

## Final Report for this one-year Project

### **Project Title:**

***Blossom Thinning of Apples with New Blossom Thinners***

**Personnel:** **Project Leader:** Dr. Essie Fallahi, Professor and Director of Pomology, University of Idaho, Parma Research and Extension  
**Technical Support:** Bahar Fallahi and Benito Morales, University of Idaho.

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**Co-PI and Cooperators:** Dr. Jim McFerson, Co-PI, Washington State Tree Fruit Research Commission, Dr. Curt Rom and Dr. Ross Byers, Cooperators

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### **Objectives:**

- 1) To experiment with different concentration and spray volume of Tergitol TMN-6 blossom thinner alone or in combination with other blossom thinners and consequence of the sprays on fruit quality and fruit marking on apples in Washington and Idaho. This experiment will be in conjunction with Dr. Jim McFerson on apples in Washington.
- 2) To study the effects of combination of Fish Oil and Lime Sulfur and perhaps other thinners on apple blossom thinning and ultimately yield and fruit quality and fruit marking.

### **Significant Findings:**

1. Tergito TMN 6 at higher than 0.5% may cause over thinning.
2. Tergitol at rates of 1 to 2.5 pints in 100 gal applied at full boom reduced fruit set. 1.5-2.5 pints per 100 gal were more effective than lower concentrations.
3. Tergitol at each rate of 1.5, 2 and 2.5 pints in 100 gal significantly reduced fruit set and resulted in significant reduction in time of hand thinning while showed no sign of fruit marking at all. Thus, this chemical may have a great potential for Rome blossom thinning.

4. Tergitol at 1.5 pints or 2 pints/100 gal reduced fruit set in Red Delicious apple, but caused russetting (burning) on the fruit.
1. 5. Tergitol at up to 2.5 pints in 100 gal did not reduce fruit set in Fuji while caused fruit marking.
6. Results with Lime Sulfur and Fish oil will be discussed at the meeting. Fish oil at 3% or lime sulfur at 6% single or double applications reduced fruit set.

## **Methods:**

**Blossom Thinners:** Several apple orchards were selected in Idaho and Washington. In each orchard, trees of a few rows were flagged. In each of the two adjacent rows, 6 trees will be tagged and sprayed with one of the treatments while the next three trees were used as buffer. Four of those 6 trees (the ones in the middle of each segment) were used for sampling. Each treatment had at least 4 replications (16 trees). When testing for Tergitol on a volume bases, we used sprays at 200gal/ acre OR 100 gal/acre. When experimenting for combination of blossom thinners, we used sprays at 200 gal/acre.

Trees were sprayed when they are at 80%-90% bloom. For measuring the fruit set, we used one of the two methods: 1) either we counted number of mixed buds on each of the three to four limbs before blooming. Then fruit numbers of the same branch were counted after June drop. Fruit set was then calculated as fruit no/mixed bud no x100. 2) OR, we sprayed the trees and count number of fruits on three or four limbs and fruit set was calculated as : fruit number/cross sectional area of braches on which fruits were counted.

Fruits were sampled at harvest time, and fruit size and russetting and color were evaluated in the lab. Yield per tree for each treatment was estimated at harvest time.

## **Results and Discussion:**

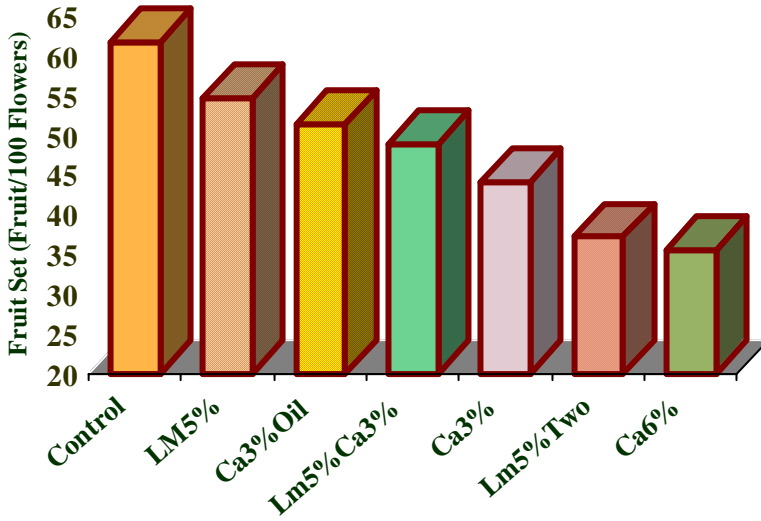
Tergito TMN 6 at higher than 0.5% may cause over thinning. Tergitol at rates of 1 to 2.5 pints in 100 gal applied at full boom reduced fruit set. 1.5-2.5 pints per 100 gal were more effective than lower concentrations. In Rome Beauty apple, Tergitol at each rate of 1.5, 2 and 2.5 pints in 100 gal significantly reduced fruit set and resulted in significant reduction in time of hand thinning while showed no sign of fruit marking at all. Thus, this chemical may have a great potential for Rome blossom thinning.

