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MACADAMIA TREE INSURANCE STANDARDS HANDBOOK

2019 and Succeeding Crop Years

**RISK MANAGEMENT AGENCY
KANSAS CITY, MO. 64133**

TITLE: MACADAMIA TREE CROP INSURANCE STANDARDS HANDBOOK	NUMBER: 20410U
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	APPROVED: <i>/S/ Richard H. Flourney</i> Deputy Administrator for Product Management

REASON FOR ISSUANCE

This handbook provides procedures and instructions for administering the Macadamia Tree insurance program beginning with the 2019 crop year.

MACADAMIA TREE INSURANCE CROP INSURANCE STANDARDS HANDBOOK

CONTROL CHART

Macadamia Tree Crop Insurance Standards Handbook							
	TP Page(s)	TC Page(s)	Text Page(s)	Exhibit Number	Exhibit Page(s)	Date	Directive Number
Insert	Entire Handbook						
Current Index	2	2	1-12	1-8	13-36	09-2018	FCIC-20410U

FILING INSTRUCTIONS

This handbook is effective for the 2019 and succeeding crop years and is not retroactive to 2018 crop year determinations. This handbook replaces any applicable procedures related to macadamia tree insurance contained in the 2018 Crop Insurance Handbook. (See Part 1, Para. 2.)

**MACADAMIA TREE INSURANCE CROP INSURANCE STANDARDS HANDBOOK
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PART 1 GENERAL INFORMATION AND RESPONSIBILITIES

1 Purpose

The purpose of this UG is to provide supplementary instructions for establishing macadamia tree crop insurance coverage in accordance with the Macadamia Tree CP (19-MT) and the Macadamia Tree LASH (FCIC-20410L).

In the course of delivering macadamia tree crop insurance, AIPs may develop forms based on their internal needs. The forms must be developed according to RMA's approved standards contained in this handbook or as specified in the FCIC 24040, DSSH, and provide all required information. Standards and examples contained in this handbook do not contain required statements. Refer to the FCIC 24040 to determine the applicable statements to be included on each form. The Collection of Information and Data (Privacy Act) Statement and the Nondiscrimination Statement must be included on any form the insured signs or must be provided to the insured on a separate form, for each form that is signed by the insured. A copy must be maintained by the AIP. The Certification Statement must be included on any form that the insured signs that collects information from the producer.

2 Background Information

The Macadamia Tree (MT) program is a product based on approval by the FCIC Board of Directors under section 508(h) of the Federal Crop Insurance Act. RMA is implementing the revised Macadamia Tree program for all insurable macadamia trees beginning with the 2019 crop year. The program is patterned after other tree-based dollar crop programs and provides an indemnity for trees that are either damaged by adverse weather, flood, and other listed perils during the insurance period.

In general, the FCIC 18010 Crop Insurance Handbook (CIH) applies to macadamia trees. However, various revisions to the specific procedures contained in the 2018 CIH have been made. The revised procedures are incorporated into this handbook and replace procedures contained in the CIH that do not specifically apply to the MT insurance program beginning with the 2019 crop year.

The MT insurance program is a Tree Based Dollar Amount of Insurance Crop (Plan Code 40) program. The terminology and instructions contained in the CIH that apply to the development of forms and responsibilities of the AIP and the insured apply to the MT program.

3 Availability

The revised MT program is available in counties where the current macadamia tree program is offered.

4 Eligibility

A. Macadamia Tree Program

The MT program is available to all persons with a share in a macadamia tree orchard in the counties listed in the actuarial documents for the purpose of producing a crop intended to be sold for human consumption in accordance with the BP, CP, and SP.

B. Ineligible Persons

Any person with a delinquent debt to RMA or an AIP or who is otherwise ineligible under the BP may not obtain Macadamia tree insurance coverage.

5 Important Dates

A. Contract Change Date

August 31, preceding the CD

B. Sales Closing Date

November 30

C. Cancellation and Termination Dates

November 30 before the beginning of the crop year

D. Premium Billing Date

August 15 of the crop year

E. Acreage Reporting Date

For new and carryover insureds, February 15

F. Beginning of the Insurance Period Dates

(1) For new policies: On January 1 following the SCD date unless the AIP notifies the insured that all or a part of the insured's trees are not insurable

(2) For carryover policies: January 1 of the crop year

G. Calendar Date for the End of the Insurance Period

December 31 of the crop year

6 Coverage Levels and Policy Changes

A. Coverage Levels

The insured may select only one coverage level for the insured crop, as specified in section 3 of the CP.

B. Tree Reference Price

The insured may select different tree reference prices by density practice. Additionally, the insured may elect a different percentage of the maximum price election available for each practice. For example, if the insured chooses 100 percent of the maximum tree reference price for one practice, the insured may choose 75 percent of the maximum tree reference price for another practice. (The insured's tree reference price, by stage and density practice, is the result of multiplying the price percentage elected by the insured by the applicable tree reference price contained in the AD.)

C. Policy Changes

Changes to the insurance coverage that would become effective for the current crop year are limited as follows:

(1) for new policies, changes may not be made after the SCD.

6 Coverage Levels and Policy Changes (Continued)

- (2) In subsequent years, for carryover policies, the insured may elect, prior to the sales closing date, a higher coverage level, higher price election (higher percentage of the tree reference price) or optional coverage on the applicable form.
- (3) The insured may:
 - (a) by the SCD, elect:
 - (i) a higher coverage level;
 - (ii) a higher price percentage; or
 - (iii) to add optional coverage (Comprehensive Tree Value Endorsement or Occurrence Loss Option).
 - (b) by the ARD:
 - (i) increase the insured share; or
 - (ii) report additional insurable trees such that the amount of protection increases more than ten percent. The additional trees must be inspected and accepted before insurance will attach.
- (4) If insured damage is evident at the time the election is made under Para. 6B(2) or if damage occurs after the SCD but before the date insurance coverage attaches for the crop year under Para. 6B(3)(a) or (b), any election or change made under Para. 6B(2) or (3) will not be effective for the crop year for which the election or reported change was made.

7 Additional Responsibilities

A. Agent Responsibilities

In addition to the responsibilities discussed in the CIH, the agent will assist the insured in completing the annual acreage report and advise insureds of their responsibility to comply with all of the reporting requirements of the policy.

- (1) The agent will assist the insured to ensure that the stage-blocks reported by the insured are established in accordance with the definition of stage found in the CP and the stage table in Para. 10D of this handbook.
- (2) The agent will assist the insured in correctly reporting the number of trees by block within the unit by utilizing plat maps, Grove Identification Maps, past acreage reports, and/or other relevant sources.

B. Insured Responsibilities

In addition to the responsibilities discussed in the CIH, the insured must accurately report the number of trees in each unit, by stage-block, as well as the applicable planting dates on the Macadamia Tree Producer Pre-Acceptance Worksheet, Grove Identification Map, and the acreage report. If the insured is unable to correctly report this information, the agent should be requested to provide assistance.

