

Evaluation and Recommended Improvements of the Current Nursery Crop Insurance Program and Recommendations for Alternative Designs for Providing Insurance for Nursery Crops

Deliverable 3: Recommendations for Alternative Designs for Providing Insurance Coverage

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SECTION I. EXECUTIVE SUMMARY

This report was produced under contract for the United States Department of Agriculture's (USDA) Risk Management Agency (RMA) and addresses the requirements for a written report as an element of Deliverable 3 under Contract Number: D11PS18819/0002. The report provides recommendations for specific alternative designs to the current RMA Nursery Crop Insurance Program (Nursery Program). The report presumes familiarity with the current program and the issues and concerns elaborated in detail in the first two deliverables of the contract.

The alternative design recommendations in this deliverable are not intended to supplant the substantial recommended changes detailed in previous deliverables. This deliverable instead describes potential new alternative designs that could be implemented following full development efforts to address and at least partially obviate several of the fundamental concerns expressed by growers, agents, company personnel, and RMA staff concerning the challenges posed by the Nursery Program.

The nursery segment of the U.S. agricultural economy is extraordinarily complex and diverse. Nursery operations support wholesale and retail sales of a host of plants intended for ornamental purposes and for crop production. Many nursery operations are vertically integrated. In addition to production agriculture, nursery operations sometimes provide processing, marketing, landscaping, and transportation services. Plants sold by producers in the nursery segment range in size from plants less than half an inch tall to large trees.

As noted in the Contractor's Nursery Program Evaluation Reports, Federal Crop Insurance Corporation (FCIC) nursery crop insurance in several different manifestations has been available since 1989. Nursery crop insurance under the current Nursery Crop Provisions (08-073) is available in every state to producers operating a nursery that produces field-grown or container-grown plants itemized on published regional listings of eligible plants, provided the nursery receives at least 50 percent of its gross income from the wholesale marketing of nursery plants.¹

The nursery segment of the agricultural economy is changing in response to market demands. Nurseries are producing new species and varieties more often than was the case 10 years ago. For container-grown operations, no producer comments indicated a commitment to only the species and varieties that have been produced historically. Decisions about "planting," especially for containerized production, are driven by the markets (on both the input and sales sides). Furthermore, a major slow-down in new home construction has radically reshaped the character of inventories in nurseries in several regions of the country.

The Crop Insurance Act (U.S. Code Title 7, Chapter 36, Subchapter I, Section 1508 as amended, hereinafter "the Act") is the controlling legislative language for the FCIC insurance administered by RMA. Nursery crop insurance constitutes a small part of the total crop insurance program under the Act for all parameters but one: its share of the total liability. Between 1999 and 2010, nursery averaged 6 percent of the total program liability, but only 0.3 percent of policies earning premium, 0.2 percent of units earning premium, and 1.2 percent of premiums earned. Nursery's share of total premium was much lower than its share of total liability because the average

¹ As with any FCIC insurance, there are eligibility requirements and restrictions that apply.

earned premium rate was about one-fifth of the average earned premium rate for all other crops. This was due to two factors: a very high percentage of business at the Catastrophic Risk Protection (CAT) level and a much lower overall premium rate structure.

The Contractor believes replacement of the current structure for determining liability is an option RMA should consider. In Deliverable 2, the Contractor introduced a number of alternative crop insurance approaches for nursery. The variation among plants and among nursery operations does not permit a simple insurance design based on a single price. Consequently, all the alternative approaches require a pricing mechanism that addresses these variations. Furthermore, designs based on a limited number of prices will likely elicit criticism from the insureds, unless the option to adjust those prices is available. None of the proposed approaches reliably reflects the values of plants contained in a producer's inventory without introducing some risk that producers might be tempted to inflate the value of the inventory. Consequently, effective underwriting controls will be needed.

A fraction of the producer population has studied the Nursery Program policy sufficiently and understands and accepts its structure (and its limitations). While these insureds are frustrated by the paperwork requirements, simply addressing the recommendations of the evaluation from the earlier deliverables should provide a better product for this group. The revised documents and procedures should eliminate ambiguity and decrease disagreements about covered losses. Yet the proportion of nursery producers who find the existing Nursery Program attractive will likely continue to decline. Issues with inconsistencies between the inventory used to create the Plant Inventory Value Report (PIVR) and inventories following a loss are inevitable because of the nature of the nursery production cycle and the business models of nursery operations. The Contractor also believed the extensive use of CAT coverage will continue regardless of implementation of the recommended improvements.

The Contractor was not able to identify a "magic bullet" whose execution would fix the current Nursery Program so participation would reflect broader acceptance of the insurance, greater participation at additional coverage levels in lieu of CAT, and minimize administrative costs. Yet the current program, with thousands of prices and detailed inventories for establishing liabilities and losses, has not generated a high level of acceptance. Compliance with the requirements of the current program is costly to all concerned: insureds, agencies, Approved Insurance Providers (AIPs), and RMA.

Consequently, the Contractor believes replacing the current approach for determining liabilities and indemnities is an option RMA should seriously consider. Of the two options the Contractor presents, the Contractor prefers the Itemized Inventory/Area Valuation (II/AV) approach. The most attractive feature of the II/AV approach is that the insured determines when lesser insurance for a group of plants as a block is sufficient (eliminating much of the paperwork burden for those plants) and when precision is required (consequently introducing a substantial paperwork burden). There is no doubt simplicity would be welcomed. What cannot be predicted is whether the trade-off of less precision in exchange for less paperwork will be welcomed by the stakeholders in the event of a loss. Layering the effects of the simplification over the industry production cycles (which range from a few months to many years) and loss adjustment procedures will have consequences some stakeholders will not anticipate.

Due to this, the Contractor recommends another round of producer input sessions should RMA desire to move forward with a development along the recommended lines. These would target a specific potential pilot area and would address the implications of the new approach in detail (i.e., modeling a series of producer business structures, insurance alternatives under the approach, hypothetical loss events, and indemnities) to understand whether the new approach will have any greater acceptance than the existing insurance. The Contractor recommends proceeding with a full development effort based on collection of concrete evidence the alternate product would ultimately be welcomed by producers. Concerns with the current program are well documented, but without additional input it will not be clear what stakeholder perceptions of any new program may be.

