FLOWER AND FRUIT PREVENTION: OLIVE AND PRIVET TREES

by W. Douglas Hamilton

Olive trees (*Olea europaea*) and glossy privet trees (*Ligustrum lucidum*) are commonly planted trees in California's landscape. The olive trees are most often transplanted from old and nonproductive groves. In the urban setting, the abundance of small flowers presents a litter problem; an allergic reaction from the open flowers is also a complaint. Ripe olive fruit presents a direct problem since it is rare that people in the community fully utilize the fruit in canning or preserving. Vandals stain walls, etc. with the purple oily fruit, and the fruit with a hard round seed presents a hazard on pavement surfaces beneath the tree. Unwanted seedlings that are transported can also be a nuisance. Hence the need to develop a safe and consistently effective means of preventing flowers and fruit.

The glossy privet is a useful, evergreen small tree with few pest problems in the mild-climate areas of California. A minor problem of basal sprouts can be controlled, but the annual abundance of strong and sweet-smelling flowers coupled with claims of allergies cannot be tolerated in some cities. In addition, panicles of hard round berries develop later causing a hazard to pedestrians. For these reasons, it became desirable to develop a safe and effective means of preventing flowers and fruit.

Olive

For many years the University of California has had a recommendation to prevent olive fruit formation. It involves the application of napthalene acetic acid (NAA) at 150 ppm, plus a wetting agent just following full bloom when the young fruit is 1/16 to 1/8 inch in diameter. This has been effective. However, in some areas where the bloom period is prolonged, as many as four sprays have been necessary, and flower prevention still was not completely achieved.

The aim of more recent field research was to prevent flower and fruit formation with a single pre-bloom spray applied between the time the florescence was just visible up to the time the buds turned white before bloom. This work was centered in Alameda and Santa Clara counties of California.

Trials during the 1969-79 period included various concentrations and pre-bloom timing of the following: NAA, NAA plus surfactants, NPA, ethrel and dikegulac. Dikegulac, somewhat new on the market, has the trade name of Atrinal. Both ethrel and dikegulac also consistently prevented flower development. Table I is a summary of the data.

Ethrel stimulated abcission. It often acts slowly with results appearing two months after application. The reliable results occurred on nonstressed trees at the label recommended rate of 1000 ppm (3.2 oz/gal of Florel 3.9% active ingredient). A slight leaf twisting and a more linear shape of the new leaves is observed, but this is barely perceptible. Lateral branching was not stimulated.

Dikegulac rapidly causes the florescence to dry up with subsequent development of lateral growth. It is effective with minimal phototoxicity over a wide range of pre-bloom growth stages and conditions of moisture stress. The 4000 ppm rate (Atrinal 2.5 oz/gal; 18.5 active ingredient; the label recommended rate is 2.5 to 5.0 oz/gal) consistently provided satisfactory results with little observable toxicity.

The results indicate that olive flower and fruit prevention are possible and practical with a single pre-bloom spray with little or no observable phototoxicity with registered materials.

Glossy Privet

As a result of citizen demand to prevent flowering and fruiting or to remove trees, field trials were initiated in 1970 and continued through 1978. Materials tested were: ethrel (Florel), ethrel plus NAA (naphthalene acetic acid), NPA (naphthyl hydrazide), Maintain CF125 (Chlorfluenol), and

Atrinal (dikegulac).

The materials which effectively prevented flower and fruit formation were: Maintain CF125, NPA and Atrinal. Chart one and two explain. Each material was effective when applied to the 1- to 3-inch long unopened florescence. Atrinal concentrations above 4 ounces per gallon caused chlorosis and leaf drop from light to abundant. Label rates of Atrinal are 0.6 to 1.5 ounces per gallon.

A few notes of caution. The application must thoroughly wet the florescence. Atrinal causes the whole florescence to dry and also caused axillary branching. Therefore, axillary growth will completely by-pass the dry florescence if the treatment is made when the immature flower parts are 1 to 3 inches long. If the application is made later, the dry florescence will remain visible for the season. Phytotoxicity symptoms did not recur in subsequent years.

As for olive flower/fruit prevention, Atrinal has been registered for use as a flower/fruit preventative on *Ligustrum lucidum*.

Table 1. Phytotoxicity of ethrel and dikegulac and effectiveness in fruit removal on stressed and nonstressed trees.

				Stressed trees			*Nonstressed trees*		
				Application			*Application*		
Material	*ppm (a.i.)*	*Product (oz/gal)*		*Early*	*Mid*	*Late*	*Early*	*Mid*	*Late*
Ethrel	500	1.6	Phytotoxic	+	±	+	−	−	−
			Fruit removal	±	±	±	±	±	±
	1000	3.2	Phytotoxic	−	±	+	−	−	±
			Fruit removal	+	+	−	+	+	+
Dikegulac	4000	2.5	Phytotoxic	−	−	±	−	−	−
			Fruit removal	+	+	+	+	+	+
	8000	5.0	Phytotoxic	−	±	+	±	±	±
			Fruit removal	+	+	+	+	+	+
	12000	7.5	Phytotoxic	+	+	+	+	+	+
			Fruit removal	+	+	+	+	+	+

*Recommended rates are in boxes.

Chart 1. Phytotoxic concentrations.

Material	*Concentration (ppm)*	*Toxicity and market availability*
Maintain CF125	150 - 600	Severe phytotoxicity and is currently off the market
NPA	600	Severe phototoxicity and is off the market
Atrinal	1000 - 3000	Toxic at higher rates; registered and available

Chart 2. Effective concentrations without phytotoxicity.

	ppm (a.i.)	*Product (oz/gal)*
Atrinal	*500*	0.3
	1000	0.6
	1500	1.0
	2250	1.5
	3000	2.0

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