PART 2 MACADAMIA TREE PROVISIONS AND PROGRAM DETAILS

8 Insured Crop

A. Insured Commodity

The insured commodity is listed in the SP.

B. Insurability

In accordance with section 8 of the BP, the insured crop will be all macadamia trees in the county for which a premium rate is quoted in the AD:

- (1) that are grown in the county listed on the insured's application;
- (2) in which the insured has a share;
- (3) that are adapted to the production area;
- (4) that are at least one year of age on January 1 of the crop year;
- (5) that are grown for the production of macadamia nuts;
- (6) that have the potential to produce a yield typical of a healthy tree of the same age as the subject trees.

C. Exclusions

In addition to the exclusions listed in section 8 of the BP, the insured crop will not include any trees that:

- (1) are non-grafted seedlings (grown from seed);
- (2) are unsound, diseased, or unhealthy;
- (3) are toppled or leaning and that have not been reset (see the definition of reset);
- (4) were damaged by a cause of loss before the beginning of the insurance period. If trees suffered such damage the previous crop year, then insurance will not attach until the previous year's damage is determined, the insured submits a revised acreage report, and the trees are accepted by the AIP; or
- (5) are inspected by the AIP and considered unacceptable.

9 Causes of Loss

A Crop Provisions – Insured Causes

The CP provide crop insurance coverage only against the following causes of loss that occur within the insurance period:

- (1) adverse weather;

9 Causes of Loss (Continued)

- (2) flood;
- (3) earthquake;
- (4) volcanic eruption (including volcanic gases);
- (5) wildlife, unless proper measures to control wildlife have not been taken;
- (6) fire, unless weeds and other forms of undergrowth have not been controlled or pruning debris removed;
- (7) insects, diseases, and other pathogens, as specifically provided by the SP; or
- (8) failure of the water supply caused by an insured peril during the insurance period.

B. Crop Provisions – Exclusions

In addition to causes of loss excluded in section 12 of the BP, damage other than actual damage to the tree due to the causes specified above is not insured.

10 Establishing the Amount of Protection for the Unit

A. Amount of Protection (unit)

The dollar amount for the unit calculated by multiplying the number of insurable trees reported by the insured in each stage-block times the applicable reference price for the stage and density practice (standard density and high density) times the coverage level, times the applicable price percentage and total the results.

- (1) The applicable reference price for the stage and density practice is the Tree Reference Price shown in the AD.
- (2) Under the CTVE, the applicable reference price is the Maximum CTV Reference Price for the stage and density practice shown in the AD.

B. Certification

Applicants for insurance certify the numbers and ages of trees to be insured by completing a Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (shown in Exhibit 3 with instructions for completion).

- (1) The applicant identifies the blocks of trees in each unit and provides information about the numbers of trees and planting dates used to designate the stage-blocks that comprise each unit.
- (2) The applicant also provides a Grove Identification Map (shown in Exhibit 4 with instructions for completion) that shows locations of the stage-blocks identified in the worksheet.
- (3) Insureds are not required to submit new worksheets or maps in subsequent years of coverage unless changes occur which alter the numbers of trees and/or stage-block designation. (The insured may use the original worksheet to certify that no changes have occurred. [See Exhibit 3, Remarks instructions and sample worksheet.]

C. 75/25 Rule for Determining Tree Stages

- (1) Insureds must report trees by block on the Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (shown in Exhibit 3).
 - (a) For blocks in which 75% or more of the trees are the same stage, the insured may report the block as one stage-block.

Example 1: An insured has one unit of standard density trees containing 400 stage III trees, 50 stage II trees, and 50 stage I trees.

The block may be reported as follows:

Block No.	Stage-Block	Stage	No. of Trees
1	1-III	III	500

The insured elects a 75% coverage level and 100% price percentage. The reference prices for the standard density practice are contained in the AD (\$165 – stage III tree reference price; \$81 – stage III maximum CTV reference price). The insured’s reference prices are established by multiplying the applicable reference price (i.e. \$165 and \$81) by the 100% price percentage elected by the insured.

$$\text{Amount of protection}_{\text{Tree}} = (500 \times \$165) \times 75\% = \$61,875$$

$$\text{Amount of protection}_{\text{CTVE}} = (500 \times \$81) \times 75\% = \$30,375$$

Example 2: The 50 stage I trees in the preceding example could be reported as a separate block if there were a distinct change in planting pattern in one area of the orchard (e.g. end rows at the edge of an orchard).

The insured may report the blocks as follows:

Block No.	Stage-Block	Stage	No. of Trees
1	1-III	III	450
2	2-I	I	50

The standard density stage I tree reference price is \$102.

$$\text{Amount of protection}_{\text{Tree}} = [(450 \times \$165) + (50 \times \$102)] \times 75\% = \$59,513$$

$$\text{Amount of protection}_{\text{CTVE}} = (450 \times \$81) \times 75\% = \$27,338$$

The CTV Amount of Protection includes only the stage-III block. Stage-I blocks are not eligible for the CTVE.

10 Establishing the Amount of Protection for the Unit (Continued)

- (b) For blocks in which less than 75% of the trees are the same stage, the insured must separate the blocks into stage-blocks and report the number of trees in each stage-block.

Example: An insured has one unit of standard density trees containing 300 stage III trees, 100 stage II trees, and 100 stage I trees.

The block must be reported as follows:

Block No.	Stage-Block	Stage	No. of Trees
1	1-III	III	300
1	1-II	II	100
1	1-I	I	100

The instructions contained in the previous subparagraph C(1)(a) could also be applied to this example for reporting purposes.

The insured elects a 75% coverage level and 100% price percentage. The reference prices for the standard density practice are contained in the AD (tree reference prices - \$165 – stage III; \$137 – stage II; \$102 – stage I; maximum CTV reference price - \$81 – stage III). The insured's reference prices are established by multiplying the applicable reference price (e.g., \$165 or \$81) by the 100% price percentage elected by the insured.

$$\text{Amount of protection}_{\text{Tree}} = (100 \times \$102) + (100 \times \$137) + (300 \times \$165) \times 75\% = \$55,050$$

$$\text{Amount of protection}_{\text{CTVE}} = (300 \times \$81) \times 75\% = \$18,225$$

- (c) If the trees described in (c) were inter-planted, the three stage-blocks would be shown in the same location on the Grove Identification Map.

D. Tree Stages

Tree stages will be based on the number of crop years since the trees were set out as follows:

Event Crop Year	Stage as of January 1 Following Each Complete 12-Month Period Following Event Crop Year				
	Crop year 2020 – 2022	Crop year 2023 – 2025	Crop year 2026 – 2029	Crop year 2030 – 2033	Crop year 2034 +
Set Out Calendar Year - 2018	Stage I	Stage II	Stage III	Stage IV	Stage V

11 Acceptable Records

A. Acceptable Records

Acceptable records may be requested at the time of loss to substantiate the tree counts and stages reported by applicants/insureds. Insureds are not required to submit copies of their records to the AIP unless required by the loss adjuster at the time of claim settlement due to discovery of a discrepancy between the stage-blocks that were established for the unit and the actual numbers and stages of trees in the unit.