SECTION II. INTRODUCTION

Nursery activities include propagation and sale of agricultural and horticultural plants. The 2007 Census of Agriculture (2007 Census) reported more than \$16.6 billion of nursery, greenhouse, floriculture, and sod sales in the United States on 50,784 farms.² Thus the nursery industry is a substantial element of the U.S. agricultural economy, albeit an element that is difficult to quantify precisely.

Producers of nursery plants face production risks that are insurable, and a sufficient number of producers are risk averse to support an actuarially-sound nursery crop insurance program. Yet, while the total production value of the crops insured under the Nursery Crop Insurance Program is high, the insured liability is a modest fraction of the production value (about 25 percent in 2007 and about 12 percent in 2012)³ and the participation in the program is likewise limited to a relatively small fraction of nursery crop producers.

The most notable element of the nursery segment of the U.S. agricultural economy is its complexity. Plants sold by producers in the nursery segment range in size from tiny plants in tray liners with cells less than an inch across to trees whose size allows the creation of instant landscapes. Nursery plants include mosses (though none are insurable), lycopods, ferns, cycads, conifers, and flowering plants. Flowering nursery plants include monocots (bamboos, grasses, orchids, and palms) and dicots (broad-leaved plants); they include annuals, biennials, and perennials. In addition to herbaceous perennials, insurable perennial nursery plants include vines, shrubs, and trees. Furthermore, some perennial nursery crops are evergreen, while others are deciduous. This tremendous diversity of insurable nursery crop plants is reflected in the extensive Eligible Plant List and Plant Price Schedules (EPL/PPS) RMA publishes. RMA indicated in the solicitation for this project that the 2010 EPL/PPS lists included 25,500 plants when species, variety, and size were considered.⁴

Further compounding the complexity of the nursery segment of the U.S. agricultural economy, the producer population is widely scattered and characterized by an extreme range of financial resources and sophistication. Nursery production is sold directly into retail markets and to a variety of wholesale markets (production agriculture, landscapers, retail outlets, etc.). Many nursery operations are vertically integrated, including production, processing, marketing, and transportation activities.

In accordance with the provisions of Section 12 of the Basic Provisions, insurance for nursery crops is provided for unavoidable damage caused by the following causes of loss occurring within the insurance period:

² USDA, NASS, 2009, 2007 Census of Agriculture, Table 2, page 9.

³ Nursery participation is difficult to accurately measure. The Nursery Program specifically excludes insurance of about \$4 billion of sales from Census “Nursery, Greenhouse, Floriculture, and Sod” categories. The program also excludes insurance of production from operations that do not have at least 50 percent of their gross income from sales into wholesale nursery crop markets. It is worth noting that the program insures multiple years’ potential sales in the form of growing inventory. As a result, the liability in many operations could easily exceed the value of annual sales. In addition, the overall liability insured under the nursery program is low relative to value of sales because of the low level of participation and the extensive coverage at the CAT level.

⁴ Solicitation: Attachment – Operation of Current Nursery Crop Insurance Program, page 1.

- (1) Adverse weather conditions, except as specified in section 10(c) or the Special Provisions;
- (2) Fire, provided weeds and undergrowth in the vicinity of the plants or buildings on an insured site are controlled by chemical or mechanical means;
- (3) Wildlife;
- (4) Earthquake; or
- (5) Volcanic eruption.

While this list is familiar to those who participate in FCIC crop insurance programs, for nursery crops insurance is also provided against the following if due to a cause of loss specified in list above that occurs within the insurance period:

- (1) A loss in plant values because of an inability to market such plants, provided such plants would have been marketed during the crop year (e.g. poinsettias that are not marketable during their usual and recognized marketing period of November 1st through December 25th);
- (2) Failure of the irrigation water supply; or
- (3) Failure of, or reduction in, the power supply.

In addition to the causes of loss excluded in Sections 12(a) and 12(c) through 12(f) of the Basic Provisions, the Nursery Program does not insure against losses caused by:

- (1) Disease or insect infestation, unless:
 - (i) A disease or insect infestation occurs for which no effective control measure exists; or
 - (ii) Coverage is specifically provided by the Special Provisions;
- (2) The inability to market the nursery plants as a result of:
 - (i) The refusal of a buyer to accept production;
 - (ii) Boycott; or
 - (iii) An order from a public official prohibiting sales including, but not limited to, a stop sales order, quarantine, or phytosanitary restriction on sales;
- (3) Cold temperatures, if cold protection is required in the EPL, unless:
 - (i) The insured has installed adequate cold protection equipment or facilities and there is a failure or breakdown of the cold protection equipment or facilities resulting from an insurable cause of loss. However, the insured plants must be damaged by cold temperatures and the damage must occur within 72 hours of the failure of the cold protection equipment or facilities unless the insurer establishes repair or replacement of the cold protection equipment or facility was not possible between the time of failure or breakdown and the time the damaging temperatures occurred; or
 - (ii) The lowest temperature or its duration exceeded the ability of the required cold protection equipment to keep the insured plants from sustaining cold damage;
- (4) Collapse or failure of buildings or structures, unless the damage to the building or structures results from an insured cause of loss;
- (5) Any cause of loss, if the only damage is a failure of plants to grow to an expected size; or
- (6) Failure to follow recognized good nursery practices.

Due to the complexity of the crop, the producer population, and the risks insured, the current insurance under the Nursery Program is also quite complex. The program is summarized in a

factsheet (Program Aid Number 1894) and detailed in policy, underwriting, and loss adjustment documents. The policy documents include:

- Common Crop Insurance Policy (11-br),
- Nursery Crop Provisions (08-073),
- Special Provisions,
- Nursery Peak Inventory Endorsement (08-073a),
- Nursery Crop Provisions Rehabilitation Endorsement (06-073b),
- Nursery Growers Pilot Price Endorsement (06-073c), and
- Catastrophic Risk Protection (CAT) Endorsement (09-cat-4).

