

**PROJECT PLAN / RESEARCH GRANT PROPOSAL**Project Year: 2009 Anticipated Duration of Project: 1st year of a 2 year projectProject Leader: Richard Buchner Location: Tehama CountyCooperating Personnel: Steve Lindow and Jim AdaskavegProject Title: Walnut Blight Control InvestigationsKeywords/Commodity(s): Walnut Blight, Xanthomonas campestris, copper/Manzate, Walnut

Relevant AES/CE Project No.: \_\_\_\_\_

Problem and its significance:

Farm Advisors Richard Buchner, Bill Olson and UC Berkeley Plant Pathology professor Dr. Milt Schroth, first began experimenting with Manex back in 1993 in Butte and Tehama counties. At that time, copper applications alone were providing very little or no walnut blight control in many walnut orchards. Increasing rates of applied copper or adding iron did not improve disease control. Dr. Schroth identified copper-resistant walnut blight bacteria which was the reason copper alone did not control the disease. Experimental results quickly documented that copper tank-mixed with Manex dramatically improved walnut blight control. The Emergency Registration (Section 18) was approved and walnut growers had an excellent material to protect their crop. Over the years, copper tank-mixed with Manex has consistently provided very good to excellent disease control in the presence of copper-sensitive and copper-resistant walnut blight bacteria. Year after year, Section 18 renewals were obtained allowing walnut growers (depending on county) to use Manex.

For the last several years, Buchner, Adaskaveg and product manufactures have been working toward full registration of mancozeb, tested as Manzate 75DF and Dithane 75DF. Tests show that these products work equally well as Manex, so switching ethylene bis-dithiocarbamate (EBDC) formulations will not compromise walnut blight disease control. Currently all mancozeb labels are awaiting full registration (Section 3) approval and will have walnut on the label. For 2010, we expect full registration for mancozeb completing the transition without affecting disease control. The registration process is moving forward, although somewhat slowly, and apparently requires additional documentation.

Work in 2008 was designed to evaluate Manzate 75 DF efficacy and investigate three rates of Manzate 75 DF (0.5, 1.5 and 2.4 lbs/ac). We tested Pristine as a tank mix and looked at Nu Cop HB. For the first time in our research, the Codling moth material CYD-X was included in blight sprays to evaluate a biological method to take out 2 pests with one shot. This might be particularly useful if Pheromone puffers need help by reducing first flight Codling Moth. We worked with Steve Lindow to evaluate breakthru rates and conducted the bud tagging work with Steve to continue the population work on first spray timing. We finished the copper kernel residue research.

For the 2008 season, our test orchard sprinkler system was reconfigured and we lost our over tree simulated rainfall ability. With the low disease pressure year we measured no treatment differences in the 2008 research effort. Our 2009 goal is to reestablish our over tree rainfall simulation and re run the previous year's experiments. Objectives are similar to the 2008 proposal.

Objectives:

- 1) Engineer over tree sprinklers to establish our ability to simulate rainfall and manipulate walnut blight disease pressure.
- 2) Complete the work on efficacy of early-season bactericides applied at different phenological stages for disease control (Lindow work).
- 3) Continue to evaluate 0, 8, 16, 32 and 64 ounces of Breakthru for disease control using Manzate and KOC 3000
- 4) Continue to look at the Manex replacement Manzate and evaluate any new materials if available. Will include copper alone and copper plus Manzate if we still need registration data.
- 5) Evaluate Kocide 3000 with 3 rates of Manzate.
- 6) Evaluate walnut bud break phenology and cropping based upon bud break.
- 7) Incorporate the codling moth material CYD-X into blight sprays to control first flight Codling Moth.

Plans and Procedures:

- 1, 2) Finish up the bud tagging experiments. Tag 500 buds per tree at 5 day intervals starting at first bud break. At each interval, trees will be sprayed with a Kocide/Manzate/Breakthru mix. Help from the Lindow lab will be required to tag buds, evaluate bacterial populations and do final disease rating. Money is in the budget to cover Lindow expenses.
- 3, 4 and 5) Randomized complete block design spraying individual trees to compare spray treatments under simulated rainfall. Rate disease in early June. Help from the Lindow lab will be required to rate diseased walnuts. Money is in the budget to cover Lindow expenses.
- 6) Tag opening buds and evaluate by counting walnuts per tag data.
- 7) Incorporate 1.5 and 3.0 oz/ac CYD-X into copper/manex sprays and evaluate Codling moth efficacy.

**BUDGET REQUEST**

Budget Year: 2009-2010

Salaries and Benefits		_____
Postdocs/RA's		_____
SRA's	Lindow Lab support	<u>4,000.00</u>
Lab/Field Assistance	Tehama field assistant 4 mos x 2,252/mo = 9008.00	<u>9,008.00</u>
Subtotal		Sub 2 <u>13,008.00</u>
Employee Benefits	(Tehama)	Sub 6 <u>3,603.00</u>
		SUBTOTAL <u>16,611.00</u>
Supplies and Expenses	Flags, tags, etc. + lab evaluations	Sub 3 <u>2,000.00</u>
Equipment	Sprayer maintenance	Sub 4 <u>1,000.00</u>
Travel	Walnut Research Conf at Bodega Bay	Sub 5 <u>700.00</u>
		TOTAL <u>20,311.00</u>

Department account number \_\_\_\_\_

\_\_\_\_\_  
Originator's Signature Date \_\_\_\_\_

COOPERATIVE EXTENSION County Director \_\_\_\_\_ Date \_\_\_\_\_

Program Director \_\_\_\_\_ Date \_\_\_\_\_

AGRICULTURAL EXPERIMENT STATION Regional Director \_\_\_\_\_ Date \_\_\_\_\_

LIAISON OFFICER \_\_\_\_\_ Date \_\_\_\_\_