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Spirotetramat: Pesticide Products; Registration Applications — Hawai‘i

The following comments are being submitted in response to the *Federal Register Notice* of February 26, 2010, regarding applications to register pesticide products containing the active ingredient **spirotetramat**. These comments are being submitted on behalf of the Western Integrated Pest Management Center and provide input on the use and importance of spirotetramat (at 22.4% active ingredient) to the production of **macadamia nut, various vegetables and other commodities** in Hawai‘i.

Two spirotetramat products at 22.4% active ingredient were licensed for sale in Hawai‘i by the Hawai‘i State Department of Agriculture. These comments speak to those formulations of spirotetramat.

The continued availability of spirotetramat in Hawai‘i will help prevent development of insect resistance to one chemical; will give growers more choices of effective pesticides; and will encourage extension agents and pesticide education specialists to help growers develop sustainable pest management programs.

Due to Hawai‘i’s tropical climate, many insects such as aphids and whiteflies present serious economic concerns, year-round, for many diversified crop producers. The minor and ultra-minor crops which they produce often have few registered pesticides. Therefore, the loss of a registered crop protection chemical like spirotetramat can accelerate development of resistance in the pests of those crops.

Spirotetramat is an effective insecticide against many insect pests in Hawai‘i. It has a long-term residual effect and is relatively safe for pesticide applicators and farm workers. These characteristics make spirotetramat ideal for our tropical climate and production systems. The sustainability and profitability of many small scale agricultural operations in Hawai‘i would be

negatively impacted if there were no registrations for spirotetramat products. These small farms have very few resources, yet these growers purchased this effective but expensive, new chemistry—grudgingly—because have very few options to help them grow marketable produce.

Perhaps **macadamia nuts** is the single largest commodity in Hawai'i for which spirotetramat has been used. Spirotetramat has been used to control macadamia felted coccid. Felted coccid can pose a threat to Hawai'i's entire macadamia crop and there are few tools to control this pest. Because spirotetramat is systemic, it is able to move in the plant and very effectively control this pest in large macadamia trees. A possible alternative chemical, petroleum oil (Safe-T-Side) is only effective in small trees. Buprofezin (Applaud) is effective, but has negative impacts on Coccinellidae.

Vegetable crops. Because of its systemic activity, spirotetramat is very good for controlling aphids, whiteflies and other sucking insects on **fruiting vegetables—eggplant, peppers, tomatoes and others; crucifers—broccoli, kai choy, gai lan and others; leafy greens—chard, lettuce, amaranth and others; and dasheen (dryland taro)**. Spirotetramat is an excellent insecticide for these crops for resistance management; it is a very important product that is used in spray rotations with other mode of action insecticide classes to add to a pesticide resistance rotation.

Recently, there have been reports of huge infestations of whiteflies on beans, eggplants and peppers on O'ahu. There are other pesticides being used on this pest but its populations vary a great deal recurring again and again. Insect pests like whiteflies will most likely require a variety of pesticides for effective control.

Spirotetramat is very effective in controlling root aphids on crucifers. For crops with thick canopies, like eggplants, spirotetramat provides good control of mealybugs. Other contact/translaminar insecticides do not control these pests well because these insects are on the stems of the eggplant. This product is also important to the lettuce industry for the control of red aphids in lettuce hearts.

Tomatoes are likely to require the increased use of spirotetramat for whitefly control because there have been reports of resistance to older chemistries. In November of 2009, the whitefly-vectored disease, tomato yellow leaf curl virus (TYLCV) was first discovered in Hawai'i. TYLCV can be found in most places where tomatoes are grown. It can be a destructive disease; in tropical and subtropical regions, total losses of affected tomato crops have been reported. The sweetpotato whitefly (*Bemisia tabaci*) and the biotype B (or silver-leaf) whitefly (*Bemisia argentifolii*) are the primary vectors of TYLCV.

Research and uses in the pipeline. Because it is relatively safe for human handlers, but mostly its importance in the insect resistance management/control program and its effectiveness against various insect pests, spirotetramat has been a material selected for current and future research projects:

1. **Papaya.** Papaya mealybug is a very important pest to Hawai'i's papaya production. Spirotetramat is very effective against this pest and papaya growers statewide would greatly benefit from this product to use in rotation with other insecticides.

Mites are another serious pest of papayas. Spirotetramat is being tested on papaya with mite infestations, to determine if this systemic pesticide is a good chemical to manage papaya mite pests.

2. **Coffee.** Green scale is one of the most important economic pests of coffee production in Hawai'i. The ability to use spirotetramat will prove useful to the coffee growers, particularly those in drier environments. As for other commodities, spirotetramat will be useful in the resistance management program.
3. **Banana.** Banana bunchy top virus (BBTV) is one of the two most damaging diseases of bananas in Hawai'i. The banana aphid is a serious problem on banana because it is a vector of BBTV. Because of its efficacy against other aphids, spirotetramat may be a tool to help control BBTV.
4. **Quarantine pests.** Spirotetramat is effective against aphids, mealybugs, and other soft bodied insects that are targeted as quarantine pests. Hawai'i's agriculture producers in general and ornamental producers in particular have had difficulties controlling quarantine pests that have resulted in their shipments being refused at destination ports. Work has also begun to investigate the efficacy of spirotetramat against reniform nematodes, another quarantine pest.

This information has been provided by extension agents and specialists of the College of Tropical Agriculture and Human Resources, one representative, each, of Hawai'i's macadamia nut industry, the Hawai'i Farm Bureau Federation, and agricultural chemical vendors.

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