

Seed Orchard Pest Management Subcommittee Report
Galveston, TX – June, 2007
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- The Subcommittee last met in Atlanta, GA. Feb 8, 2007. Minutes are available on request.
- Field work and most of the laboratory work for the 2006 Worker Exposure Study has been completed. Organizations participating included Weyerhaeuser Company, Mead Westvaco, Smurfit-Stone Container Corp, Plum Creek Timber Company, Louisiana Department of Agriculture and Forestry, and the Texas Forest Service. Dr. Bob Krieger, toxicologist from UC Riverside, coordinated the study which was funded with collaboration from Dr. John Taylor, USDA Forest Service. Cone collection appears to be such a low risk task that traditional transfer rate calculations do not function well. Dr Taylor has provided a supplemental stipend to fund additional data analysis and preparation of a final report. See attached abstract.
- Confirm 2F® received a supplemental label for use in seed orchards and pine plantations after extended negotiations with Dow Agrosiences. Michelle Frank, Alex Mangini, John Taylor and Teung Chen were instrumental in making this happen. Mangini is conducting efficacy trials in 2007 to ensure that Confirm® is similar in performance to Mimic® which was the previously available formulation for this active ingredient.
- Results of the Asana® rate study conducted under the auspices of the SOPM committee were reported at this meeting by Alex Mangini. Six orchards throughout the South were used in the study, five loblolly pine and one slash pine orchards. Each orchard had four treatment plots. A complete block design was used with each orchard serving as a replicate. The four study treatments were: Asana® XL at the labeled rate of 0.19 pounds active ingredient/acre (ai/ac), Asana® XL at 0.10 pounds ai/ac, Asana® XL 0.03 pounds ai/ac, and a control consisting of untreated trees. Aerial applications were made five times at monthly intervals (May-August). The resulting management recommendation is that reduced rates of esfenvalerate may be applied only in combination with insecticides specific to coneworms.
- Don Grosman, Texas Forest Service, expects registration for the injection application of emamectin benzoate by late 2008 or 2009. This chemical/application method appears to be effective on coneworms and a number of boring insects. He reports that post plant application of fipornil for tipmoth and aphid control has been approved by the EPA. Product with the appropriate label should be available in a few months.
- The SOPM committee has requested that orchard managers document the occurrence and species responsible for scale outbreaks. This information will be useful in making the case for IPM strategies to the EPA and chemical companies.
- EPA is changing the dimethoate label to require a full face mask for applicators.
- EPA is in the process of changing the certification and training standards. Certification will be required for all applicators regardless of the classification of the chemical as restricted or non-restricted. Supervisors will have to be on-site during application.

Pine Cone Harvesting Is a Very Low Pesticide Exposure Work Task: A 10-Site Biomonitoring Study in the Southeast United States. R Krieger¹, T Byram², S Gee³, J Keenan¹, S Mosadeghi¹, J Taylor⁴, and H Vega¹. University of California, ¹Riverside and ³Davis, ²Texas A & M University, and ⁴U. S. Forest Service.

ABSTRACT

Generic estimates of potential harvester pesticide exposure can be valuable regulatory surrogates for risk assessments. Empirical measures of dislodgable foliar residues (DFR) for many crops protected by pesticides, contact or work time, and a task-specific transfer coefficient (TC; cm²/hour) are recognized for row crops and tree fruit harvesters. The exposure estimates predict potential (external) dermal exposure (PDE; mg/worker-day). PDE estimates are particularly useful for field entry after pesticide applications and exposure assessments for risk characterization.

Contact with knowledgeable professional foresters and early field observations made it very clear that southern pine seed orchard harvesting is a low exposure work task. Indeed, in pilot studies in 2002 we were able to measure very low insecticide biomarker levels in urine. Data were collected in an attempt to satisfy the following empirical equation: **Potential Dermal Exposure_{clothing} (PDE; mg/person-day) = DFR (ug/cm²) x Hours worked x TC (cm²/hour).** When based upon biomonitoring PDE could be attributed to occupational exposure, diet, or other environmental exposures to parent insecticides or their biomarkers. Hours worked were readily established. Other parameters including creatinine (Cn) to account for sample volume, dermal penetration, and clothing absorption were estimated from the literature. When it is assumed that the biomarker is conservatively attributable to parent insecticide that is eliminated in urine, PDE is back-calculated as follows: **Biomarker_{urine} (ug/ml) x (Parent formula wgt/Biomarker fw) x [ml urine/g Cn x 1.7 g Cn/day] x 100/% dermal absorption x 100/% clothing penetration = PDE (mg/person-day).**

Very low PDEs prohibited determination of a generic TC. A 10-site biomonitoring study was conducted. Trained company supervisors managed the field research. Environmental sampling showed negligible opportunity for cone harvester exposure following season-long pest management programs involving multiple insecticide applications. Biomarker levels of esfenvalerate and guthion cannot be reliably distinguished from biomarkers of pyrethroid and organophosphorous insecticides and their environmental/biological derivatives in the general population.

In addition to important exposure data obtained, the investigators demonstrated feasibility of broad-based, worker biomonitoring using on-site supervision. Supervisors received instructions regarding biomonitoring of their employees. Coded results in aggregate will be provided. Future development of biomarkers of pesticide exposures in agriculture (ug biomarker/g Cn) is desirable as an adjunct to generic dosage (ug pesticide/kg bw-day) estimates. Determination of safe biomarker levels can be determined when combined with basic medical surveillance. The resulting contribution to safety evaluation would more faithfully represent human experience than the present system dominated by default assumptions and no-observed-effect-levels of exposure.