

EVALUATION REPORT OF THE PILOT FLORIDA FRUIT TREE AND AVOCADO AND MANGO TREE PILOT CROP INSURANCE PROGRAMS

Executive Summary

This evaluation provides an overview, insurance experience information, and the results of reviews, data collection, and program comments on the Florida Fruit Tree and Avocado and Mango Tree Pilot Crop Insurance Programs. The objective of the evaluation was to determine if the program met the risk management needs of producers and whether the pilots should be converted to permanent programs. Both programs have had several changes over the pilot duration and this report also details the result of these changes.

The evaluation found that growers have major risk management concerns that the pilots do not address. The producers, producer associations and grower groups have asked RMA to make changes to these pilots that will better meet their risk management needs. Some of these requests require changes that are beyond what RMA has typically covered under pilots or regulatory risk management products. Growers were adamant about getting changes made to the tree pilot programs to cover their risk management needs adequately before the programs are converted to permanent status. Since many of the requested modifications need to be researched and tested, it is recommended the programs remain in pilot status until the producers feel the program meets their risk management needs.

The Florida Fruit Tree and Avocado and Mango Tree Pilot Crop Insurance Programs were evaluated together because these programs were initially one policy. The policy language is consistent between the two policies except for the methods for determining losses.

Overview of the Pilot Programs

Where the programs were initially offered and types of trees covered

The Florida Fruit Tree Pilot Program began in 1996 in Dade (025), Highlands (055), Martin (085), Palm Beach (099), and Polk (105), Counties, Florida and covered the following tree types: (crop codes are in parentheses): Orange (207); Grapefruit (208); Lemon (209); Limes (210); All Other Citrus (211); Avocados (212); Carambola (213); and Mango (214). The above counties represent approximately 30 percent of the trees in Florida covered by the pilot tree programs.

Policy Provisions

Initially, the crop provisions allowed one basic unit per crop (type of tree) per county in which the producer had a share and further breakdown of the unit was not available. Effective for the 2000 crop year for the Florida Fruit Tree Policy and the 2001 crop year for the Avocado and Mango Tree Policy, the option to divide units by section, section equivalent, farm serial number or non-contiguous land was made available. The insurance period is from November 21 of one year to November 20 of the next year. The contract change date is August 31, and the cancellation and termination dates are November 20. In 1998, due to producer requests for a different appraisal

methodology for avocado and mango trees, a separate policy was developed specifically for avocado and mango trees. The Florida Fruit Tree Policy covers the remainder of the above tree types. (See Exhibit 1 and 2 for the Florida Fruit Tree Crop Provisions and the Avocado and Mango Tree Crop Provisions.)

The Florida Fruit Tree and Avocado and Mango Tree pilots provide protection for damaged or destroyed trees. Indemnities are triggered when the measured tree damage exceeds the deductible amount selected. The policy insures against freeze, wind, and excess moisture damage to trees. Asiatic citrus canker (ACC) coverage is also available under the Florida Fruit Tree policy. The ACC is not a threat to avocado and mango trees and is not included as a cause of loss in the Avocado and Mango Tree Crop Provisions.

Coverage and Premium

Unlike most crop insurance policies that are acreage based, these pilots are tree-based. Since tree populations are very stable between years and within the growing season, grove owners can establish their coverage based on their tree count. The coverage is calculated by multiplying the number of trees times the tree price times the coverage level selected times share.

The premium is calculated by multiplying the number of insurable trees times the tree price (as designated on the Actuarial Documents by Stage), times the coverage level selected times the premium rate times share. For example, using the following assumptions (75% coverage election, 2.7% rate, \$26 tree price, 100% share, 55% government paid subsidy (producers pay 45% of the premium), the premium for an orange tree grove with 15,000 mature trees, the producer paid premium would be \$3,554 for \$292,500 of coverage, as calculated below:

$$\text{Coverage} = 15,000 \text{ (trees)} \times .75 \text{ (level)} \times \$26 \text{ (tree price)} \times 1.00 \text{ (share)} = \$292,500$$

$$\text{Producer Premium} = 15,000 \text{ (trees)} \times .75 \text{ (level)} \times \$26 \text{ (tree price)} \times 1.00 \text{ (share)} \times .027 \text{ (rate)} \times .45 \text{ (subsidy)} = \$3,554$$