B. Record Types

The following types of records are acceptable, if the records indicate the location the number of trees and planting dates:

- (1) planting records (orchard management records); and
- (2) AIP recorded evidence, which includes pre-acceptance inspection reports, acreage reports, and any other documentation of tree ages that was used to establish insurance coverage for the trees.

C. Macadamia Tree Orchard Pre-Acceptance Worksheet and Grove Identification Map

- (1) Insureds should be encouraged to obtain and use acceptable records to prepare a Macadamia Tree Orchard Pre-Acceptance Worksheet and Grove Identification Map. (See Exhibits 3 and 4 for completion instructions and sample worksheet and map.)
- (2) The PAW and Grove Identification Map is submitted with the application. For subsequent crop years, the PAW is completed annually (self-certification allowed following year of application) and submitted by the ARD. The Grove Identification Map is also used in conjunction with the PAIR (see Exhibit 5).
- (3) The applicant/insured certifies:
 - (a) by stage-block for each unit, the numbers and age of trees to be insured and the applicable stage, by completing a PAW (see Exhibit 6 for instructions on determining tree age); and
 - (b) other information contained on the PAW.

D. Tree Numbers and Stage Determinations

- (1) A visual inspection is required to establish the unit value for claim settlement and will be completed by a loss adjustment contractor or company employee, who has been trained in loss adjustment procedures to determine the actual (existing) tree numbers and stages.
 - (a) If an inspection reveals no discrepancy between the reported and actual numbers and stages of trees, the loss adjuster (or trained company employee) should sign and date the PAW that was submitted by the insured to verify that the information was found to be accurate.
 - (b) If an inspection reveals a discrepancy between the reported and actual numbers and stages of trees, the loss adjuster can:

11 Acceptable Records (Continued)

- i. request to examine the records used by the insured to complete the Pre-Acceptance Worksheet and Grove Identification Map;
 - ii. establish the numbers of trees in each stage-block using the setting distances shown in Exhibit 7; or
 - iii. conduct a tree count.
- (2) AIPs may use a PAW and the instructions provided in Exhibit 3 to establish the stage-blocks of trees in each unit at the time of loss, if the information provided by the policyholder was not accurate. Both the insured and the AIP representative should sign and date the revised PAW.

12 Unit Division

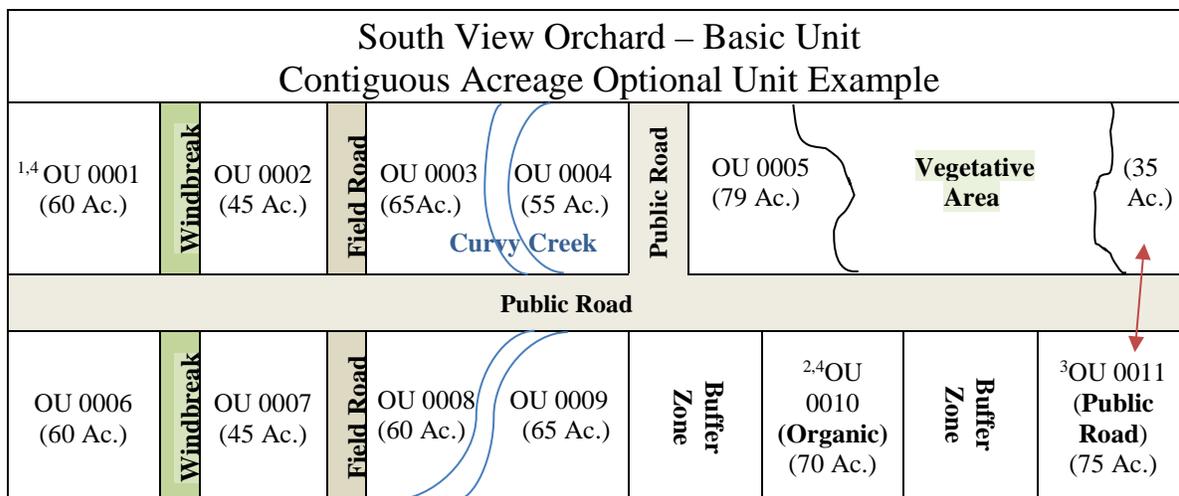
A. Basic Unit

A basic unit as defined in the BP will apply.

B. Unit Provisions – Section 34

- (1) Enterprise/Whole Farm Units. Provisions in section 34 of the BP that allow for enterprise and whole farm units are not applicable.
- (2) Optional Units
 - (a) Instead of establishing optional units by section, section equivalents, FSA FN or irrigated and non-irrigated practices as specified in section 34 of the BP, optional units may be established if each optional unit is:
 - (i) located on non-contiguous land;
 - (ii) a separate identifiable acreage of trees located on contiguous land:
 - (A) containing at least 40 acres of macadamia trees (see the SP for minimum acre requirement);
 - (B) is identified by a discernable boundary; and
 - (C) is established in accordance with this handbook; or
 - (iii) grown under an organic farming practice.
 - (b) Section 34(b)(1), (3), and (4) are not applicable.

12 Unit Division (Continued)



¹Examples of physical land features (windbreaks, streams, public and field roads, and a vegetative area) separating optional units are demonstrated between OU 0001 – 0009 and 0011.

²OU 0010 is a separate optional unit based on the organic practice.

³To qualify as an optional unit, the unit must contain at least 40 acres. Any adjoining acreage parcels divided by a physical land feature that do not contain at least 40 acres will be combined with the closest adjoining acreage parcel to form a single optional unit (e.g. OU 0011

⁴Optional units that cannot be separated into individual 40 acre acreage parcels may qualify as optional units based on physical land features provided the minimum 40 acre requirement is met for each optional unit (e.g. OU 0001 exceeds the 40 acre minimum but cannot be divided into separate acreage parcels containing 40 acres).

⁴The 40 acre requirement does not apply to optional units established based on the organic production practice (such units are authorized under section 34(c)(3) of the BP and section 2(b)(3) of the CP).

13 Service Forms

The following forms are required for the Macadamia Tree Program:

- A. **Application**
- B. **Policy Change**
- C. **Macadamia Tree Orchard Producer Pre-Acceptance Worksheet**
- D. **Grove Identification Map**
- E. **Macadamia Tree Orchard Pre-Acceptance Inspection Report**
- F. **Acreage Report**

PART 3 ENDORSEMENTS AND OPTIONS

14 Endorsements and Options

The Macadamia Tree Program has an endorsement and options that add supplemental coverage, exclude coverage, or otherwise modify the coverage.

A. Occurrence Loss Option

An insured with a Macadamia Tree Policy in effect may elect to obtain additional coverage on the insured trees through the use of this option (where premium rates for the option are provided on the actuarial documents). The option applies to all insurable trees of the insured crop in the county. The option is continuous and must be elected by the sales closing date for the crop year. The option may be cancelled in accordance with the cancellation provisions of the policy.