Tergitol at 1.5 pints or 2 pints/100 gal reduced fruit set in Red Delicious apple, but caused russetting (burning) on the fruit. Tergitol at up to 2.5 pints in 100 gal did not reduce fruit set in Fuji while caused fruit marking.

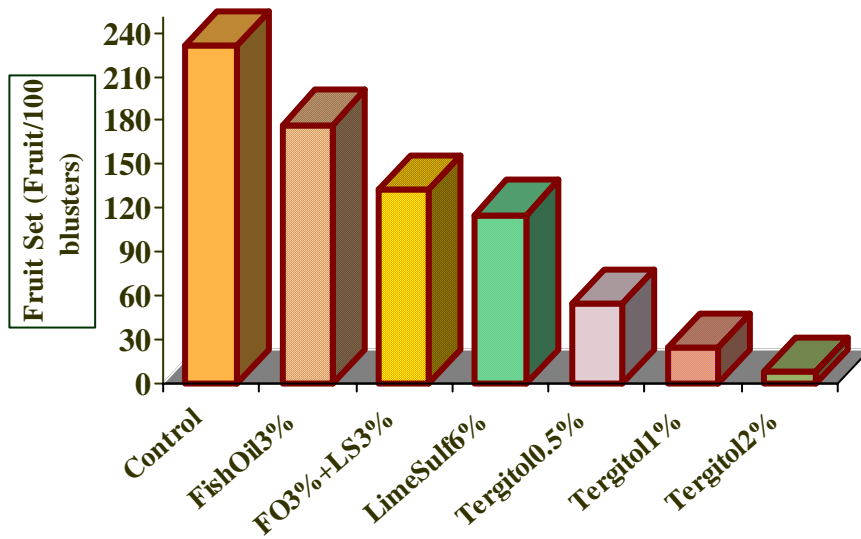
Results with Lime Sulfur and Fish oil will be discussed at the meeting. Fish oil at 3% or lime sulfur at 6% single or double applications reduced fruit set.

In conclusion, Tergitol can be an effective blossom thinner for certain apple cultivars but not all. We found that Tergitol is an effective blossom thinners for peaches and plums without any adverse effects on these fruits. Lime sulfur, as a blossom thinner works, but results are not always consistent from year to year. We are going to continue our research with apple blossom thinners in 2005.

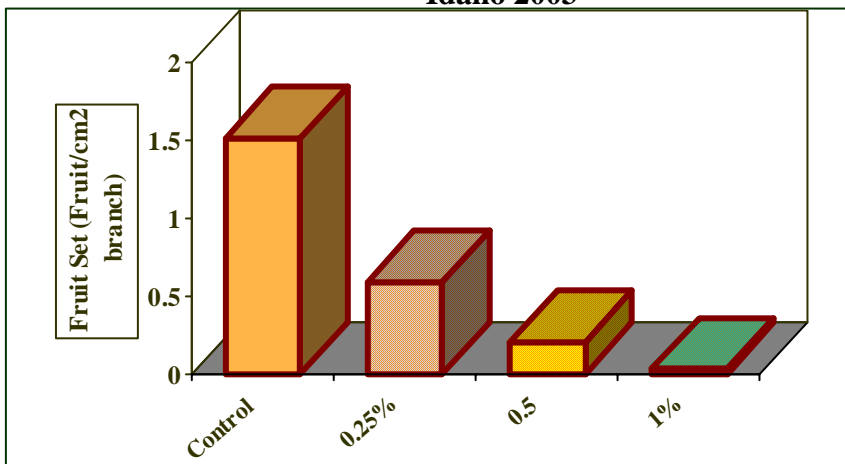
**Effect of Organic Blossom Thinners on Fruit Set of 'Gala' Apple in 2001**