Buy-up is considered to be coverage levels of 50 percent coverage and higher at 100 percent of the price. All buy-up coverage uses the above premium calculation formula. Catastrophic risk protection level of coverage (CAT) was also available for trees for a small administrative fee (\$60 for the 2000 crop year). CAT provides a low level of protection (50% coverage and 55% price protection) for all trees in the county (by tree type). For example, using the following assumptions (CAT coverage = 50% coverage level, 55% of \$26 tree price, 100% share), a producer with an orange grove with 15,000 mature (stage 3) trees, would pay a \$60 administrative fee for \$107,250 of coverage for the 2000 crop year.

Indemnity

Damage is the evaluation of totally and partially destroyed trees or limbs/canopy. The percent of damage is determined during an evaluation by the adjuster. For example, an orange tree that is uprooted would be evaluated as 100 percent damaged, an orange tree that has 1 out of 5 scaffold limbs removed would have 20 percent damage. An orange tree with 4 out of 5 scaffold limbs removed would be 80 percent damaged. If a tree is 80 percent or greater damaged, the tree would

be considered 100 percent damaged. Damage is assessed using samples from the overall unit unless the loss is due to Asiatic citrus canker (ACC). If the loss is due to ACC, the number of trees removed pursuant to a public order will be considered 100 percent damaged and the indemnity calculated by taking the number of trees destroyed times the insured value per tree. Examples of indemnity computations for ACC and non-ACC losses are contained in the attached Florida Fruit Tree Crop Provisions.

Rating

Rates are based on the frequency and severity of insured perils (freeze, wind, excess moisture and for citrus only, Asiatic Citrus Canker). The perils covered are events that generally can be documented by weather station records or other third party verification. Therefore, there is a long data series available about the frequency and severity of the covered peril. A damage model was developed for each insured peril. The elements of this model predict damage at different degrees of severity. This model was developed in conjunction with regional crop experts. The covered perils of these pilots are generally specific weather events that occur within a relatively short time. These perils were also recorded by the National Weather Service. Base premium rates (unsubsidized) for the tree pilots ranged by county from 2.3 percent to 9.9 percent of the 2001 crop year. The pilot tree program rates are found on the actuarial documents by county by tree type.

Pricing

The maximum dollar amount of insurance available per tree is based on grove establishment cost data and production budgets developed by the University of Florida and Florida Agricultural Extension Service. This amount is the sum of the costs to replace or rehabilitate a tree and the variable production costs until the income from the marketable fruit equals the variable expense for the year. This includes costs for up to five years for citrus trees and three years for tropical fruit trees after the tree is planted or dehorned (the period needed for the trees to become economically sustaining). The amount of insurance is offered by stages representative of the tree age and accumulated costs. For example for the 2001 crop year, the stages and dollar amounts available for citrus trees were:

- Stage I, first year set out, price of: \$8;
- Stage II, ages above 1 year, yet do not qualify for Stage III, price of: \$15; and
- Stage III, age 4 and older, price of: \$26

The tree prices are found on the actuarial documents by tree type and by stage.

Participation

Approximately 80 percent of the insurable trees in Florida were covered by the pilot programs for the 2000 crop year. Two major changes were made to the Florida Fruit Tree Pilot for the 2000 crop year that contributed to this high percentage. The policy was modified to include coverage for losses due to Asiatic Citrus Canker (ACC) and 24 additional Florida counties were added to the pilot, making the pilot available to roughly all Florida counties with commercial trees. The threat of ACC was cited as being the basis for the high level of participation and the motive for producers to increase their coverage levels. The percent of buy-up policies more than doubled from 1999 to 2000. The percent of buy-up policies for these programs is comparable to the

Florida state average for all crops. The distribution of buy-up versus CAT policies from 1999 to 2000 are shown in Table 1.

Table 1.