- (1) The insured may elect the OLO if he/she has not elected coverage under the CAT Endorsement.
- (2) An indemnity will be due under the OLO only if the amount of insured damage within all stands of damaged trees within the unit identified as a result of the most recent cause of loss is at least three percent (3%) of the unit value (unless otherwise specified in the SP).
- (3) The amount of the indemnity will be determined by:
 - (a) multiplying the total number of trees in each stage-block (in all stands of damaged trees identified as a result of the most recent cause of loss) times the insured's tree reference price and applicable percent damage for each stage and then totaling these values to determine the damage value;
 - (b) multiplying the damage value by the coverage level selected by the insured to determine the amount of insured damage;
 - (c) multiplying the amount of insured damage by the underreport factor (URF); and
 - (d) multiplying the amount of insured damage times the share.

If A(3)(d) is greater than A(2), the amount in A(3)(d) is the amount of indemnity due.

- (4) The total amount of indemnities payable on a unit during the crop year is limited to the lesser of the amount of protection for that unit or the unit value times the insured's share.

B. Comprehensive Tree Value Endorsement

The CTVE provides supplemental coverage for macadamia trees in addition to the coverage provided by the CP.

- (1) The insured may elect the CTVE if he/she has not elected coverage under the CAT Endorsement. The endorsement is continuous and must be elected by the SCD for the crop year. The endorsement may be cancelled in accordance with the cancellation provisions of the policy.

14 Endorsements and Options (Continued)

- (2) The CTV Amount of Protection (unit) will be determined by multiplying the number of insurable trees reported by the insured in each stage-block times the insured's maximum CTV reference price for each stage-block, adding these values, and then multiplying by the coverage level.
- (3) The CTV Unit Value will be determined by multiplying the number of insurable trees in each stage-block in the unit, as determined by the AIP, on the day before the loss (but not reduced for any insured damage that occurred during the crop year) by the insured's maximum CTV reference price for each stage-block, adding these values, and then multiplying by the coverage level.
- (4) The reference price offered under this endorsement is in addition to the tree reference price offered under the CP.
- (5) Only those trees in stage-blocks designated as stage III through stage V and considered fully damaged or destroyed are eligible for an indemnity under this endorsement.
- (6) If the insured elects both the OLO and the CTVE, the OLO will apply to the CTVE.
- (7) The coverage level and price percentage elected by the insured for the Macadamia Tree Policy will apply to the endorsement.

C. High Risk Land Exclusion Option

This option is available for macadamia trees on any land identified in the actuarial documents as high risk and allows the insured to exclude land identified as high risk in accordance with section 3(b)2 of the BP.

Acronyms

The following table contains RMA-approved acronyms used in this handbook.

Approved Acronym/Abbreviation	Term
AD	Actuarial Documents
ARD	Acreage Reporting Date
AIP	Approved Insurance Provider
APH	Actual Production History
BP	Basic Provisions (11-BR)
CAT	Catastrophic Coverage Endorsement
CIH	FCIC- 18010 Crop Insurance Handbook
CISH	Crop Insurance Standards Handbook
CLU	Common Land Unit
CP	Crop Provisions
CTVE	Comprehensive Tree Value Endorsement
DSSH	Document and Supplemental Standards Handbook
FAD	Final Agency Determination
FCIC	USDA Federal Crop Insurance Corporation
FSA	Farm Service Agency
GSH	FCIC-18190 General Standards Handbook
LAM	FCIC- 25010 Loss Adjustment Manual
LASH	Loss Adjustment Standards Handbook
OLO	Occurrence Loss Option
MT	Macadamia Tree (s)
PAIR	Pre-acceptance Inspection Report
PAW	Producer's Pre-acceptance Worksheet
RMA	Risk Management Agency
SCD	Sales Closing Date
SP	Special Provisions

Definitions

Adjustment factor – means a factor contained in the Special Provisions used to determine the percent of damage and damage value of fully and partially damaged trees for purposes of determining an indemnity.

Age (of tree) – means the number of complete 12-month periods that have elapsed since the month the trees were set out or were grafted, whichever is later. Age determination will be made for each unit, or portion thereof, as of January 1 of each crop year.

Amount of insured damage – means the dollar amount determined by multiplying the damage value by the coverage level.

Amount of protection (unit) – means the dollar amount for the unit calculated by multiplying the number of insurable trees reported by the insured in each stage-block times the insured's tree reference price for each stage-block, totaling these values, and then multiplying this result times the coverage level selected by the insured.

Block – means a stand of trees on acreage in a unit that shares a common boundary with no discernible change in the planting pattern.

CTV amount of insured damage – means the dollar amount determined by multiplying the CTV damage value by the coverage level.

CTV amount of protection – means the dollar amount (by unit) calculated by multiplying the number of insurable trees reported by the insured in each stage III – V block times the insured's maximum CTV reference price for each stage-block, adding these values, and then multiplying the result by the coverage level selected by the insured.

CTV damage value – means the dollar amount determined by multiplying the actual number of destroyed trees and the actual number of fully damaged trees in each stage III – V block in all the stands of damaged trees identified as a result of the most recent cause of loss times the insured's CTV reference price for each stage block, and then adding these values. The CTV reference price will be the maximum CTV reference price for trees destroyed and the minimum CTV reference price for trees fully (100-percent) damaged.

CTV underreport factor (unit) – means a factor determined by the AIP and used to adjust the insured's CTV indemnity in section 10(b)(2) when the insured has underreported the number of insurable trees. The factor is the result of dividing the CTV amount of protection by the CTV unit value, rounded to three decimal places, not to exceed 1.000.

CTV unit deductible – The dollar amount determined by multiplying the actual number of insurable trees in each stage II - V block in the unit on the day before the loss (but not reduced for any insured damage that occurred during the crop year) times the insured's maximum CTV reference price for each stage-block, adding these values, and then multiplying the result by the deductible.

CTV unit value – means the amount determined by multiplying the number of actual insurable trees in each stage III- V-block in the unit, as determined by the AIP, on the day before the loss (but not reduced for any insured damage that occurred during the crop year) times the insured's maximum CTV reference price for each stage-block, adding these values, and then multiplying the result by the coverage level selected by the insured.

Definitions (Continued)

Damage value – means the dollar amount determined by multiplying the actual number of insurable trees in each stage-block damaged by the most recent cause of loss times the insured’s tree reference price for each stage-block, multiplying this result for each stage-block times the percent of damage applicable to each stage-block, and totaling these values.

Damaged (damage) – means a tree that requires rehabilitation, removal, or reset due to injury to the main trunk, roots, or canopy (including leaning and toppling) due to an insured cause of loss that occurs during the insurance period.

