CALLA LILY PRODUCTION WITH METHYL BROMIDE ALTERNATIVES - PACIFIC AREA-WIDE PROGRAM FOR MBA

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Cut flower and ornamental bulb industries rely heavily on a methyl bromide/chloropicrin (MB/Pic) mixture as a key pest management tool. The loss of MB will seriously affect the cut flower and bulb industry, and, in the future, will require growers to use alternative fumigants. Past experiments have shown that calla lily can be successfully grown using alternative fumigants. These have included combinations of chloropicrin (Pic), 1, 3-dichloropropene (1, 3-D), and potassium metam (K-Pam). An experiment is being conducted to determine the lowest effective rates that these chemicals can be successfully used to grow this crop.

Materials & Methods

A trial was established near Moss Landing, California on a commercial calla lily farm. The plots were approximately 500 feet long and consisted of raised beds 72 inches wide. The main plots were fumigated with either InLine (1, 3-D 60.8%, Pic 33.3%) or Pic-Clor 60 EC (Pic 56.7 %, 1, 3-D 37.1%) or left untreated. Both fumigants were applied at three rates: 20, 17, and 14 gallons per acre. All fumigants were applied through five drip irrigation tapes on the surface of the beds beneath virtually impermeable film, the tapes delivered water at a rate of 0.22 gallons per minute per 100 feet. The fumigants were applied in 1 inch of water on 18 & 19 May 2011. The main plots were divided into four sub-plots. One week after the initial fumigation the sub-plots were fumigated with one of four rates of K-Pam: 0, 28 34, or 40 gallons per acre. On 16 June 2011 the beds were seeded with 15 lines of calla lily. On 7 June 2011, soil samples were collected from each sub-plot. The samples consisted of a composite of five 1 inch diameter soil cores 6 inches long. The samples were returned to the lab and populations of *Fusarium oxysporum* and *Pythium* spp. were determined by dilution plating on Komada's medium and P_5ARP medium. On 21 July stand counts were made on 1 meter long segments of the bed in each sub plot.

Results

The trial will continue until the end of 2012 when the bulbs will be harvested and yield results collected. At this time we can present results of the pathogen populations test and stand establishment. The populations of *Fusarium oxysporum* are presented in figure 1. The populations were reduced at all rates of the primary fumigants and especially with the high rates of K-Pam. The populations of *Pythium* spp. are presented in figure 2. A species of Pythium is the primary disease causing agent of root rot of calla lily. The fumigants did a much better job in reducing populations of *Pythium* spp. compared to *F. oxysporum*; we

have observed this before in past experiments when using these fumigants. The stand counts are presented in figure 3. The stand of calla lily was not affected by the soil treatments. More data including disease counts will be presented during the presentation.

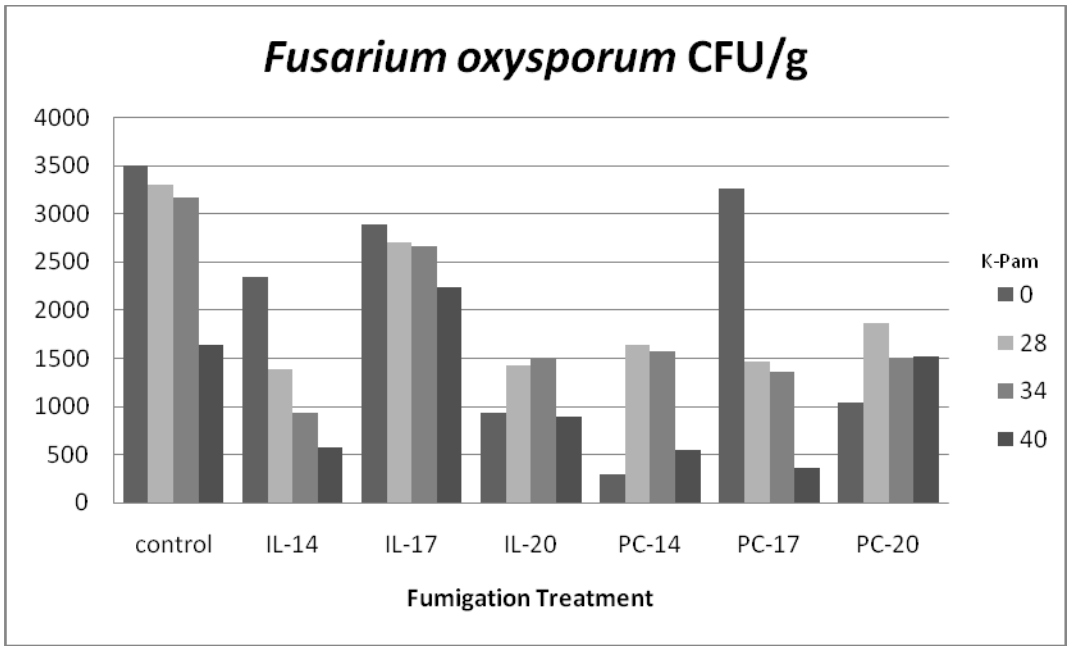

Figure 1. Populations of *Fusarium oxysporum* in soil samples collected from plots fumigated with InLine (IL) at 14, 17 and 20 gallons per acre or Pic-Clor 60 EC (PC) at 14, 17 or 20 gallons per acre. The plots were subsequently fumigated with K-Pam at 0, 28 34 or 40 gallons per acre.