**Comparison of Percent of CAT and Buy-up Policies
For the Pilot Tree Programs and for Florida (all crops)
1999 and 2000 Crop Years**

Coverage Levels	% of Policies for 1999 (Pilot Tree Programs)	% of Policies for 2000 (Pilot Tree Programs)	% of Policies for Florida (all crops) 2000
Buy-up	10	24	28
CAT	90	76	72

For the 2000 crop year, 81 percent of the insured trees were covered by a CAT policy (See Table 2). The distribution of trees by coverage level varies by tree type. For example, for lime trees, only 16 percent of the trees were covered by CAT and 84 percent buy-up. This supports the comments received that producers switched to higher levels of protection due to the ACC infection. Of the trees covered by the pilots, lime and grapefruit trees are the most susceptible to the ACC bacterium *Xanthomonas axonopodis*, and these tree types had a much higher level of buy-up protection purchased relative to the other tree types.

**Table 2. Comparison of Percent of Trees Covered by CAT and Buy-up Protection
2000 Crop Year**

Tree Type	% Trees CAT	% Trees BUY-UP
Limes	16	84
Grapefruit	61	39
All Other Citrus	78	22
Oranges	84	16
Lemon	99	1
Totals	81	19

Experience

The number of policies has quadrupled from 1996 to the 2000 crop year. The largest policy number increase occurred in 2000 when the pilot was expanded from 5 counties to 29 counties. The pilot's five-year loss ratio is .14. The only significant loss event that triggered an indemnity payment was due to ACC for the 2000 crop year (See Table 3). Exhibit 3 provides a summary of the experience by type of tree, by county and by crop year.

Table 3.

FLORIDA FRUIT TREE AND AVOCADO/MANGO TREE PILOT EXPERIENCE

Crop Year	Policies	Liability	Premium	Indemnity	Loss Ratio	Premium Rate Earned
1996	1,136	105,374,844	2,097,591	1,282	0.00	0.02
1997	1,464	124,431,904	2,496,273	1,995	0.00	0.02
1998	1,641	147,250,024	2,920,952	0	0.00	0.02
1999	1,627	153,720,537	3,105,449	4,318	0.00	0.02
2000	4,881	658,329,438	13,012,806	3,357,468	0.26	0.02
96-00	10,749	1,189,106,747	23,633,071	3,365,063	0.14	0.02

Grower Feedback, Summary of Findings and Recommendations

This evaluation includes feedback obtained from meetings with citrus and tropical fruit growers and from written requests from growers associations, grower groups, political representatives, and individual growers. As part of this evaluation, a team consisting of representatives responsible for rating, pricing, policy, loss adjustment and procedures met with growers in the central Florida citrus area and the southern Florida tropical fruit area to solicit their comments on the pilot programs. The producer concerns and proposed recommendations are discussed below:

1. Losses without payment are a grower concern. Growers stressed that it costs thousands of dollars to renovate a grove after a freeze or storm, yet the tree policy does not trigger an indemnity even if they purchase the highest level of coverage. One example given was for a freeze that occurred in January, 1997. A policy holder had severe damage to an avocado grove with about 10,000 trees of which 1,500 trees were destroyed. The trees that were destroyed were fairly young trees that had been replanted after being lost to Hurricane Andrew in 1992. The older trees survived the freeze without damage. This producer incurred thousands of dollars of recovery costs, yet his tree policy did not trigger an indemnity payment.

There are two reasons that the insured did not get paid when 1,500 trees were destroyed. First, the policy requires that a unit must incur a minimum percent damage or the deductible (1 minus the coverage level elected). Second, the percent of loss is determined for the entire unit because the entire unit is sampled, including potentially undamaged and damaged trees. For a 10,000 tree unit, the sample would include every 4th tree from every 5th row. It is unlikely that those trees will be the younger trees that sustained damage.

Recommendation:

An occurrence loss option could be added to the Florida Fruit Tree and Avocado and Mango Tree Pilot Provisions that would allow losses to be determined on damaged trees only, rather than the entire unit. This option would trigger once a minimum damage threshold of the lesser of 5% or 100 trees has been met. The producer would pay an additional premium for this option and as an option, it would only be available for producers who have buy-up coverage. This should also provide the producer further incentive to buy a coverage level higher than CAT.