Destroyed tree – means

- (a) For damage due to insured causes of loss, any insurable tree that:
 - (1) Is dead;
 - (2) Is a stage I – III trees that is toppled or leaning and the insured and the AIP agree that reset is not practical;
 - (3) Is a IV – V that is toppled or-leaning;
 - (4) Is missing; or
 - (5) Damage to the tree’s canopy is more than eighty (80) percent.
- (b) Destroyed trees are considered 100 percent damaged.
- (c) See section 13(d) and (i) for determining the percent of damage for destroyed trees.

Discernable boundary – means an identifiable physical land feature such as a windbreak; public, private, or field road; drainage ditch; stream; ravine; vegetative area (e.g., woods, wetland, grassland, etc); or other similar physical feature or a boundary.

Excess moisture (precipitation) – means direct or proximate rainfall in quantities sufficient to cause flooding.

Flood (flooding) – means an unusual and rapid accumulation or runoff of surface waters caused by excess moisture that results in the trees being toppled, caused to lean, or otherwise damaged.

Fully damaged – means

- (a) An insurable tree requiring reset.
- (b) A fully damaged tree will be considered 100-percent damaged but is not destroyed. (See section 13(d) and (i) for determining the percent of damage for fully damaged trees.)

Leaning (lean) – means a tree that is leaning more than 15 degrees from the upright position.

Limb adjustment percentage – means the percentage of normal limb breakage contained in the Special Provisions and used to determine the percent of damage for partially damaged trees.

Maximum CTV reference price – means the price per tree, by density practice and stage, listed on the actuarial documents for CTV that is used in calculating the CTV unit value, the CTV amount of protection, and the portion of the CTV damage value for destroyed trees for the Endorsement.

Minimum CTV reference price – means the price per tree, by density practice and stage, listed on the actuarial documents for CTV that is used in calculating the CTV unit value, the CTV amount of protection, and the portion of the CTV damage value for fully damaged trees for the Endorsement.

Definitions (Continued)

Partially damaged tree – means an insurable tree that requires rehabilitation for which damage to the tree’s canopy is more than 10 percent but not more than 80 percent. (See section 13(d) and (i) for determining the percent of damage for partially damaged trees.)

Occurrence loss option – means an option that may be elected by the insured that eliminates the unit deductible in accordance with section 15 of these Crop Provisions.

Rehabilitation – means the pruning of a damaged tree in an attempt to remove the damaged areas and allow the tree to recover.

Remove (removal, removed, removing) – means conducting the necessary operations to prepare the planting site for a replacement tree.

Replacement tree – means a tree set out in an existing orchard in the same location of a damaged tree that cannot be rehabilitated, reset, or is otherwise destroyed.

Reset – means restoring a toppled or leaning tree to approximately the same position the tree occupied before it was caused to topple or lean, and carrying out the cultural practices necessary to restore the tree. For loss adjustment purposes only, reset is applicable only for stage I – III trees.

Share – means in addition to the definition in section 1 of the Basic Provisions, an insured tenant or operator must have a lease with the owner of the macadamia orchard that requires him or her to maintain the macadamia orchard using accepted orchard management practices. The lease agreement must clearly state the tenant is entitled to his or her insured share of any indemnities under the Macadamia Tree Crop Provisions. A copy of the lease must be on file with the insuring company at the time insurance attaches. However, only for the purpose of determining the amount of indemnity, the insured’s share will not exceed the insured’s share at the time of loss.

Stage – means each full 12-month period based on the age of the tree.

Stage	Age (of Tree)
I	1-3 years
II	4-6 years
III	7-10 years
IV	11-14 years
V	15+ years

Stage-block – means a block in which at least 75% of the trees are the same stage, at the time insurance attaches.

Stand of damaged trees – means the area or areas within a unit where damage due to the same insurable cause of loss occurs, as established by the insurance provider for the crop year, and used to determine the damage value for the unit. If distinct areas of damaged trees within the unit cannot be established, the stand of damaged trees will be the entire unit.

Toppled – means a tree that is leaning and has an exposed root system.

Tree reference price – means the price per tree, by density practice and stage, listed on the actuarial that is used in calculating the unit value, the amount of protection, and the damage value.

Undamaged - means a tree that does not require rehabilitation, removal, or reset.

Definitions (Continued)

Underreport factor (unit) – means a factor determined by the insurance provider and used to adjust the insured’s indemnity in section 13(a) when the insured has underreported the number of insurable trees. The factor is the result of dividing the amount of protection by the unit value, rounded to three decimal places not to exceed 1.000.

Unit deductible – means the dollar amount determined by multiplying the actual number of insurable trees in each stage-block in the unit on the day before the loss (but not reduced for any insured damage that occurred during the crop year) times the insured’s tree reference price for each stage-block, totaling these values, and multiplying this result times the deductible.

Unit value – means unless otherwise specified on the Special Provisions, the amount determined by multiplying the actual number of insurable trees in each stage-block in the unit, as determined by the insurance provider, on the day before the loss (but not reduced for any insured damage that occurred during the crop year) times the insured’s tree reference price for each stage-block, totaling these values, and then multiplying this result times the coverage level selected by the insured.

Macadamia Tree Orchard Producer Pre-Acceptance Worksheet

Instructions for Completion

Items to be completed by the approved insurance provider are denoted [AIP].

ELEMENT	REQUIRED INFORMATION
Name of Applicant/Insured	Enter the name of the applicant or insured as it appears on the application for insurance.
Crop Year	Enter the crop year for which the worksheet is being completed.
County	Enter the name of the county in which the trees are located.
Agent [AIP]	Enter the name, address, and phone number of the agent who services or will service this contract, as applicable.
Contract Number [AIP]	Enter the contract number from the most recent Policy Confirmation. In the case of a new applicant, enter only the 2-digit state and 3-digit county code, e.g., XX-XXX.
Address of Applicant/Insured	Enter the mailing address of the applicant or insured as it appears on the application for insurance.
Phone Number of Applicant/Insured	Enter the area code and telephone number at which the applicant or insured can be reached during normal business hours.

INDIVIDUAL ORCHARD DATA:

Item #	REQUIRED INFORMATION
(1) Unit Number [AIP]	Begin unit numbering with 00010000BU or 00010001OU. Basic and optional units are allowed as defined in the Crop Provisions.
(2) Block Number	<p>By line, enter the block number as identified on the grove identification map.</p> <p>A block is a stand of trees on acreage in the unit sharing a common boundary with no discernible change in planting pattern (a homogenous planting pattern) and may or may not consist of different tree stages (age classes.) If there is a change in planting pattern that distinguishes areas of different tree ages within the stand (orchard), the insured can report the areas as separate blocks.</p>
(3) Section	<p>Enter the section number for the orchard location.</p> <p>(a) Complete a separate worksheet for each section. Note all section numbers in the “Remarks” section.</p> <p>(b) In the absence of sections, townships, and ranges, use the applicable legal description for the area to complete items (3) through (5). Enter the Farm/Tract/Field Number if available.</p>

Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (Continued)