Together, these policy elements provide producers a wide range of coverage options. The underwriting and loss adjustment documents, which reflect both the coverage options available to producers and the complexity of the nursery industry include:

- Eight regional EPL/PPS which identify the plants that are insurable and specify cold protection requirements,
- The 2013-2 Nursery Underwriting Guide (24090-2),
- The Loss Adjustment Manual (LAM) Standards Handbook (25010-1), and
- The Nursery Loss Adjustment Standards Handbook (12-25750).

The underwriting materials available from RMA also include the FCIC Nursery Insurance Software[©] 2000-2009 by DataScape, LLC. The software assists “wholesale nursery growers in establishing their insurable plant inventory value. The software lists all insurable nursery plants and their maximum insurable value. The software also specifies plant insurability requirements, including storage protection requirements for containerized plants and hardiness limitations for all plants.”⁵

The underwriting for insurance under the Nursery Program requires the insured prepare a Plant Inventory Value Report (PIVR), a report based on a detailed inventory of the insurable assets at the time insurance attaches. Since an insured’s inventory fluctuates during a crop year, the insured is given two opportunities to revise the PIVR.⁶ The premium for an increased PIVR value is calculated from the month the increase is effective until the end of the insurance year.

Insureds whose policies have additional coverage can also purchase a Peak Inventory Endorsement to provide coverage greater than that based upon the PIVR then in effect for a specific period during the insurance year. The premium for the endorsement is calculated for the period (i.e., months) the endorsement is effective. The Peak Inventory Endorsement does not need to run to the end of the insurance year. Any one or all of the basic units (plant types) may be included on an Endorsement.

Simply establishing a nursery policy requires an enormous effort by the insured and the agent/agency. In the event of a loss, the adjustment procedures require two additional inventory valuations. The first establishes the value of all insurable plants in the inventory at the time of the loss (the Field Market Value A or FMV A), while the second establishes the value of all

⁵ USDA, RMA, 2012, Information Browser, Nursery Software, <http://www.rma.usda.gov/tools/eplpps/>, accessed May, 2012.

⁶ But only to increase liability, if the inventory decreases, a revision is not allowed.

insurable plants after a loss (the Field Market Value B or FMV B). The positive difference between the two values (FMV A minus FMV B) is the total loss for the purpose of insurance.⁷ Factors reflecting the accuracy and precision of the initial or revised PIVR are used to determine if the amount of total loss for the purpose of insurance (i.e., FMV A minus FMV B) should be reduced. After any such reduction, the deductible must be subtracted to determine the amount of an indemnity. The additional inventories required during loss adjustment add to the burden and to the trauma of a loss, and are unpopular with growers who have experienced a loss.

This report continues with an introduction to the context for consideration of alternative designs for a nursery crop insurance program including brief summaries of nursery production practices, available nursery production data, a characterization of recent trends in the industry sector, and a brief history of the Nursery Program. The Contractor then introduces two alternatives to the existing Nursery Program and provides analysis with regard to these alternatives. The Contractor provides an assessment of the anticipated relative costs of development of the alternatives as compared to the existing Nursery Program before introducing specific recommendations. The Contractor notes the charge stipulated in the contract was not to develop all the insurance components for an alternative approach. Instead the charge was to discuss the pertinent aspects of these two approaches which, subject to a full development effort, might provide a viable alternative insurance design to the existing Nursery Program.

II.A. Production Practices

Propagation of nursery plants can be as simple as planting seed and maintaining the resulting seedlings or as complex as the sterile harvest of a meristem,⁸ culturing the meristem in a laboratory, stimulating shoot development in culture, harvesting shoots from the cultured tissues, rooting the shoots, planting out the rooted shoots, growing a separate root stock, harvesting a scion from the cloned plants, grafting the scion onto the rootstock, and maintaining the plants until sale.

Some nurseries produce a single species (though often more than one variety); others produce dozens of species and varieties. Highly specialized operations may focus on production of a limited number of species in a limited number of sizes include those producing tray “liners,” grafted fruit trees for commercial fruit producers, and bedding plants.

The incredible variety of the nursery plants insurable under the Nursery Program is evident in the eight regional EPL/PPS, which range in length from 64 pages for Alaska to 1,084 pages for the southeastern states including Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, South Carolina, and Tennessee. While many nurseries produce relatively small numbers of species, when varieties and sizes are also considered in their production diversity, even a one-acre operation might be characterized by hundreds of different inventory entries for the purposes of the current Nursery Program.

⁷ Since unreported plants and plants not insured because of the unit structure may be lost, the insured may have a financial loss that is markedly different from the loss for insurance purposes. This is no different from other asset-based insurance (e.g., home-owners content insurance) in that uninsured assets may be lost without affecting the size of the indemnity payment.

⁸ The growing tip of a stem or, less often, a root.

Field-grown Production

Field-grown nursery production includes bare root and ball-and-burlap harvest practices. Bare root production involves harvest after the plant has entered dormancy, removal of the soil from the root mass, and often a management practice to limit desiccation of the root mass. Storage options for bare root stock includes cold storage, packing the roots in a moist medium (e.g., moss, paper, etc.), and treatment with anti-desiccants (e.g., dips, gels, and clay). Dormant groundcovers, perennial grasses, and broadleaf perennials (e.g., deciduous shrubs and trees) can all be managed as bare root stock. Small conifers for Christmas tree planting and reforestation are also managed as bare root stock. The major advantages of bare root plants are the light weight of the plants and relatively low cost for production and shipping.

Shrubs and trees that are dug with a portion of their root mass covered with soil are identified in the industry as ball-and-burlap (B&B). B&B is a suitable harvest mechanism for evergreen and deciduous plants, conifers and flowering plants, and woody trees and palms. Large trees can be moved using this approach. One producer talked of moving trees with 15 ton root balls. Most B&B harvests are done while the plants are dormant. Hand harvesting B&B plants requires trained staff, while mechanical harvesting requires specialized machinery.

Drainage is essential for field-grown production. Soil types can vary from sandy soils (better for bare root production) to silty-clay loams (better for B&B production). Soils can be improved by the addition of organic matter. Pulverized, granular, pelletized and hydrated lime; gypsum (calcium sulfate dihydrate), and acidifiers (aluminum sulfate and elemental sulfur) can be used to adjust the soil's pH. Nitrogen phosphorus, potassium, and micronutrient content can be tested and soil amendments can correct deficiencies. Catching irrigation and rain water and recycling excess water may require construction of a drainage system and holding ponds.