2. Double deductible perception. Producers perceive a double deductible with the tree pilots. Growers feel they are penalized by only being allowed to insure a percentage of the maximum reference price, as well as having to meet a loss deductible before a loss will be paid. One group member gave the following example of why this perception exists:

A corn producer with an APH of 100 bushels and a price election of \$2.85 per bushel is able to purchase insurance at the highest coverage level that would cover losses in excess of 25 bushels per acre and up to 75 bushels per acre. The producer would then be paid \$2.85 per bushel if the insurance was purchased at the 75 percent coverage level and 100 percent of the price (75/100.)

A citrus producer with 100 trees per acre and a maximum reference price of \$26.00 per tree is able to purchase insurance at the highest coverage level that would cover losses in excess of 25 trees per acre and up to 75 trees per acre. The producer would only be paid \$19.50 per tree at the highest insurance levels.

Recommendation:

As recommended above in item 1, the occurrence loss option should take care of this concern. It allows losses to be determined for damaged trees once a minimum damage threshold has been met. Using the above example of 100 trees per acre, an indemnity would be triggered once the equivalent of 5 trees were lost (for example: 10 trees at 50% damage). This would be the equivalent of 100 percent coverage and 75 percent price (100/75).

3. Revenue replacement. Producers suffer financial loss after trees are damaged, due to minimal or reduced fruit production. They are interested in a product that will provide revenue protection for this loss. The current tree programs cover costs to replant or rehabilitate damaged trees for a period of about four years. This is the length of time for a replanted tree to begin producing fruit. Production revenue from a replanted tree does not exceed the replacement and rehabilitation costs until seven years after replanting. The tree reaches peak production at about fifteen years. If a peak-producing tree has to be replaced, the cost of establishing a new tree is covered but the grower has lost the revenue that tree would have produced between years four and fifteen.

Recommendation:

A revenue replacement option could be developed for the current tree programs. Payments would be triggered by a loss on the tree policy. Research on the revenue replacement concept could be conducted through a Cooperative Agreement. Items that need to be quantified in the research include: The relationship between percent tree damage and lost future revenue, the amount of production or value of various age trees at the time the loss occurred, and the additional premium required to cover this option.

4. Coverage increase after the sales closing date. Florida Citrus Mutual asked that provisions be made to allow producers to increase their level of protection during the crop year. They indicated producers could buy additional coverage for other lines of insurance at any time and as money is available. They want this option for the tree programs.

Recommendation:

This change is feasible since tree populations and grove conditions are very stable within the growing season and producers are unable to predict a loss that will occur beyond 30 days. It supports RMA's initiative for producers to have a high level of risk protection. The Research and Evaluation Division proposes this change should include the following requirements:

The coverage level change:

- 1) Can be increased only one time per year;
- 2) Will apply to only an increase in coverage level;
- 3) Will be subject to the same premium as if the higher coverage level had been in since the initial coverage date;
- 4) Will be available if no damage has occurred for the crop year; and
- 5) Is subject to a 30-day waiting period for coverage to attach - to allow an inspection at the company's discretion.

5. Coverage for unknown diseases. Producers are concerned that a disease that has no effective control product, similar to the Asiatic Citrus Canker, could surface in a short period of time, and they could suffer significant losses without insurance coverage available. They want RMA to address this concern.

Recommendation:

A statement should be added to the cause of loss section that indicates if disease coverage is available, it will be described on the Special Provisions. Since the Special Provisions are modified each year on a county basis, it could address disease coverage in a relatively short period of time.

6. Acreage reporting only when changes occur. Representatives from Florida Citrus Mutual indicated the requirement to file acreage reports each year is not needed for the tree program. They state there is generally no change from year to year in the number or status of trees.