Item #	REQUIRED INFORMATION
(4) Township (Twp.)	Enter the township number for the orchard location if available [(see item (3)(b)]. Otherwise, MAKE NO ENTRY.
(5) Range	Enter the legal description (range number) for the orchard location if available [(see item (3)(b)]. Otherwise, MAKE NO ENTRY.
(6) Crop	Enter the applicable commodity name as specified in the Special Provisions. MAKE NO ENTRY FOR TYPE.
(7) Acres in Block	Enter the acres occupied by the block, rounded to the nearest tenth.
(8) Tree Spacing	Enter the average tree spacing, in whole feet, for the block. If there is a wide variation in spacing, enter “varying.”
(9) Tree Count	Enter the total number of trees in the block (see Exhibit 7 for determining tree number). Enter an estimate (identify as “Est”) if accurate determination is impractical.
(10) Tree Stage	The stages (I - V) are shown on separate lines of the worksheet.
(11) Month & Year Set	Enter the month and year of set out or grafting of the trees in each stage shown on separate lines. If the trees of a stage were set out or grafted in different years, enter the date when most of the trees were set out or grafted.
(12) Tree Age	Enter the tree age in years (that corresponds to the date in (item 11) for the trees in each stage shown on separate lines.
(13) Number of Trees	Enter the number of trees in each stage on separate lines.
(14) Percent of Trees	For each line, enter the result of dividing the number of trees (item 13) by the tree count for the block (item 9), and multiplying by 100. Round the result to whole numbers; for example, report 65.48% as 65% and 65.84% as 66%.
(15) Stage-Block Number	Determine if the block should be reported as one or more stage blocks. If one of the percentages reported in item 14 is at least 75%, report the block as one stage-block. If none of the percentages reported in item 14 is at least 75%, report each block as a separate stage-block. Denote the stage-block on each line for which there are entries in item 14, by the block number and the tree stage. For example, if the block is No. 1 and 80% of the trees in the block are stage III, record the stage-block number as 1-III on each line for which there are entries in item 14; if the block is No. 2 and 50% of the trees in the block are stage III and 50% are stage I, record the stage-block numbers as 2-III and 2-I, respectively.

Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (Continued)

<p>REMARKS</p>	<p>Enter notes pertinent to the orchard certification, such as the source of information used to complete the worksheet, method of determining tree numbers, and description of the orchard.</p> <p>Once the initial certification (worksheet and grove identification map) has been provided, insureds who continue insurance coverage in subsequent crop years will be allowed to self-certify in the remarks section of the original pre-acceptance worksheet that no change has occurred. The insured will write “No change for XXXX Crop Year,” initial and date.</p> <p>If any changes (e.g., tree damage, change in the number of trees, stage changes, etc.) have occurred since the original certification that would alter the stage-block designations or the numbers of trees in each stage-block, an amended or revised worksheet and grove identification map should be completed for any blocks of trees affected by the change. The nature and date of the revisions or amendments should be noted in the remarks section.</p> <p>Note any trees that are uninsurable trees and the applicable reasons. Identify such trees on the Grove Identification Map.</p> <p>Enter the tree density per acre for each block (tree count divided by the acres in the block).</p>
<p>Signature of Applicant/Insured</p>	<p>Sign and date the worksheet.</p>
<p>Enter the page number of this form in the first blank and the total number of pages of this form for this contract in the second blank. For example: PAGE <u>2</u> OF <u>3</u> PAGES.</p>	
<p>Signature of Insurance Provider Representative</p>	<p>Sign and date the worksheet after conducting an inspection to verify the information provided on the worksheet.</p>

Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (Continued)

MACADAMIA TREE ORCHARD PRODUCER PRE-ACCEPTANCE WORKSHEET FOR ILLUSTRATION ONLY														
NAME OF INSURED/APPLICANT <p style="text-align: center;">Joe Farmer</p>					CROP YEAR <p style="text-align: center;">YYYY</p>		COUNTY <p style="text-align: center;">Hawaii</p>			AGENT <p style="text-align: center;">Frank Agent</p>			CONTRACT NUMBER <p style="text-align: center;">XX-XXX</p>	
ADDRESS OF INSURED/APPLICANT <p style="text-align: center;">RR X Hilo, Hawaii</p>					PHONE NUMBER OF INSURED/APPLICANT <p style="text-align: center;">808-XXX-XXXX</p>					XXXX Palm Drive Hilo, Hawaii 808-XXX-XXXX				
INDIVIDUAL ORCHARD DATA:														
UNIT NO. (1)	BLOCK NO. (2)	SECTION (3)	TWP (4)	RANGE (5)	CROP & TYPE (6)	ACRES IN BLOCK (7)	TREE SPACING (8)	TREE COUNT (9)	TREE STAGE (10)	MONTH & YEAR SET (11)	TREE AGE (12)	NUMBER OF TREES (13)	PERCENT OF TREES (14)	STAGE-BLOCK NUMBER (15)
0001-0000BU	1	Lot 1			Mac Trees				I					
						16.6	15 X 25	1,925	II	Oct. 2014	4	212	11%	1-III
						---	---	---	III	Oct. 2011	7	1,713	89%	1-III
									IV					
									V					
0001-0000BU	2	Lot 2			Mac Trees				I					
									II					
						16.5	15 X 25	1,914	III	Oct. 2011	7	1,914	100%	2-III
									IV					
									V					
								I						
									II					
									III					
									IV					
									V					
									I					
									II					
									III					
									IV					
									V					

Macadamia Tree Orchard Producer Pre-Acceptance Worksheet (Continued)

MACADAMIA TREE ORCHARD PRODUCER PRE-ACCEPTANCE WORKSHEET, CONTINUED		
<p>REMARKS</p> <p>Tree Density per Acre – 116 trees (15 X 25 tree spacing).</p> <p>(For subsequent crop years if no changes occur from the prior crop year, the insured will enter the following statement on a copy of the insured’s original Pre-acceptance Worksheet, initial and date)</p> <p>No change for _____ crop year. JF, MM/DD/YYYY</p>		
<p>I certify that the information provided above is true and correct to the best of my knowledge.</p>		
<p>SIGNATURE OF INSURED/APPLICANT</p> <p style="text-align: center;">Joe Farmer</p>	<p>DATE</p> <p style="text-align: center;">DD/MM/YYYY</p>	<p>PAGE <u> 1 </u> OF <u> 1 </u></p>
<p>SIGNATURE OF INSURANCE PROVIDER REPRESENTATIVE</p> <p style="text-align: center;">I. M. Inspector</p>	<p>DATE OF INSPECTION</p> <p style="text-align: center;">DD/MM/YYYY</p>	

The applicable Privacy Act statement must appear on the form (or back of the form). See the Document and Supplemental Standards Handbook (FCIC 24040) for the current statement.