Once general bed preparation and drainage grading is complete, the soil may require sterilization. Perennial weeds are controlled using fumigation or systemic herbicides. Most planting is done in the spring, with limited fall planting for some crops. If irrigation uses buried lines, these are installed before the beds are planted. On some field-grown nursery sites, cover crops help to control weeds and erosion.

Most field-grown nursery production requires at least some supplemental irrigation. Field irrigation systems include either portable overhead or drip irrigation systems. After planting, weeds are generally controlled with cultivation, herbicides, mulching, mowing, and/or weeding by hand. Other considerations for field-grown nursery production include acclimation of planting liners, pest (insect, disease, and wildlife) control, pruning, staking, harvesting procedures/equipment, holding procedures, and shipping procedures.

Container Production

Container nursery production includes growing plants in liners, pots, or bags. Generally, metal and clay pots that were used historically have been replaced by blow-molded or injection-molded plastic containers in sizes up to several hundred gallons. Some production occurs in smaller fiber containers (pressed paper and/or peat). Except for production of annuals and chrysanthemums, the majority of container production occurs in 1, 3, 5, 7, 10, 15, and 25 gallon containers. Substantial improvements have occurred in the manufacture of plastic containers,

including incorporation of ridges, holes, and baffles to control root growth. A variety of containers are available, including soft-walled polymer bags with gusseted bottoms, low profile bottomless containers for production on plastic or woven ground cloth, double wall container systems (pot-in-pot and pot-in-tray systems) that can hold pots as large as seven gallons), and field-grown fabric bags made from porous synthetic fabrics.

Site selection is less critical for container production. A container bed can be built on any soil type as long as drainage is possible by natural slope or grading. Container production areas include the production beds, the irrigation/pond system, and the roads. Beds are often covered with impervious barriers such as black plastic or with clam shells, gravel, mulch, or woven nursery cloth. Regardless of the surface, bed drainage is an essential management practice. Permanently set irrigation allows less flexibility in bed layout than drip irrigation. Catching irrigation and rain water and recycling excess water may require construction of a drainage system and holding ponds. Some beds have incorporated drainage tile systems.

Container-grown plants require more frequent fertilization than field-grown production. Very few nutrients are available from the production medium. Slow-release, granular, or liquid fertilizer generally supply nitrogen, phosphorus, and potassium as well as micronutrients. The slow-release and granular fertilizers can be incorporated into the potting medium or the surface of the medium. Most granular fertilizers do not last an entire growing season and need to be reapplied. Slow-release fertilizers have largely replaced traditional granular fertilizers in nursery production. These products package nutrients in resin or polymer capsules. The capsule is engineered to control the release of nutrients with release times as long as a year. Liquid fertilizers are generally applied with the irrigation water.

Irrigation is required for container production, with daily irrigation during the growing season in many locations. Container bed irrigation can be supplied overhead, by drip systems, or by subsurface or capillary systems. Overhead irrigation uses the greatest volume of water while capillary systems use the least. A relatively new approach for overhead irrigation involves application of smaller pulses of water. Pulsed irrigation uses less water and leaches less fertilizer, but requires a more sophisticated control system. In the United States, capillary systems are used primarily for greenhouse rather than open bed production.

Due to the close plant spacing, weeds are more difficult to control in containerized production. Hand weeding, herbicides, and substrate weed barriers are common control approaches. Other considerations in container production include acclimation of planting liners, container type and size, cold protection, sun shading, wind protection, planting medium, staking, pest (insect, disease, and wildlife) control, pruning, holding procedures, and shipping procedures.

Production of Grafted Material

Grafting is a horticultural practice wherein tissues from one plant are joined to those of another. Grafting is most commonly used in asexual propagation of commercially grown plants for horticultural and agricultural uses. For most grafts, one plant (the rootstock) is selected for the characteristics (e.g., rapid growth, disease resistance) of its roots. The other plant (the scion) is selected for its stems, leaves, flowers, or fruits.

Most large-scale production of grafted material is accomplished with bud grafts. In bud grafting, a dormant side bud (also called an eye) from one plant is grafted onto the stem of a plant being used for the rootstock. For successful grafting to occur, the vascular cambium tissues of the rootstock and scion must be placed in contact. A “graft union” forms as the two cambia produce new vascular tissues.

Depending on locale, species, and available human resources, bud grafts are made relatively early in or near the end of the growing season. A dormant bud is inserted into a shallow cut through the bark of the rootstock plant. There are many styles of bud grafting depending on the cut of the bud and method used to fit the bud to the rootstock; shield budding (describing the shape of the bud cut) is the most commonly used method. The tissues of the rootstock and scion must be kept alive until the graft union has formed, usually after a few weeks. The bud is generally bound in place to facilitate the formation of the graft. The wound may be sealed using the binding tape or a chemical seal to limit drying. When the graft union has formed, the scion is encouraged to grow by pruning off the stem of the rootstock plant just above the grafted bud.

Production of grafted material can be done in field or using containerized rootstock. Field-grown rootstocks are used for the largest scale production operations. The grafted plants are generally grown for a year (or less often for two) following the grafting. In these large-scale operations, most harvests from the fields are of bare root plants.

Other considerations for grafted production include maintaining the dormancy of the scion stock until the grafts are made and (because the graft union is weaker than a typical stem), harvesting and holding procedures. Otherwise, grafted production is the same as the container or field-grown production described previously.

The Nursery Crop Provisions specifically exclude insurance of stock plants “grown solely for harvest of buds” (08-073 (Rev. 10-06), section 8(i)). Therefore, the plants from which the scions are harvested, the most valuable asset in a nursery operation that propagates grafted plants, are not insurable under the Nursery Program. The rootstock may be uninsurable in its earliest stages because of size limitation. Finally, when the grafted plants are pruned to stimulate growth of the scion, they may once again fall outside the insurable size categories, except in the new “seedling” category.