Recommendation:

Requiring acreage reports only when changes occur should meet with significant approval from the producers and agents. Unlike other crops, fruit trees are fairly static with only minimal changes occurring in any given crop year. However, because of natural attrition and loss events, producers will probably be submitting reports on an annual basis anyway. The downside to this change would be that the producer might incur a change and it not get reported, a loss could occur, and the producer would not have the coverage needed. If these programs remain pilots, it is recommended that this provision be made to the pilot policy to test its impact.

7. Coverage for trees less than 4 years old North of Interstate 4. There are 11 counties in northern Florida that have the following statement on the Special Provisions:

For the peril of freeze only, we do not insure any citrus trees that have not reached the third growing season after set out, if they are located north of Interstate 4.

Representatives from Florida Citrus Mutual requested that coverage be provided for trees three years old and younger North of Interstate 4. They feel that those counties are already rated for freeze and should not have Stage 1 and Stage 2 trees uninsurable. Additionally, the youngest trees are the most easily protected and therefore less likely to be damaged in the event of freeze.

Recommendation:

A citrus expert from the Lake Alfred Citrus Research and Education Center, expressed that there are inherent risks with growing citrus in all of Florida, not just in the areas north of Interstate 4. However, the trees north of the Interstate 4 line tend to be more prone to hard freeze. Microjet irrigation has been proven to help protect against freeze, if used properly. The chance of inadequate irrigation freeze protection in these systems due to human error and system failure, however, is great. Low volume irrigation systems that were designed to irrigate only a portion of a grove at one time would not provide adequate protection and producers do not always begin the protection when needed.

The above 11 counties have rates that are two to three times higher than the southern

counties. RMA has no data to substantiate whether the additional rating for these counties sufficiently accounts for the younger tree risk. To provide the desired coverage for the growers in these counties it is suggested that RMA test this by changing the Special Provision statement on the actuarial table as follows:

For the peril of freeze only, we do not insure any citrus trees that have not reached the third growing season after set out, if they are located north of Interstate 4, unless there is irrigation that provides adequate frost protection and meets the following requirements:

(The requirements need to be coordinated with the Lake Alfred Research and Education Center and the Valdosta Regional Office.)

8. Loss adjustment methodology. Florida Citrus Mutual commented that producers have concerns about the method of damage assessment. Under the current system, to be considered damaged, scaffold limbs must be injured within a distance from the trunk equal to one-fourth the height of the tree and that requires buckhorning. As an example, under this method a tree with a height of 16 feet suffers freeze damage to all limbs but only to within six feet of the trunk. Even though nearly 50 percent of the canopy would need to be removed, no indemnity would be paid because the limbs were not damaged to within one-fourth of the height or 4 feet. They believe consideration should be given to using the canopy volume method of damage assessment, which is used for the avocado and mango tree program. In contrast, avocado and mango producers indicated the canopy volume loss adjustment method would not result in an assessment that would provide reimbursement for the recovery costs they incur with a hurricane or tropical storm. Growers feel that the current canopy volume appraisal methodologies will not produce an outcome that will represent the costs they incur restoring their groves after a loss event.

Recommendation:

Research on the loss adjustment methodologies should be conducted. The study should evaluate the appropriate appraisal methodology to be used for the Florida Fruit Tree and Avocado and Mango Tree Programs. The two appraisal methodologies currently in place are the canopy volume method for avocados and mangos and the scaffold limb method for all other trees. To date, the tree pilot programs have had no significant losses, other than ACC (Asiatic Citrus Canker), to test the efficacy of these methodologies.

The study should recommend appraisal methodologies that will result in percent damage determinations that provide growers indemnities representative of the costs they incur to restore their groves.

9. Citrus tree price too low. Florida Citrus Mutual commented that the maximum reference price for citrus trees (\$26) is too low and should be adjusted to \$32.00 per tree for Stage III trees (third crop year after set out or topworking, or the fourth crop year after buckhorning).

