ALTERNATIVE SOIL TREATMENTS FOR FIELD GROWN ORNAMENTALS

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A trial was established in Marina, CA to test alternatives to methyl bromide for calla lily flower and rhizome production. Chemicals were applied through the drip irrigation tape in either 33mm or 67mm of water based on bed width on May 2nd & 3rd 2002. A split-plot design was utilized; the main plots are the amount of water used, and the subplots are the chemicals applied. There are 6 replications. Prior to treatment, satchets containing rhizomes of calla lily, nutsedge, and seed of mustard and malva were buried in each plot at 5 and 15cm depth. It is important that a successful alternative treatment eliminate any residual calla rhizomes from the previous crop. The chemical treatments are listed in Table 1. Two weeks after treatment the satchets were removed and the viability of the seed and rhizomes were determined (Fig. 1-4). Soil samples and weed data (Table 2) were also collected at this time. Twelve rows of calla were planted per bed on June 3rd and stand counts were made on August 13th (Fig. 7). The soil samples were assayed to determine post fumigation populations of *Phytophthora* & *Pythium* sp. (Fig 5-6). The trial will continue until late fall 2003 at which time yield data will be collected. Results are shown in figures 1-7 and in table 2.

These preliminary data indicate that the treatments containing chloropicrin are the most efficacious for controlling weeds and disease pathogens in a severely infested calla field. It appears the amount of water used to apply the fumigants may be important in some instances. These are only preliminary data. More data are being developed on populations of other pathogens. Next summer disease data will be collected along with more weed control data. This trial will continue for over a year. At the conclusion of the trial, data will collect yield data from the harvest of the rhizomes.

Table 1. List of chemical treatment and rates.

Treatment Number	Chemical(s) Applied
1	Control (water only)
2	CX-100 (Sodium Azide) 112 kg/ha
3	Multiguard Protect/Vapam 50/50 673 kg/ha
4	Telone EC 272 kg/ha
5	Inline 628 kg/ha
6	Iodomethane/Chloropicrin 50/50 336 kg/ha
7	Iodomethane/Chloropicrin 33/67 448 kg/ha
8	Chloropicrin 448 kg/ha

Fig. 1. Mortality of Malva Seed in satchets @ 15 cm

No significant difference

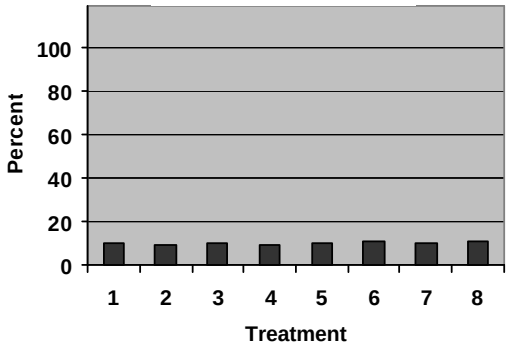


Fig. 2. Mortality of Nutsedge Rhizomes in satchets @ 15 cm

Mortality was significantly greater in the high water rate (68.2) compared to the low rate (58.1).

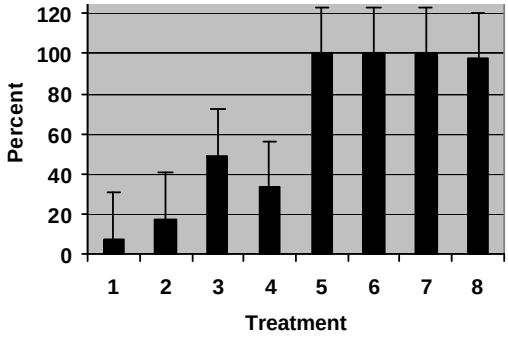


Fig. 3. Mortality of Mustard Seed in satchets @ 5 & 15 cm

Mean comparisons are not valid between depths

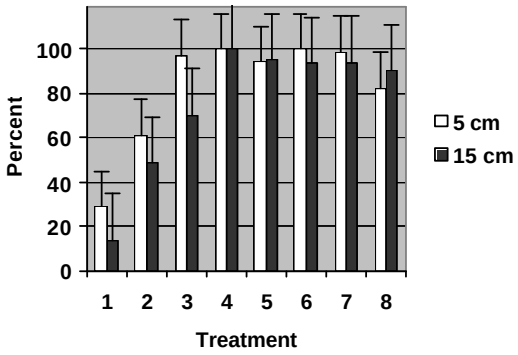


Fig. 4. Bud Number and Vigor (1-10) from Calla Rhizomes Buried 15 cm.

Vigor was significantly lower in the high water rate (1.33) compared to the low rate. (85).

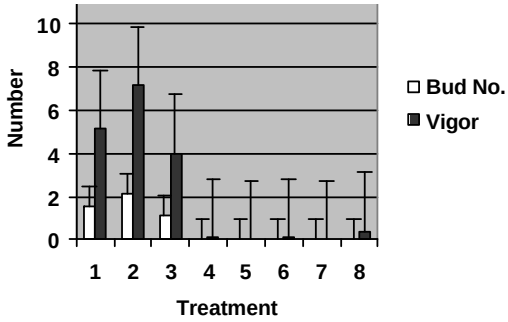
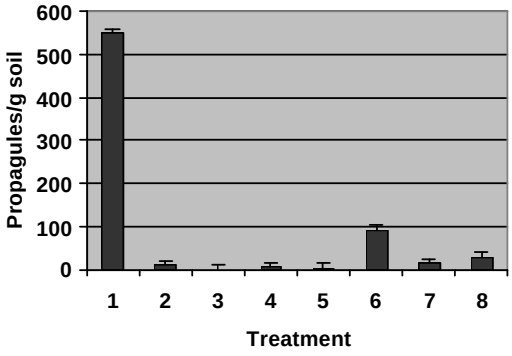


Table 2. Counts of volunteer weeds emerging in the trial 2 weeks after treatment. Numbers followed by the same letter within a column are not significantly different at the p=0.05 level.

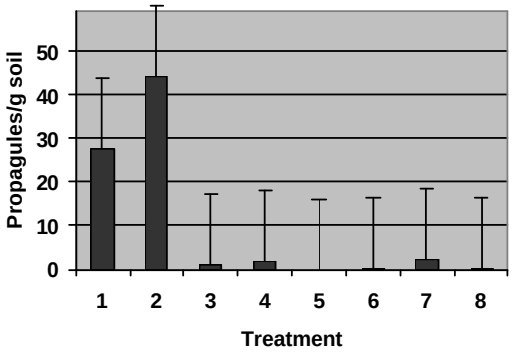
Treatment No.	Malva	Groundsel	Clover
1	2.0[a]	8.9[a]	6.3[a]
2	0[b]	2.2[b]	1.3[b]
3	0[b]	0[b]	0[b]
4	0[b]	00.2[b]	0.2[b]
5	0[b]	0[b]	0.3[b]
6	0[b]	0[b]	0.1[b]
7	0[b]	0[b]	0[b]
8	0[b]	0[b]	0.4[b]

Fig. 5. Populations of Pythium sp. after treatment



No significant difference between water rates.

Fig. 6. Populations of Phytophthora sp. after treatment



No significant difference between water rates.

Fig. 7. Stand Count of Planted Calla on 8/13/2002

Counts were made on the center 6 seed line 1 m long.