EXAMINATION OF PREPLANT METHYLY BROMIDE ALTERNATIVES IN A WALNUT TREE REPLANT SITE

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A walnut preplant fumigation trial was established in northern Kings County, CA. The field site is a uniformly deep, well drained Nord fine sandy loam formed from alluvial parent material. Permeability is moderate. Water holding capacity is high. Effective rooting depth is greater than 60". The 40 acre site was a 50 year-old walnut orchard consisting of Hartley and Franquette cultivars which were removed during the winter of 2006-2007. The site was repeatedly chiseled to a depth of 4 feet to bring up as much of the old root system as possible. Following root removal, the field was laser leveled, bordered every 40 feet, and irrigated in preparation for planting silage corn that was harvested in early August of 2007.

Preliminary nematode sampling in February of 2007 consisted of four composite samples, each consisting of ten subsamples taken at a depth of 24". In these samples we detected 136, 363, 233, 281 *P. vulnus* per 250 cc of soil using sieve/mist chamber extraction.

Prior to fumigation, the site was ripped to a depth of six feet on four-foot centers in the direction of the tree rows (east/west). This was then followed by a six foot slip plow which used the ripper shanks to achieve maximum penetration and modification. Measurement of soil moisture and assessment of pretreatment nematode populations occurred one week after soil modification and two days prior to fumigation. The fumigation treatments were applied November 2, 2007, by Tri-Cal Incorporated.

The experimental design is a six by six Latin Square with a plot size of 75' x 160' and 12 trees/plot. This resulted in a 13.14 acres test site. The following six treatments were established:

1. Untreated Control (2.07 acres)
2. Methyl Bromide broadcast @ 400 lb/ac (2.07 acres)
3. Telone II @ 33.7 gal/ac strip treated (10' swath) & shanked at 28" (2.07 acres)
4. Telone II @ 33.7 gal/ac broadcast & shanked at 28" (2.07 acres)
5. Telone II @ 33.7 gal/ac broadcast and shanked at 20", Plus 175 lb/ac Chloropicrin broadcast and shanked at 28" (2.07)
6. Telone II @ 33.7 gal/ac broadcast and shanked at 20", Plus Methyl Bromide @ 125 lb/ac at 28" depth (2.07 acres)

In addition to the fumigation treatments, each plot was split to test the performance of newly developed walnut clonal rootstock material VX211 against conventional seedling paradox. The site was left undisturbed until February, when it was disked, bordered up, and irrigated to settle the soil from modification.

On February 28, each plot was sampled in one-foot increments to a depth of five feet for both nematodes and phytopathogenic agents. In May 2008 the field site was planted with the three root stocks, Paradox, Vlach, and VX211. Here we will present data on the effectiveness of the

fumigants tested on nematode and *Agrobacterium* populations, and plant growth parameters. In addition we will examine the effect of soil moisture levels on fumigant effectiveness.