The Budgeting Costs and Returns published by the University of Florida, revised January 25, 2000, relates the cost of planting and maintaining a reset citrus tree to the number of reset/replacement trees per acre as follows in Table 4:

Table 4. Estimated Cost of Planting and Maintaining a Reset Citrus Tree

	<u>Number of Resets/Replacement Trees per Acre</u>				
	1-2	3-5	6-10	11-25	26+
	Cost Per Tree				
Year # 1:	\$	\$	\$	\$	\$
Tree Removal	5.73	4.98	3.98	3.22	2.57
Tree Costs (Container Tree)	4.00	4.00	3.75	3.75	3.75
Site Preparation **	5.40	4.68	3.97	3.67	2.88
Plant Tree and First Watering	2.52	2.18	1.84	1.71	1.34
Total Planting Cost	11.92	10.86	9.56	9.13	7.97
Total Tree Care Cost Year #1	3.81	3.52	3.32	3.16	2.99
Total Cost Year #1	21.46	19.36	16.86	15.51	13.53
Total Tree Care Costs Year #2	3.34	3.02	2.63	2.31	2.10
Total Tree Care Costs Year #3	2.64	2.35	2.02	1.73	1.46
Total Tree Care Costs Year #4	2.71	2.41	2.07	1.77	1.50
Total Four Year Cumulative Costs	30.15	27.14	23.58	21.32	18.59
** Site preparation for bedded citrus grove; costs of root removal, rotovating/leveling tree planting site. Fumigate planting site would costs approximately \$2.50 per tree					

The \$32 amount per tree that Florida Citrus Mutual advocates is the amount that it will cost if 1 or 2 trees are reset/replaced per acre. Even with the spot loss provisions added to the policy, it is unlikely that insurance will pay an indemnity for replacing one or two trees per acre. There is a concern with the pricing by Stage Category. Specifically, according to the above data, Stage I (set out, buckhorned, or topworked less than one year) trees maximum reference price should be higher, possibly \$13.00 or \$14.00 per tree

Recommendation: RMA should review the citrus tree pricing for the 2002 crop year to determine if the price for Stage I trees should be adjusted.

10. Avocado producers commented that the price for avocado trees should be increased:

The dollar amounts for avocado trees are based on grove establishment cost data from extension and industry sources, and rehabilitation costs developed by the University of Florida Agricultural Extension Service. Current reset budget data that accounts for economy of scale, the annual variable costs until the tree's revenue exceeds the costs of production, and cost of debris removal for mature trees are not available for avocado, carambola, mango and lime trees. Research to obtain this information is planned to be conducted through a Cooperative Agreement.

11. Questions have been received by RMA as a result of the ACC coverage language added to the Florida Fruit Tree Pilot Program for the 2000 crop year. The policy does not include specific language that clearly addresses the following situations:

Situation: A producer has a destruction order for trees exposed or infected with ACC in the 2000 crop year that is not carried out (trees are not destroyed) before the beginning of the 2001 crop year. Does the producer have carryover coverage for these trees in the 2001 crop year when the claim has not been determined? Can the producer obtain buy-up coverage for the 2001 crop year for the trees in the unit that are not identified as being infected or exposed to ACC? When would this coverage attach? What if the trees are hit by freeze before they can be recertified as not being infected or exposed to ACC?

Recommendation: The Florida Fruit Tree Pilot Provisions should be updated to clarify the language for the situations resulting from the ACC losses.

SUMMARY AND CONCLUSIONS

The evaluation team found there were major concerns requested by growers that remain to be addressed by RMA. The producers, producer associations and grower groups have asked RMA to make changes to these programs that will better meet their risk management needs. Some of these requests require changes that are beyond the bounds of what RMA has typically covered under pilots or regulatory risk management products. Growers were adamant about getting changes made to the tree pilot programs to cover their risk management needs adequately before the programs are converted to permanent status. Since many of the modifications need to be tested, it is recommended that the programs should remain in pilot status and allow the changes to be tested.

Reference Information

The county actuarial documents for the tree pilot programs can be accessed through the RMA website at: <http://www.rma.usda.gov/>

Exhibit 1
Florida Fruit Tree Crop Provisions

Exhibit 2
Avocado and Mango Tree Crop Provisions

Exhibit 3
Florida Fruit Tree and Avocado and Mango Tree Experience Summary