# MANAGING DEER DAMAGE TO YOUNG PECAN TREES USING PLANTSKYDD DEER REPELLENT

## Summer 2013

## FIELD TRIAL RESULTS

**Before Treatment**

**After Treatment**

**TABLE OF CONTENTS:**

Overview of the situation: page 2
Observations & Speculation: pages 3
The trial in pictures, pages 4-9

# CASE STUDY:
# MANAGING DEER DAMAGE TO YOUNG PECAN TREES USING PLANTSKYDD DEER REPELLENT.

## OVERVIEW OF THE SITUATION:

**The problem:**
This established pecan farm inter-planted approximately 15,000 young trees on 600 acres where 60' x 60' spacing had originally been used. Shortly after planting, herds of deer began to cause significant damage to the young trees.

**Plantskydd Animal Repellent:**
Facing the prospect of unacceptable damage and mortality, the grower contacted Tree World and acquired enough of the deer repellent Plantskydd powder concentrate to spray 331 acres of the newly planted trees. Damage to the trees was dramatically reduced immediately after the first application of Plantskydd and complete control was achieved once adequate coverage was achieved. By the end of summer, browse damage from deer was virtually eliminated.

**Other product unsatisfactory:**
Young Pecan trees require only a short period of a few years to grow past deer damage, ruling out fencing as an economical option. In the past, a contingency plan included the use of another deer repellent: a capsaicin-based animal repellent commonly used in agriculture. Once significant browse damage began, the capsaicin product was sprayed 2 times but the deer resumed heavy browsing after only a few days. The farm is in the Southwest U.S. desert climate zone with an average June rainfall of less than ¼" and the fields are flood irrigated, so it cannot be said that the capsaicin-based product was washed off the plants. These same conditions create an ideal situation for the deer with irrigated, nutritious young trees and grasses for food, shade and cover from the sun thanks to the mature trees and presumably fewer predators due to the human presence. Other than a ¾ mile buffer of residences on one side and pockets of dwellings on the other, the farm is literally surrounded by hundreds of miles of wilderness.

**OBSERVATIONS & SPECULATION:**

-At the start of the trial, the grower estimated that an average 10% of the replants were severely damaged. In some concentrated areas damage levels were unacceptably high.

-Once the deer home in and get a taste for a particular tree, the animals will keep targeting any new emerging growth on the very same tree. One can speculate that to conserve energy the animals stand still and completely defoliate one tree before moving on to the next, but the interesting thing is that the animals will cycle through damaged trees and constantly return to the same ones causing extreme damage and mortality (other species of trees can withstand a great deal of damage without dying – notwithstanding delays in production, difformity, etc.)

-A few damaged and treated trees that were struggling to put out growth and recover did incur minor browsing on leaves during the trial. We advised the grower that we believed the trees with very little foliage were not sufficiently covered by overhead spraying. Subsequently, we recommended spraying the defoliated young trees using a hand wand and paying close attention to hitting all the leaves. Spray-pattern cards were used for both overhead and wand spraying and the patterns were fine-tuned to the same coverage.

-Trees with good canopies seemed to be sufficiently covered using a rate of 12 gallons of water per acre (which is one of the lowest rates that we have experienced.)

-Trees that hadn't been damaged yet were easiest to protect. Some repeat browse damage was observed after the 1st application on those treated trees that were already damaged. The grower switched to wand application on the defoliated trees and achieved control thereafter (see detailed analysis on page 6) During the trial, staff observed deer tracks and witnessed deer browsing on the mature untreated trees and grass in the same plot. Browsing of mature trees was a behavior that was either never noted by staff and/or never deemed of any real consequence. The animals clearly prefer the newly planted tender trees over the leaves from mature trees.

-Materials cost: for one season: $15.00 / acre (this orchard was inter-planted, for a completely new 30' x 60'plantation, factor in double the cost.)

-Labor costs: approximately 180 man hours total for 3 applications.

Same tree before and after treat-ment.

Fig. 1
June 5, 2013 - This area is at the ex-treme Southern tip of the farm where pressure is highest.

