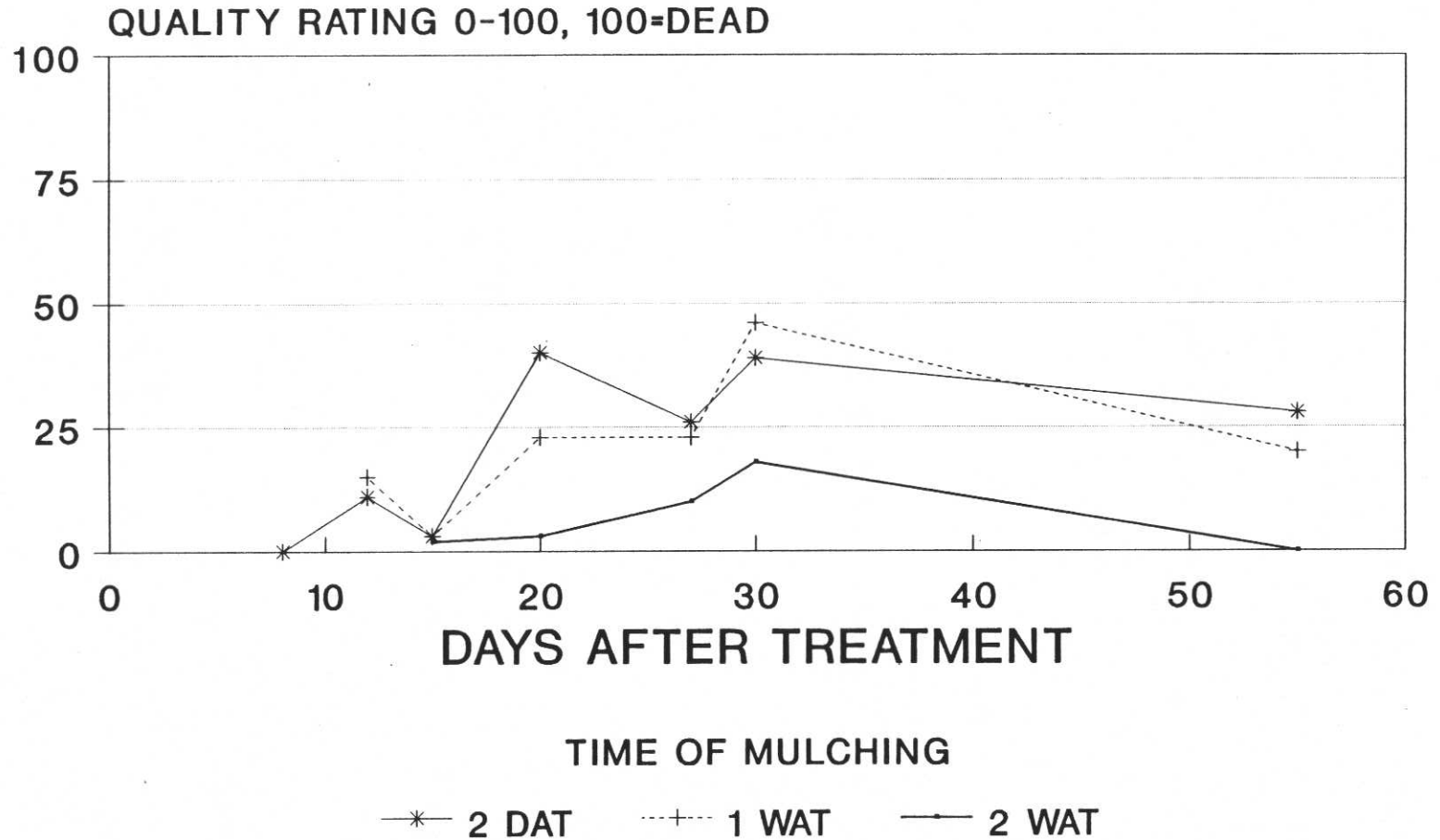


FIGURE 4