

Using Plant Growth Regulators to Eliminate Nuisance Fruits in Ornamental Trees[®]

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INTRODUCTION

Numerous ornamental tree species have fruit-bearing characteristics that make them undesirable, especially when the trees overhang sidewalks, driveways and streets. Among other problems, nuisance fruits create slipping hazards for pedestrians. City park departments are especially concerned about such fruits, as they are liable for injuries caused by trees growing in city easements.

A number of trials were conducted in early to mid-1990s to determine the effectiveness of ethephon and NAA (naphthaleneacetic acid) in eliminating the fruits of several commonly planted ornamental trees. At the time of the trials, relatively few species could be legally treated for fruit elimination in California; NAA was registered for eliminating olive (*Olea europaea*), pear (*Pyrus* spp.) and plum (*Prunus* spp.) fruits, ethephon for eliminating apple and crabapple (*Malus* spp.), carob (*Ceratonia siliqua*), and olive fruits, and mefluidide for eliminating olive fruits. This report summarizes several research trials and discusses the proper use of plant growth regulators for eliminating nuisance fruits based on those trials.

MODESTO TRIALS

Fruit elimination trials were conducted in Modesto, California, on the following species: American sweetgum (*Liquidambar styraciflua*), flowering pear, (*Pyrus calleryana* Aristocrat[™] pear), ginkgo (*Ginkgo biloba*), Mt. Atlas pistache (*Pistacia atlantica*), purple leaf flowering plum (*Prunus cerasifera* 'Pissardii' (syn. *P. cerasifera* 'Atropurpurea'), and holly oak (*Quercus ilex*). All of the test trees were vigorous and mature (over 10 years old), and known heavy fruit producers. Treatments consisted of ethephon at 15, 30, and 60 oz per 10 gal of water, NAA at 40 oz per 10 gal of water, and untreated controls. In all cases, attempts were made to apply the treatments at full bloom for each of the species.

At 30 oz per 10 gal of water, ethephon provided acceptable fruit elimination in liquidambar, flowering pear, and holly oak, but not in purple leaf flowering plum, ginkgo, or Mt. Atlas pistache (Perry, 1992; Perry and Lagarbo, 1994). Despite the poor results in Modesto on purpleleaf flowering plum, research conducted by Svihra (1990) showed ethephon to be effective in eliminating the fruit of that species.

In the Modesto ethephon trials, there was no visible phytotoxicity on the trees treated, nor on any of the plants growing beneath or near the treated trees. Turfgrass species in the treated sites included Kentucky bluegrass (*Poa pratensis*), perennial ryegrass (*Lolium perenne*), and common bermudagrass (*Cynodon dactylon*). Woody plants included almond (*Prunus dulcis*), juniper (*Juniperus* spp.), laurustinus (*Viburnum tinus*), and photinia (*Photinia × fraseri*).

Additionally, a single trial was established to test the effectiveness of NAA at 40 oz per 10 gal of water in eliminating the fruit of ginkgo. NAA did not effectively eliminate the ginkgo fruit and produced unacceptable phytotoxicity.

FRESNO TRIALS

Trials were conducted in Fresno, California, to determine the effectiveness of ethephon at 30 oz per 10 gal water, and NAA at 2.5 and 4 oz per 10 gal of water in eliminating the fruit (acorns) of Southern live oak (*Q. virginiana*). Both materials were highly effective for that purpose. However, the NAA treatments produced unacceptable phytotoxicity to the foliage and small branches of the test trees (Elam and Baker, 1996).

SPRAY TIMING AND MANAGEMENT

Spray timing is perhaps the most critical factor in successful fruit elimination. Recognizing the full bloom stage is sometimes difficult for those species that do not bear showy flowers. *Liquidambar* and oak, for example, bear monoecious flowers that have no petals. Additionally, the period of full bloom for each species varies from year to year, so calendar dates cannot be used for timing sprays. For example, in the Modesto trials full bloom for liquidambar occurred on 1 April 1991, and on 18 March 1992. To be most effective, growth-regulating chemicals should be applied early during the full bloom period, at early fruit set. The materials will not be as effective later on, once the fruit begins to develop. This is a critical point for trees such as flowering pears, which have a bloom period that may extend to 14 days. Finally, complete spray coverage is also important, as flowers not contacted by the spray will successfully set fruit.

Trees to be sprayed for fruit elimination should have ample soil moisture. Drought-stressed trees may suffer excessive phytotoxicity, especially severe defoliation. If winter rainfall amounts are inadequate to thoroughly wet the entire root zone, supplemental irrigation should be applied before treatment. High temperatures during or immediately following an application may also contribute to phytotoxicity, especially in drought-stressed trees.

CURRENT REGISTRATIONS

Ethephon is currently labeled for nuisance fruit elimination in California as Florel Brand Fruit Eliminator. The label allows its use for that purpose on all ornamental trees. NAA, available as Olive Stop, also has a California registration for nuisance fruit elimination in all ornamental flowering trees (California EPA, 2000).

LITERATURE CITED

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