



Identifying and Managing Critical Uses of Chlorpyrifos Against Key Pests of Alfalfa, Almonds, Citrus, and Cotton

Executive Summary

Alfalfa, almonds, citrus and cotton account for over 2.5 million acres of agricultural production in California valued at over \$10 billion. Alfalfa, the single largest acreage field crop grown throughout the state, is valued at \$1.25 billion and provides feed for dairies, a key industry in our state. California produces almost 90% of the world almond supply, valued at over \$6 billion with export to over 90 countries. California citrus is an extremely valuable commodity currently threatened by an insect-vectored bacterial disease; oranges, lemons, and tangerines are currently valued at \$2 billion and this market is expected to expand. California cotton, highly regarded as the standard for premium fiber, is valued at \$753 million and is one of the top ten exported commodities in the state.

Chlorpyrifos has been an important insecticide in the Integrated Pest Management (IPM) systems in each of these crops due to its efficacy, value as resistance management tool, established international registration status (MRLs), and as a tool against invasive pests and endemic pest outbreaks.

Currently there are ongoing efforts at federal and state regulatory agencies to implement regulatory measures that impact the use of chlorpyrifos. These entities are further evaluating public health and environmental concerns that could result in increased use restrictions.

The project *Identifying and Managing Critical Uses of Chlorpyrifos in Alfalfa, Almonds, Citrus and Cotton Project* was developed as a multi-year effort to identify the pest management needs and best practices for use of chlorpyrifos in these four important California crops.

To accomplish this goal, the California Department of Pesticide Regulations (CDPR) contracted with the University of California Statewide Integrated Pest Management Program (UC IPM) to convene industry leaders to work together to create commodity specific guidelines regarding chlorpyrifos use in their cropping systems. The project organized four Crop Teams (alfalfa, almonds, citrus, and cotton) to work with an appointed management team for a total of 12 professionally facilitated meetings (three meetings per team) to gather data and input on the technical and practical need for chlorpyrifos in their unique commodities and to identify critical uses for this product. The make-up of the Management Teams and the Crop Teams were specified in the CDPR contract and included industry representatives, UC Cooperative Extension specialists, pest control advisers, growers, and project staff from CDPR and UC IPM.

Through this process, the Crop Teams identified insect pests for which chlorpyrifos is presently used. Further facilitated discussions allowed the groups to more fully characterize what uses were critical, i.e., key pests for which there are no or few alternatives to chlorpyrifos, important pests for which there are alternatives and finally, occasional pests for which it is important to retain access to chlorpyrifos as a part of the IPM toolbox. It was agreed the placement in the Critical Use Matrix should not

imply more or less importance of chlorpyrifos, but rather the variety of options available in managing all pests. Alfalfa identified alfalfa weevils, blue alfalfa and cowpea aphids; almonds identified leaffooted bug and stink bugs; citrus identified ants; and cotton identified late season aphids and whiteflies as first tier critical uses. Alternatives to chlorpyrifos were evaluated in terms of efficacy, availability of non-chemical tactics, MRLs, cost, resistance management issues or other attributes for consideration in decision making.

While each Crop Team identified critical pests for a wide diversity of cropping systems, all agreed that chlorpyrifos is an essential element to their IPM programs to continue production and quality standards heretofore established for their commodities. They also agreed that stewardship and education are needed to ensure the safe and effective use of this product and that decision support tools are needed to assist pest control advisers (PCAs) and growers to recognize critical use scenarios that justify its application. The “new generation” of PCAs coming into the field provides an excellent opportunity to train emerging professionals about chlorpyrifos use.

The project identified specific research, extension, and policy gaps as part of an action plan to develop and adopt new pest management practices. The updated information and increased awareness will benefit growers, PCAs, and the community at large as we all work towards pest management programs that reduce risk from pests and pest management related activities.

The Crop Team participants trust that their investment in this process will assist the California Department of Pesticide Regulation as it evaluates the use of chlorpyrifos in IPM programs in alfalfa, almonds, citrus, cotton and other crops. Since the publication of the US EPA’s Chlorpyrifos Preliminary Human Health Assessment in 2011, a significant amount of new research has been submitted and is currently being utilized as EPA looks to release its updated assessment by the end of 2014.

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