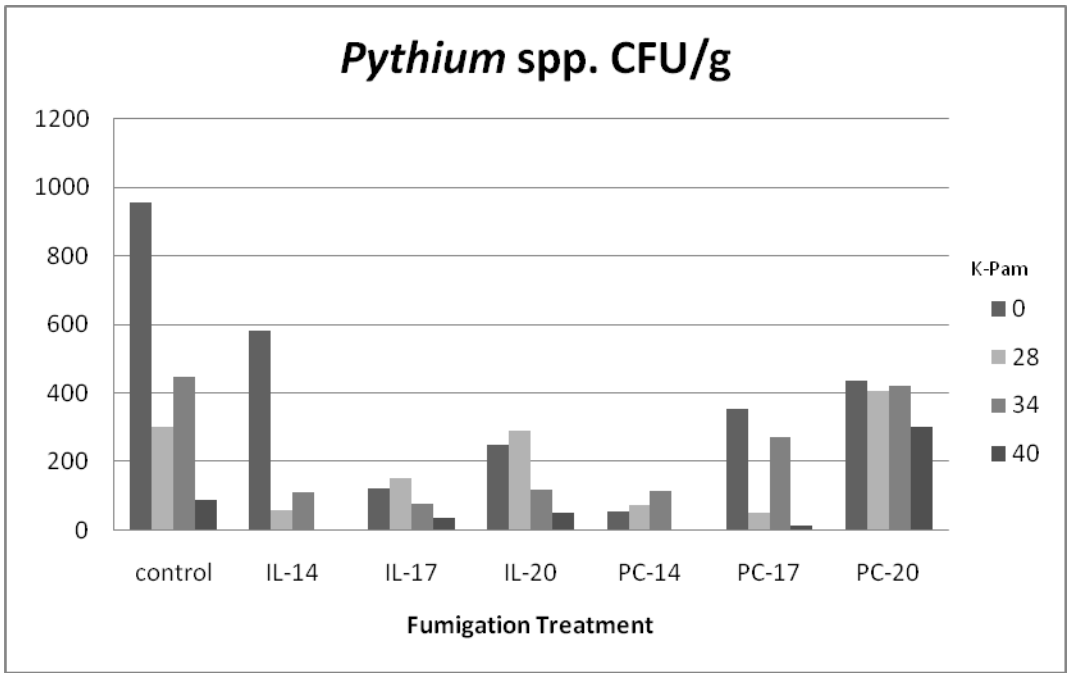

Figure 2. Populations of *Pythium* spp. in soil samples collected from plots fumigated with InLine (IL) at 14, 17 and 20 gallons per acre or Pic-Clor 60 EC (PC) at 14, 17 or 20 gallons per acre. The plots were subsequently fumigated with K-Pam at 0, 28 34 or 40 gallons per acre.

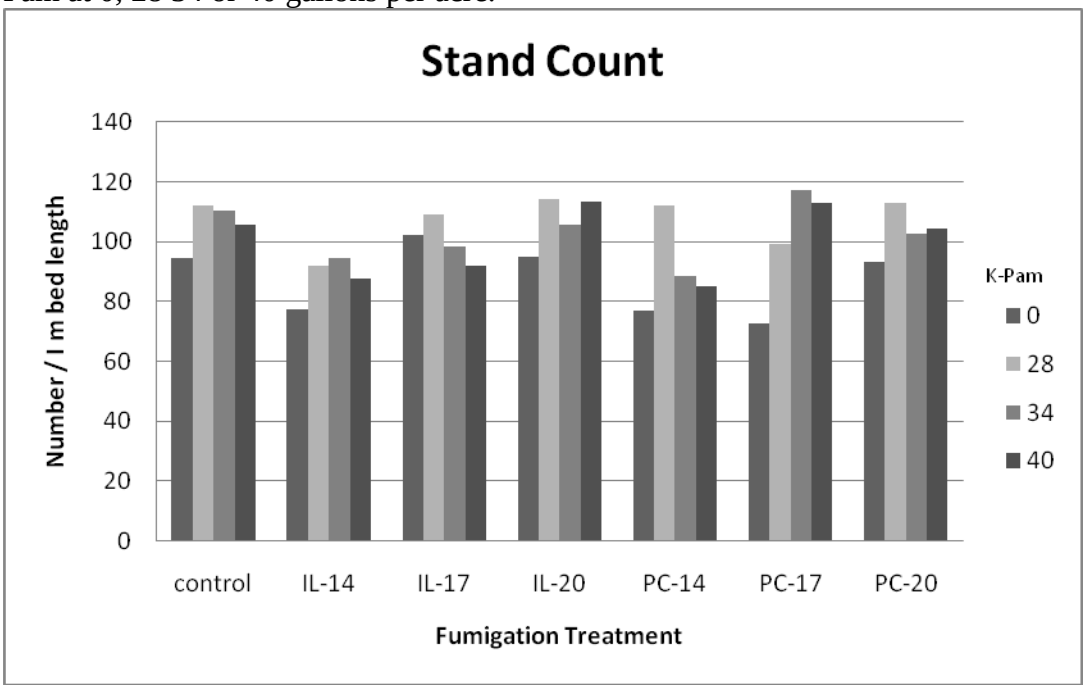

Figure 3. Stand counts approximately 5 weeks after planting seed of calla lily in plots fumigated with InLine (IL) at 14, 17 and 20 gallons per acre or Pic-Clor 60 EC (PC) at 14, 17 or 20 gallons per acre. The plots were subsequently fumigated with K-Pam at 0, 28 34 or 40 gallons per acre.