II.B. Nursery Production Data

Of the almost \$144 billion of crops reported sold in the United States by the 2007 Census more than \$16.6 billion was attributed to “Nursery, Greenhouse, Floriculture, and Sod” production on 50,784 farms.⁹ The Nursery Program specifically excludes insurability of some of the Census nursery, greenhouse, floriculture, and sod categories. Furthermore, many aquatic plants from that collective grouping are not listed in the EPL/PPSs and seedlings, liners, and plugs not grown in approved containers are not insurable under the Nursery Program. Production of excluded crops is estimated at almost \$4 billion (Table 1).

⁹ USDA, NASS, 2009, Census of Agriculture, Tables 1 and 2. The value \$16.6 billion does not include the values for short rotation woody crops and Christmas trees, included in some 2007 Census reports of nursery, greenhouse, floriculture, and sod crops.

Table 1. Operations Excluded from the Nursery Program and their Sales in 2007

Crop	Farms			Sales
	Protected	Open	With Sales	
Bulbs, corms, rhizomes, and tubers-dry	247	717	896	90,304,021
Cut flowers and cut florist greens	1,316	4,343	5,056	711,369,050
Flower seeds	191	320	491	35,995,358
Greenhouse fruits and berries	249	n/a	244	11,422,793
Greenhouse vegetables and herbs	4,075	n/a	4,056	553,034,688
Mushrooms and mushroom spawn	>197	n/a	>195	1,019,214,843
Sod	n/a	1881	1,878	1,353,422,529
Vegetable seeds	361	805	1097	99,694,490
Total				3,874,457,772

Source: The Contractor's Research Department after USDA, NASS, 2009, Census of Agriculture, Table 37, page 44.

The Nursery Program also excludes production from operations that do not have at least 50 percent of gross income from sales into wholesale nursery crop markets. The best data on nursery production by county, type, practice, and market are those in the 2009 Census of Horticultural Specialties (Horticulture Census). The Horticulture Census was a follow-up survey to the 2007 Census of Agriculture and surveyed all operations that reported horticultural crop sales of \$10,000 or more on the 2007 Census (thereby excluding 14,717 farms documented in the 2007 Census). The Horticulture Census addresses crops including aquatic plants, bedding plants, Christmas trees, commercial vegetable transplants, cut cultivated florist greens, cut flowers, dry bulbs, flower seeds, greenhouse-produced vegetables, ground covers, potted flowering plants, propagation materials, short-rotation woody crops (e.g., pulpwood crops), shrubs, sod, trees (including fruit and nut trees), unfinished or pre-finished plants, vegetable seeds, vines, and other nursery or greenhouse plants.

For the purposes of crop insurance, nursery crops exclude plants grown to produce Christmas trees, cut flowers, cut greens, dry bulbs, fruits (as opposed to fruit plants), seeds, short-rotation woody crops, and vegetables (as opposed to vegetable plants), but include the horticultural categories in addition to the limited grouping the Horticulture Census categorizes as "nursery crops." The additional horticultural categories include, at a minimum, annual bedding plants, potted herbaceous perennials, and potted flowering plants.

In 2009, there were 3,623 producers with wholesale sales of annual bedding plants (including vegetable plants). Approximately half these operations sell exclusively into the wholesale markets. The wholesale sales of all annual bedding plants were almost \$1.8 billion, with 89 percent of sales in flowering plants for landscaping and the remainder from vegetables for home gardening.¹⁰ Wholesale sales of bedding plants included approximately 66 million flats of landscape flowering plants¹¹ and 8 million flats of vegetable plants.¹² Wholesale sales of potted

¹⁰ USDA, NASS, 2010, 2007 Census of Agriculture Census of Horticultural Specialties (AC-07-SS-3), Table 4. Annual Bedding/Garden Plants Sold – Total: 2009.

¹¹ Ibid., Table 5. Annual Bedding/Garden Plants Sold – Flats: 2009.

¹² Ibid., Table 5. Annual Bedding/Garden Plants Sold – Flats: 2009.

annual plants for landscaping included approximately 500 million plants, 71 percent of which were in pots less than 5 inches in diameter.¹³ Consequently, most of the annual plants insurable under the nursery program are young and in relatively small containers.

In 2009, there were 2,975 producers with wholesale sales of potted herbaceous perennials. Some of these producers also produce bedding plants. The Census data is not reported in a manner that allows separation of the producer population into individuals with single production/marketing strategies and those who pursue multiple strategies. The wholesale sales from these perennial plants were almost \$700 million. More than 55 percent of the operations producing wholesale potted herbaceous perennials sell exclusively in wholesale markets.¹⁴ More than a third of the potted herbaceous perennial plants are chrysanthemums, many of which are sold in very small pots (just a few inches in diameter). The majority¹⁵ of non-chrysanthemum perennial potted plants are sold in one gallon containers.¹⁶

In 2009, there were 2,190 operations producing potted flowering plants with wholesale sales of almost \$780 million¹⁷ and 1,473 operations producing potted foliage plants with wholesale sales of almost \$500 million.¹⁸ Data in the Horticulture Census suggests some of these operations specialize in production of a very limited number of species and a limited range of pot sizes, while others produce a wide range of species in a variety of pot sizes. There were also 975 operations producing cuttings, plug seedlings, liners, tissue cultured plantlets, and prefinished plants for the wholesale markets. Of these, 905 sold only to wholesale customers, while 70 had both wholesale and retail sales.¹⁹

Regarding the production specifically addressed in the Horticulture Census as “Nursery Stock” (i.e., woody trees and shrubs for landscape planting, ornamental grasses, and bare root herbaceous perennials), there were 8,441 operations with production in excess of \$3.85 billion.²⁰ This includes plants sold bare root, B&B, or in containers. Production of Nursery Stock is reported in the Horticulture Census for every state. The total reported sales of Nursery Stock equals approximately 125 percent of the value of production insured under the Nursery Program in 2009. However, this comparison does not accurately reflect the level of participation in the Nursery Program since a portion of the wholesale sales of annuals (\$1.8 billion), containerized herbaceous perennials (\$0.7 billion), potted foliage and flowering plants (\$1.28 billion), and planting stock (\$1.54 billion of plug seedlings, liners, tissue cultured plantlets, and prefinished plants) are also insurable under the Nursery Program.