Fig. 2
August 21, 2013 - 11 weeks later. See page 9 for time-lapse detailed analysis on this tree.

Fig. 3
June 5, 2013 - Completely defoliated tree.

Fig. 4
August 21, 2013 - 11 weeks later, this tree may survive.

Fig. 5
June 5, 2013 - Typical deer browse pattern.

Fig. 6
August 21, 2013 - 11 weeks later. Typical response of trees treated with a dilute solution of Plantskydd (1 lb / 3 gal.)

Fig. 7
June 5, 2013 - Typical browse pattern and buck rub damage to bark (trees are painted white to reduce sunburn.)

Fig. 8
August 21 - 11 weeks later. Typical response of pecan trees treated with Plantskydd.

Fig. 9
June 5, 2013 - Harder hit trees needed wand application to ensure coverage with the deer always targeting new growth.

Fig. 10
August 21, 2013 - This tree should survive.

Fig. 11
June 13, 2013 - Typical damage.

Fig. 12
August 21, 2013 - 11 weeks later, typical response to treated trees.

Fig. 13
June 5, 2013 - What the trees should look like. This photo was taken at the time of the 1st application.

Fig. 14
August 21, 2013 - 11 weeks and 2 applications later. Good growth.

Fig. 15
June 5, 2013 - Undamaged trees at 1st application.

Fig. 16
June 20, 2013 - 15 days later. Treated trees are left untouched.

Fig. 17
June 20, 2013 - Spray pattern from overhead boom sprayer @ 12 gal/acre on trees with good canopies.

Fig. 18
Spray equipment: most trees were sprayed using an overhead boom sprayer and a handheld wand was used to spray the trees with the most damage.

Fig. 19
June 5, 2013 - Typical extreme damage, rows of de-limbed and de-foliated trees.

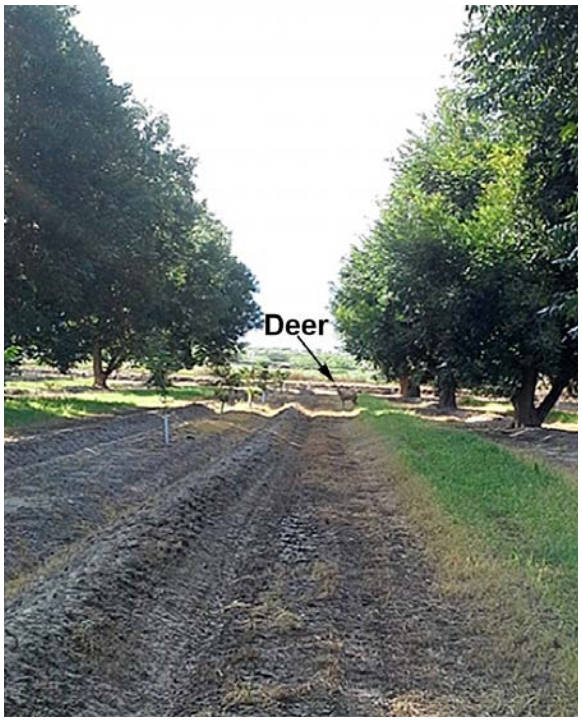


Fig. 20
July 29, 2013 - Deer present on property throughout the trial.

# 3 Months lapse-time on same tree

Image 1
June 5, 2013 - 1st Plantskydd Repellent application: over-head boom sprayer used. Trees already severely damaged. This area of the plantation is at the Southern-most tip of the property.

Image 2
June 13, 2013 - Tree has put on good growth.

Image 3
June 20, 2013 - 2nd Application: a number of trees were browsed between the 8th and 15th day after the initial application. We believed, based on the first picture, that over-head boom application did not adequately cover the foliage. At this point, we recommended that a handheld wand application be made on every tree struggling to put out foliage. From this point on, control was achieved.

Image 4
July 2, 2013 - Tree is recovering.

Image 5
July 26, 2013 - 3rd Application: wand sprayed.

Image 6
August 21, 2013 - 26 days after 3rd application. As the growing season progresses, trees become easier to protect. Typically, the final application done near 'leaf-hardening' will protect through to leaf-drop.