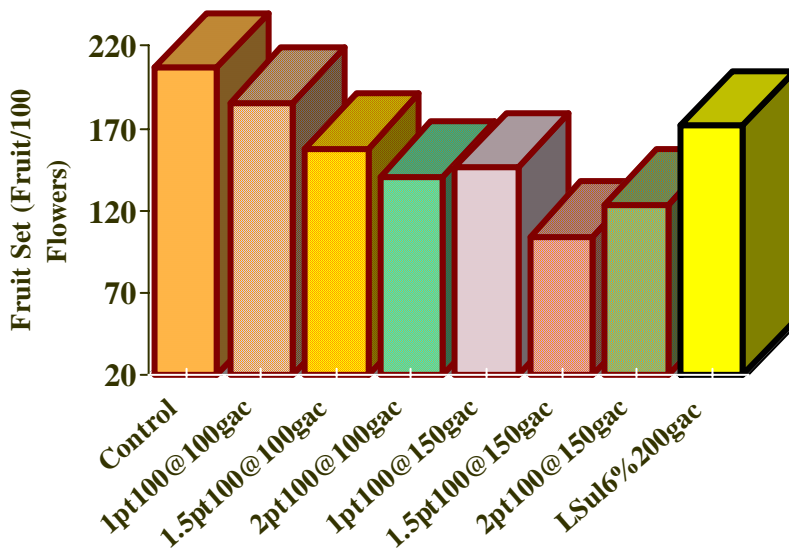
**Effect of Blossom Thinners on Fruit Set of Fuji Apple, Parma, Idaho 2003**



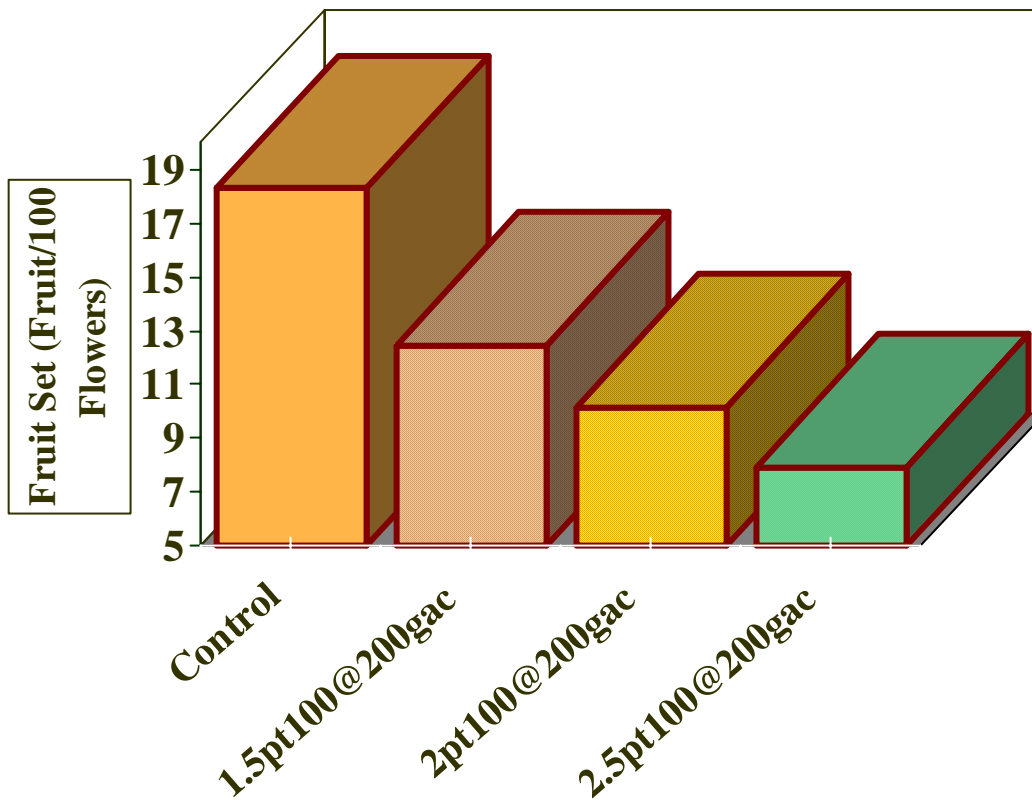
**Effect of Tergitol on Fruit Set of 'Red Chief Delicious', Sunny Slope, Idaho 2003**



**Effect of Tergitol TMN-6 on Fruit Set of 'Red Spur Delicious' Apple at U of I Pomology Orchard, 2004**



**Effect of Tergitol TMN-6 on Fruit Set of 'Early Spur Rome' Apple at Williamson Orchard, 2004**



## **Budget Page**

**Title: *Blossom Thinning of Apples with New Blossom Thinners***

**Project Leaders: Dr. Essie Fallahi, & Dr. Jim McFerson,  
University of Idaho and WTFRC, respectively**

**Project Duration: 2004-2006**

**Current Year: 2004**

**Current Year Request: \$0**

**Budget: Receved in 2004: \$7000**

Item	Year 1(2004)
Salaries	2,352
Benefits(%) 45%	1058.4
Wages	1500
Benefits (%) 0.25%	375
Equipment	0
Materials& Supplies	1715
Travel	7000