Assuming approximately ten percent of the sales value from nursery operations identified as Nursery Stock in the 2007 Census is not insurable because of the retail sales for those operations, the potentially insurable liability in Nursery Program operations based on sales (and not including retained inventory for production requiring more than one year) would be

¹³ Ibid., Table 6. Annual Bedding/Garden Plants Sold – Pots: 2009.

¹⁴ Op. cit., Table 8. Annual Bedding/Garden Plants Sold – Total: 2009.

¹⁵ 53 percent with percentages ranging from 38 percent to 88 percent by plant grouping.

¹⁶ Op. cit., Table 8. Potted Herbaceous Perennial Plants Sold: 2009.

¹⁷ Ibid., Table 9. Potted Flowering Plants for Indoor or Patio Use Sold: 2009.

¹⁸ Ibid., Table 10. Foliage Plants for Indoor or Patio Use Sold – Total: 2009.

¹⁹ Ibid., Table 26. Cuttings, Plug Seedlings, Liners, Tissue Cultured Plantlets, and Prefinished Plants Sold: 2009

²⁰ Ibid., Table 18. Nursery Stock Sold; 2009.

approximately \$11.4 billion. A comparable value is obtained by analysis of the data in the Horticulture Census. Yet only about a fifth of that value was insured under the Nursery Program during the 2011 crop year.

II.C. Recent Trends in the Nursery Industry

Nursery production is an essential sector of U.S. agricultural economy. In addition to horticultural production, nursery crops are planted to populate conifer and hardwood forests; stone fruit, apple and nut orchards; citrus groves; berry farms; and vineyards. Several specialty crops like tomatoes, peppers, and tobacco are planted into fields as seedlings.

Nursery crop production generally requires substantial inputs, particularly in the form of labor. There are some elements of nursery crop production that have hardly changed in the industry in 100 years. This is particularly true of skilled activities like pruning and grafting that require a practiced eye and a steady hand. Another pattern that has seen little change is the constant search for new varieties. New varieties generally command a premium. Consequently, a Nursery Program that insures new varieties as generic plants with low EPL/PPS prices penalizes producers who are at the forefront of the industry.

Except for field-grown operations, no producer indicated a commitment to species or varieties that had been produced historically. Decisions about “planting” are driven by the markets. There is a tendency to move to “just-in-time” ordering and delivery. The customer has more input into the particular species, varieties, and sizes being produced, resulting in a shift in the balance of some decisions from the producer to the customer. A consequence of this shift is that producers may be producing new species more often and are certainly producing new varieties more often than was the case ten years ago.

Some nursery production activities are mechanized. The operative word in this statement is “some.” Inasmuch as there are innumerable ways a nursery business can be structured, there is no one correct way to mechanize a nursery operation. In the course of evaluating the Nursery program, the Contractor saw machines for planting, potting, repotting, watering, fertilizing, protecting, harvesting, packing, loading, and shipping. Many of the devices used to mechanize nursery production were one-off and custom-made. Consequently, the costs of mechanization are high. Furthermore, mechanization with customized machines limits the ability to change crops from year to year. The Contractor saw only one operation where mechanization was maximized. On most operations, limited mechanization addresses a particular production issue the producer has identified.

The most marked change the Contractor noticed in the industry was the computerization of nursery production functions. At the minimum, this included maintaining inventories on spreadsheet software. In the extreme, the computerization of a nursery operation included inventory control (via chips in the flats), control of lighting and shade cloth deployment, control of heat, soil moisture, and the chemical composition of the “fertigation” water.

Finally, changes in housing markets with attendant decreases in new house construction have had a marked effect on nurseries. Planting into new developments represented a substantial element

of nursery sales in some regions. Consequently, in those regions sales have decreased and retained inventories have increased.

II.D. Nursery Program History

The Contractor reviewed the regulatory history of the Nursery Crop Insurance Program to document the manner by which the issues of valuing plants and inventory have been managed over time. The 1991 Code of Federal Regulations (CFR) contains 7 CFR Part 406, the Nursery Crop Insurance Provisions for 1989 and succeeding crop years. These provisions required the insured to file a nursery crop report consisting of all “eligible nursery crops in the county by unit, type, container size, number of plants and wholesale price of plants for each month of the crop year” (section 3(a)). The wholesale price to be reported was the discounted price from the nursery’s catalog for each month during a crop year. The total value developed with this information was reduced by 10 percent to account for packing, shipping, sales commissions, and other expenses not insured. In the event of a claim for indemnity, the procedure was much the same as in the current Crop Provisions except FMV A was determined using the prices that “...would have been reasonably expected in the month which the loss occurred”²¹ (less 10 percent). Thus, the difference from the current program is the definition of the applicable price.

7 CFR Part 406, as described above, remained in effect until modified by a final rule²² converting the Nursery Program to the Common Crop Insurance Policy (7 CFR 457.8). The Crop Provisions (96-056) required the insured to develop a monthly inventory of plants valued with the insured’s wholesale catalog based on the monthly wholesale price. In response to comments to the proposed rule, FCIC stated: “Due to numerous varieties of nursery plants eligible for insurance, FCIC believes that it is impractical to establish a price for each insured plant in the various states prior to the crop year. FCIC will determine whether the wholesale market price of the plant is reasonable before accepting it as the projected market price.”²³ The Crop Provisions contained the following provision to implement this statement: “Your wholesale price list may be examined to determine whether the prices listed are reasonable. If the prices are determined to be unreasonable, the previous acceptable wholesale price list will be used or we may establish the wholesale price for each type of plant.” This represented a change from the 1989 Crop Provisions, which did not allow the AIP to challenge the catalog prices.

The program subsequently was revised for the 1999 crop year with publication of a final rule at 63 FR 50965ff (September 24, 1998). This change introduced the PPS, an action deemed necessary because “FCIC determined that a fixed plant price schedule was essential to the continued offering of a nursery insurance program. A number of public oversight agencies found that FCIC was exposing the nursery program to potential abuse and litigation when it allowed individual nurseries to set their own prices.”²⁴ The PPS has remained a feature of nursery crop insurance since that time. The provisions published at 63 FR did not specify the “lower of” the PPS or the insured’s wholesale catalog, but instead mandated the values in the PPS be used to set inventory values. Persons making comments to the proposed rule objected to this requirement. RMA summarized one comment as follows: “The commenter was also

²¹ 7 CFR Ch. IV (1-1-97 Edition) page 191.