Grove Identification Map & Instructions for Completion

Item:

- (1) Enter the name of the insured or applicant.
- (2) Enter the county where insurance attaches.
- (3) Enter the policy number.
- (4) Enter the crop.
- (5) Enter the unit number.
- (6) Enter the section, township, and range (or applicable legal description in place of section, township, and range) in which the insured crop is located.
- (7) Maps: Identify the acreage to be mapped using a unit designation.
 - (a) Identify highways and other significant landmarks that can be used to help identify orchards' locations.
 - (b) Outline macadamia orchard locations. Draw orchards in actual shapes and as close to scale as possible. Indicate the stages of planted trees, if identifiable. Indicate any acreage of trees that has been excluded from coverage by labeling as "excluded."
 - (c) Outline land ownership boundaries in red for each section involved. Indicate land ownership across section lines with tie bars.
- (8) Enter any relevant comments or information.

Grove Identification Map & Instructions for Completion (Continued)

GROVE IDENTIFICATION MAP (FOR ILLUSTRATION ONLY)

Page 1 of 1

Joe Farmer
(Name of Insured or Applicant)

Hawaii
(County)

XXXXXXXX
(Policy Number)

Crop: Macadamia Trees

Unit No.: 00010000BU

Legal Description: Township: Lot 1 and 2

Range: _____

Section: Lot 1

Stage V							
Stage IV							

Section: Lot 2

Stage V							

Section: _____

Section: _____

Comments:

Grove Identification Map & Instructions for Completion (Continued)

GROVE IDENTIFICATION MAP – Continuation Sheet (for illustration only)

Section: _____

Section: _____

Section: _____

Section: _____

Section: _____

Section: _____

Macadamia Tree Orchard Pre-Acceptance Inspection Report

The AIP must inspect all acreage of trees and complete a Macadamia Tree PAIR and map (see Exhibit 4) for insurable and uninsurable trees listed on the acreage report.

A. PAIR requirements

PAIRs may be initiated at the AIP’s discretion; however, inspection must be performed:

- (1) for all new applicants (the PAIR will be completed by December 31 prior to insurance attaching on January 1);
- (2) for new added units (trees not previously in the operation);
- (3) when any acreage of trees is added under an existing policy (new tree acreage not previously in the operation meeting insurability); or
- (4) the year following any substantial damage.
- (5) for damage or probable loss, when an indemnity will be claimed on any unit.

B. Unreported Trees

If the AIP finds unreported trees during the insurance period that has not been damaged by an insured peril, the AIP must prepare a revised acreage report that includes all unreported insurable trees not entered on the original acreage report.

C. PAIR Completion Instructions

The AIP will conduct the PAIR. The person completing the inspection must possess training equivalent to that of a loss adjuster.

ELEMENT	REQUIRED INFORMATION
Name, Mailing Address, And Phone Number of Applicant	Complete the appropriate information that corresponds with the insured.
Was Acreage Report Verified?	Answer “Yes” or “No”. If “No” explain why in the “REMARKS”.
Are other macadamia orchards owned or operated by the applicant or insured?	Answer “Yes” or “No”. If “Yes”, note the condition of the other macadamia orchards owned or operated by the insured. In addition, note the physical location of where the orchard is located. If necessary, enter additional comments in “REMARKS”.

Macadamia Tree Orchard Pre-Acceptance Inspection Report (Continued)

ELEMENT	REQUIRED INFORMATION
Is orchard managed by owner?	Check "Yes" or "No". If "No", enter manager's name, address, and telephone number.
Is orchard located in an established macadamia area?	Answer "Yes" or "No". If "No", explain the general growing conditions and where the orchard is physically located. Enter additional comments in "REMARKS".
Unit Number	Enter unit number from the Summary of Coverage after it is verified to be correct.
Variety	Appropriate variety name.
Acres in Block	Number of acres in the block, rounded to tenths.
Tree Spacing	Spacing in feet (e.g., 15 x 15). If spacing varies, enter "varying" and explain in "REMARKS".
Tree Count	Enter total number of trees in the block acreage. Enter an estimate (identify as "Est") if accurate determination is impractical.
Month & Year Set	Enter the month and year of: 1) Original planting, or 2) Replacement, if more than 10 percent of the trees on any unit have been replanted.
Tree Condition	Enter "acceptable" or "unacceptable" as applicable. Explain any "unacceptable" tree conditions in "REMARKS".
Rate Area	The correct rate class from the actuarial documents. Verify with the Summary of Coverage, and if the rate class is found to be incorrect, revise according to AIP instructions see the LAM.
Weed Control Measures	Enter one of the following: a. "CWC" Chemical Weed Control; b. "W/O CWC" Weed Control Without Chemicals; or c. "None" No Weed Control.
Excluded Trees	Identify trees which are uninsurable due to policy requirements such as trees not meeting age/leaf year requirement. Leave unit column blank and enter "Excluded" in column for such trees.
Result of Inspection Check "A" or Check "B"	Check "A" if: There are no indications of a change in the data reported. Check "B" if: There are changes needed. Enter "A Revised Acreage Report".

Macadamia Tree Orchard Pre-Acceptance Inspection Report (Continued)

ELEMENT	REQUIRED INFORMATION
Remarks	<p>Note any of the following:</p> <ol style="list-style-type: none"> (1) The number of trees in the original planting pattern. (2) If more than 10 percent of the trees on any unit have been replaced, enter the total number of trees per acre in new pattern, and the total number of new trees set out with the appropriate dates. (3) If any insurable tree acreage is set out in a new pattern (intersets), enter the number of trees per acre in a new pattern, and the total number of new trees set out with the appropriate dates. (4) Any unusual conditions in the orchard or local growing area. (5) Variations in tree spacing within an orchard. (6) Any reasons for not recommending insurance coverage. (7) Note any damage (e.g., disease, hail, freeze, freeze, etc.) and where such damage occurred. Explain in detail and provide the month/year of damage. <p>If more space is needed, enter additional information on a Statement of Facts form and attach it to the inspection report.</p>
Is application/acreage report recommended for acceptance?	Check "Yes" or "No" box, as applicable.
Orchard Inspector's Signature	Inspector signs report.
DATE	Inspector enters date of report (MM/DD/YYYY).

Macadamia Tree Orchard Pre-Acceptance Inspection Report (Continued)

MACADAMIA TREE ORCHARD PRE-ACCEPTANCE INSPECTION REPORT								
Applicant or Insured I.M. Insured			Country or Island HAWAII			Contract Number XX-XXX-XXXXX		
Applicant/Insured Address RR ONE HILO, HAWAII Telephone Number 808) XXX-XXXX						Note condition of other macadamia orchard owned or managed by applicant or insured N/A		
Is Orchard Managed by Owner? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES If "No" who manages it? Telephone Number: (808)XXX-XXXX						Is orchard located in an established macadamia area? YES		
UNIT NUMBER	VARIETY	ACRES IN BLOCK	TREE SPACING	TREE COUNT	YEAR SET	TREE CONDITION	RATE	WEED CONTROL MEASURES
00010000BU	KAU	10.0	15 X 25	1,160	MM/YYYY	ACCEPTABLE	D05	NONE
00010000BU	MAKAI	10.3	15 X 25	1,195	MM/YYYY	ACCEPTABLE	D05	NONE
00010000BU	KAKEA	5.2	15 X 25	603	MM/YYYY	ACCEPTABLE	D05	NONE
18 EXCLUDED TREES								
LOT 11	KAU	6.4	15 X 25	742	MM/YYYY	EXCLUDED	N/A	NONE
The Acreage Covered By The Above Contract Was Inspected On Date Shown Below With The Following Results: A. <u> X </u> Nothing Found To Require A Change In The Data Reported. B. _____ Data Reported Was Found To Be Such That _____ Was Prepared.					20 REMARKS UNIT 00010000BU Kau Variety: Trees on moderate slope, leeward exposure. UNIT 00010000BU Makai and Kakea Varieties: Some trees on windward exposure. LOT 11: Trees uninsurable. Does not meet minimum age requirements of crop provisions.			
Is application/acreage report recommended for acceptance? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO					Code Number XXXX	Orchard Inspector's Signature I. M. INSPECTOR	Date MM/DD/YYYY	