²² 60 FR 31375 – 31381 (published in the 1995 Federal Register January 27, 1995).

²³ 60 FR 31376.

²⁴ 63 FR 50967.

concerned that substandard producers will be rewarded with a program that provides them with a higher average value for their plants.”²⁵ RMA’s response to this comment concluded that no change to the proposed rule was necessary, and the PPS was implemented as the sole vehicle to establish plant prices in the 1999 crop provisions.

FCIC subsequently published a proposed rule at 69 FR 48166ff (August 9, 2004) in which the following statement occurs with regard to a proposed change in policy language: “Clarify that the price for each plant and size listed on the insured’s plant inventory value report is the lower of the Plant Price Schedule price or the lowest wholesale price listed in the insured’s nursery catalog or price list.”²⁶ This particular language did not appear in the 1999 Crop or Special Provisions. However, the 2000 LASH contained the following definition: “**Price:** For this handbook, the word “**Price**” is the lower of the price in the Nursery’s catalog minus all discounts (referred to as the growers’ best wholesale catalog price) or the maximum price shown in the Eligible Plant List and Plant Price Schedule.”²⁷ This same statement appeared in the Underwriting Guide.²⁸ This was a change from the 1999 Underwriting Guide.²⁹

This regulatory history demonstrates that the Nursery Program has progressively become more demanding with respect to documentation of plant prices. Initially, the grower’s price catalog was acceptable without specific restrictions in the policy. Subsequently, the policy made the catalog conditional on approval. Then the PPS was introduced as the required price. This then was amended via procedure to introduce the lower of the lowest catalog price or the PPS. Hence, the regulatory history reflects an ever-increasing concern that inappropriate prices will be utilized to establish the value of the inventory if a control in the form of an independently established acceptable price is not in place. The implication of this history is that continuation of the Nursery Insurance Program *in its present form* requires the PPS or a similar document.

As reported in the first and second deliverables of this project, the Contractor believes modification of the present structure for determining liability under the Nursery Program is an option RMA should explore. Such modifications include insurance structures for nursery crops that significantly modify the PIVR documentation, creating a different “acreage report” for these crops and approaches that better address the risk management needs of the disparate sectors (i.e., bedding plants, woody landscaping plants, grafted production agricultural plants) within the nursery segment of the U.S. agricultural economy. In the context of this recommendation, the Contractor considered a wide range of alternative approaches to the insurance of nursery crops. From among these, RMA asked for further discussion of a hybrid insurance approach that allows the producer to insure a portion of the production as itemized inventory and a portion based on a production area valuation and of an approach that allows the producer to insure based on the production area selecting from a variety of pricing/valuation options. The discussion of these two approaches follows.

²⁵ Ibid.

²⁶ 69 FR 48169.

²⁷ Nursery Loss Adjustment Standards Handbook 2000 and Succeeding Crop Years (FCIC-25750 (02-2000)), page 2.

²⁸ 2000 Nursery Crop Insurance Underwriting Guide (FCIC-24050 (08-1999)), page 2.

²⁹ Summary: 2000 Nursery Underwriting Guide – Summary of Changes, August 1999. Unnumbered document found at http://www.rma.usda.gov/handbooks/24000/2000/00_24090summary.pdf, accessed 10/11/2011.

There are a number of private products available to mitigate risks faced by nursery crop producers. These include commercial insurance products, named peril weather risk insurance, and weather derivatives (Appendix A). None of the insurance or derivative products available privately offer coverage in any way comparable to the multiple peril insurance available under the Nursery Program. In fact, even combining products to create a portfolio insuring or hedging against specific perils only protects against production losses for the risks covered under the crop-hail and structure contents policies, and then only for the perils insured under the specific contract.

SECTION III. ITEMIZED INVENTORY/AREA VALUATION NURSERY CROP INSURANCE

As noted in Section I, there is no one model that describes the nursery industry. It is an agglomeration of a relatively modest number of firms that have only one common denominator: the propagation and production of plants for ornamental purposes and food production. The number of firms with the most complex production and marketing practices are a very small subset of an already small number. The concepts herein attempt to segment the insurance documentation requirements so the majority of firms are offered a less complex method for establishing insurance while requiring more complex methods for those firms that choose to employ such methods to better match insurance to needs.

Two distinct but related issues must be addressed in modifications to the present program. The first is simplification of the PIVR process. This perhaps could be accomplished as simply as accepting computerized records already maintained by certain nurseries on systems incompatible with the present program requirements (the Nursery Software). Risks involved with this approach must be identified and evaluated for potential harm to the Nursery Program. The second issue that must be addressed is valuation of the inventory. As noted previously, the Nursery Program has evolved from acceptance of producer price lists to the present practice of establishing maximum benchmark prices (the PPS). The justification for this change indicates that strong underwriting controls on accepted prices must be established. Again, alternatives must be identified and evaluated for potential harm to the program.

A third issue not directly related to the first two is devising an insurance construct that effectively copes with fluctuations in the value of the inventory during the year. The present program allows two amendments to the PIVR to increase inventory value for the remaining portion of the insurance year in addition to an endorsement that allows an increase for a specified period of time. All these are snapshots of what exists at a moment in time. Nursery crop insurance is not the only instance in which insurance upon an inventory value is purchased. Commercial policies for such coverage exist and may provide some clues regarding underwriting techniques proven effective for other business lines. A complication for nursery is the existence of CAT coverage that has no built-in incentive to manage valuations appropriately to control premium costs. That is a complication the commercial insurance lines do not face.

The proposed Nursery Itemized Inventory/Area Valuation (II/AV) hybrid approach for insuring nursery crops is a new plan of insurance. A new plan is required because of the hybrid structure of the insurance and because of many features that distinguish nursery production from crop production and/or inventory insured under other RMA products. The unique characters of nursery operations include:

- Inventory that is also the crop being produced;³⁰
- Potentially diverse nursery inventory at a single location;
- A potentially wide range of individual plant values within an operation;
- Substantial changes in inventory during the crop year;
- Changing value of individual plants during the insurance period;
- A wide range of individual plant values between operations;

³⁰ Similar to FCIC “tree” insurance products that insure the productive inventory not production.