Macadamia Tree Age Determinations

Age/Leaf year is required to determine the stage of the trees and for insurability requirements in accordance with the CP.

To determine Age/Leaf Year use the following formula.

$$\begin{array}{rcl}
 X & = & \text{Policy Crop Year} \\
 Y & = & \text{Set Out/Graft Year} \\
 \text{Formula: } (X - Y) - 1 & = & \text{Age/Leaf Years}
 \end{array}$$

Crop year is defined in the CP as a period beginning with the date insurance attaches extending through the December 31 of the same calendar year and designated by the calendar year in which the insurance attaches.

Age is defined as the number of complete 12-month periods that have elapsed since the month the trees were set out or were recently grafted, whichever is later. An age determination will be made for each unit, or portion thereof, as of January 1 of each crop year.

Example: For crop year 2019, January 1, 2019, is used when determining age. Age in crop year 2019 on macadamia trees set out in April of 2011 is 7 leaf years.

The complete 12- month period is the twelve months that have passed since the crop was set out/grafted. The 12-month period is determined for the 2019 crop year as follows.

SET OUT/GRAFTED	12 MO. PERIOD	CROP YEAR	AGE
April 2011	Jan. 1, 2012	2012	0
	Jan. 1, 2013	2013	1
	Jan. 1, 2014	2014	2
	Jan. 1, 2015	2015	3
	Jan. 1, 2016	2016	4
	Jan. 1, 2017	2017	5
	Jan. 1, 2018	2018	6
	Jan. 1, 2019	2019	7

Setting Distances and Approximate Number of Trees Per Acre

		ROW SPACING (feet)																
		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
TREE SPACING (feet)	8	389	363	340	320	303	287	275	259	248	237	227	218	209	202	194	188	182
	9	346	323	303	285	269	255	242	230	220	210	202	194	186	179	173	167	161
	10	311	290	272	256	242	229	218	207	198	189	182	174	168	161	156	150	145
	11	283	264	248	233	220	208	198	189	180	172	165	158	152	147	141	137	132
	12	259	242	227	214	202	191	182	173	165	158	151	145	140	134	130	125	121
	13	239	223	209	197	186	176	168	160	152	146	140	134	129	124	120	116	112
	14	222	207	194	183	173	164	156	148	141	135	130	124	120	115	111	107	104
	15	207	194	182	171	161	153	145	138	132	126	121	116	112	108	104	100	97
	16	194	182	170	160	151	142	135	128	122	116	113	109	105	101	97	94	91
	17	183	171	160	151	142	134	127	121	115	110	107	102	99	95	92	88	85
	18	173	161	151	142	135	127	121	115	109	104	101	97	93	90	86	83	81
	19	164	153	143	135	127	121	115	109	104	100	96	92	88	85	82	79	76
	20	156	145	136	128	121	115	109	104	99	95	91	87	84	81	78	75	73
	21	148	138	130	122	115	109	104	99	94	90	86	83	80	77	74	72	69
	22	141	132	124	116	111	104	99	94	90	86	83	79	76	73	71	68	66

The above figures are for square and hedgerow plantings. Use the formula below for tree and/or row spacings not shown in the chart: Multiply the distance between tree rows by the spacing between trees within the row and divide into 43,560. Refer to the LAM for additional information on how to calculate the number of trees per acre.

Formula: 43,560 sq. ft. per acre ÷ tree spacing (L x W) = Number of trees per acre

Example: Tree row spacing 16.0 feet and tree spacing within rows 12.5 feet.

$$\frac{43,560 \text{ sq. ft.}}{16.0 \text{ ft.} \times 12.5 \text{ ft.}} = \frac{43,560 \text{ sq. ft.}}{200 \text{ sq. ft.}} = 217.8 = 218 \text{ trees per acre.}$$

Reference Pictures

The following reference pictures represent examples of macadamia trees under various conditions. The pictures and subtitles of each picture are intended to provide a general description of these conditions and an estimate of the degree of leaning, as applicable. Actual tree and damage conditions could be different than the conditions represented by pictures contained in this exhibit.

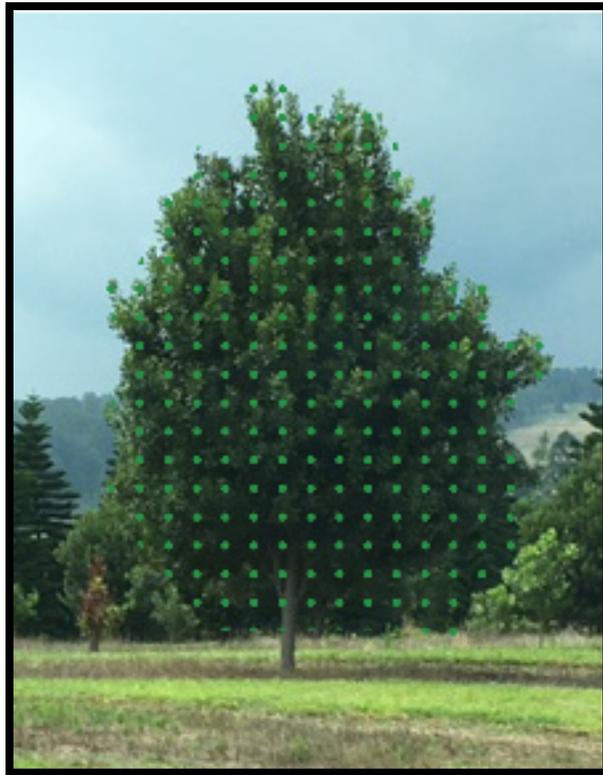


Figure 1: 100% Undamaged Canopy (AgriLogic)

Reference Pictures (Continued)



Figure 2: Tree with approximately 37% canopy loss (AgriLogic)

Reference Pictures (Continued)



Figure 3: Cyclone damage (image www.abc.net.au)

Reference Pictures (Continued)



Figure 4: Uprooted tree (Africanchristiancollege.org)

Reference Pictures (Continued)



Figure 5: Leaning tree at approximately 22 degrees (AgriLogic)