- Production times ranging from as little as a month to more than a decade;³¹
- Carefully nurtured niche markets for some nursery production; and
- Vertical integration on many operations.

No uncomplicated product design that will adequately address these issues has been identified. The current Nursery Program is based on the premise that the PIVR, published price lists, and loss event inventories provide the most appropriate basis for establishing liability and adjusting losses. That premise has led to the development of a policy that is undoubtedly the most complex crop insurance product in the world. In pursuing the precision offered by this approach, RMA has made heroic efforts to create a product that accounts for the diversity of the nursery sector of U.S. agricultural economy. Yet in spite of (and in some cases, as a result of) the complexity resulting from those efforts, there is significant producer and insurance industry frustration with the current product design.

As part of the review of the existing program, the Contractor proposed several alternative approaches to insuring nursery production. The Contractor believes a viable alternative nursery crop insurance approach needs not only to accommodate the different species, markets, and business models of nursery operations, but if possible should accomplish four broad-reaching goals to increase satisfaction among the insureds, the insurance industry, and the RMA personnel responsible for administration of the program. These include:

- Simplifying the policy and program;
- Addressing Liability/Underwriting Issues including:
 - Replacing PIVR with some other “acreage report,” “anticipated inventory,” or “anticipated revenue report” construct;
 - Pricing production/plants in a way acceptable to RMA;
 - Pricing production/plants in a way acceptable to producers:
 - Introducing contract pricing if possible;
 - Maintaining basic units by type:
 - Allowing different coverage levels by basic unit;
 - Potentially offering greater differentiation of types;
 - Avoiding over-insurance; and
 - Avoiding under-insurance;
- Addressing Loss Adjustment Issues including:
 - Avoiding over-payment of indemnities;
 - Eliminating over-report issues affecting indemnities;
 - Maintaining an under-report factor to adjust indemnities;
 - Eliminating disagreements about amounts of damage/salvage value;
 - Avoid requirement to rehabilitate effectively unsalvageable plants;
 - Protecting against fraud issues:
 - Structure of operation (>50 percent wholesale);
 - Insurance of plants not intended for sale;
 - Insurance of plants maintained in different locations;
 - Address failure to destroy indemnified inventory;

³¹ While it is unusual for a single operation to maintain a plant for decades, one producer’s “mature” crop is another producer’s “liner.” Consequently, a single plant may be the crop on five or more operations over the years and a decades-old tree worth hundreds of dollars is still a nursery crop.

- Providing appropriate AIP compensation avoiding both:
 - Compensation for handling CAT policies that is perceived as too low for the workload required; and
 - Extraordinarily high underwriting gains.

The proposed II/AV plan approaches the complexity of the industry by offering each producer the option of dividing production into two components. One, an inventory-based component, is intended to insure production that is “unique” with substantial per plant valuation that differs within and among producers. These unique plants constitute the portion of production most likely to be carefully inventoried by the producer. In the interest of providing appropriate protection for losses of these higher-value plants, the Contractor believes the insured should be offered the opportunity to insure this portion of nursery production based on inventory value, losses, and the sales price realized when these plants are sold into wholesale markets.

The second component, an area valuation based component, is intended to insure production that is “generic” and relatively uniform in value with a modest per plant valuation. This category includes production such as annual bedding and garden plants, much of which are sold by retailers at the same price per 4- or 6-cell container. Although it is tempting to consider this portion of nursery production to be similar to row or field crop production, it is important to recognize the unique characteristics of nursery crop production mentioned earlier. Even so, in the interest of simplifying the policy and program for everyone involved, the Contractor believes a portion (and perhaps even a substantial portion) of nursery production could be insured under an approach that addresses the productive area (broken into blocks by type) rather than the inventory.

A basic unit under this construct is comprised of “fields” used for the propagation and production of nursery plants separated by type and practice. The II/AV insurance covers plants in the nursery until they leave the field. The term “field” means any environment in which the nursery plants are grown, such as a greenhouse or in the open subject to the elements. Terms of insurability could remain similar to those presently established (e.g., some retail sales are allowed, plants must be grown under winter protection if needed, etc.). To address the issue that the nursery plants are portable, an insured would continue to be required insure all nursery crops in a county in which the insured has a share.³²

To address the changing inventory throughout the crop year, the guarantee is based on the maximum potential value of the nursery production in the basic unit (i.e., both the area valuation based component and the inventory-based component) at the time the value at risk is highest. This is a significant change from the current PIVR inventory which requires the insured to determine the value of the inventory at the moment insurance attaches with limited opportunities to adjust the value. The approach recognizes that the ebb and flow of plants and plant values within a nursery operation vary enormously from operation to operation and at different times of the year. Within some, the maximum value at risk is the value of the recently planted seedlings, one year old production being grown out, and the two year old production being prepared for

³² The Contractor notes the present Nursery Crop Provisions do not specify county although the Underwriting Guide does cover this specific detail. In addition, this is an imperfect restriction because any insured person could have operations in multiple counties under any crop insurance program.

market. Within others, the maximum value is reached more than once as one gallon containers of herbaceous perennials are planted from purchased quart “liners,” grown-out, and sold into southern markets and the process is repeated for central and then again for northern markets.

In establishing the guarantee, the insured chooses which plants (if any) to insure as itemized inventory, with the one constraint that no plant worth less than RMA published value(s)³³ can be insured as itemized inventory. Consequently, an insured satisfied with the coverage available on an area basis can choose to itemize none of the inventory. This provides the simplest possible outcome and should be applicable to some nursery producers (e.g., those producing only “generic” plants with short production cycles).

The basis for the Itemized Inventory (II) element of the II/AV hybrid approach is conceptually simple and with seven exceptions operates like the existing Nursery Program. These exceptions are:

- Only plants worth more than the appropriate published values can be insured as itemized inventory;
- The insured can elect to insure high-value inventory as itemized plants or under the area valuation based element of the hybrid policy;³⁴
- In place of a PIVR the producer declares the maximum anticipated inventory by type, species, variety, and size;
- The pricing mechanism for the valuation of inventory (i.e., the value of plants or planted material at the earlier of the expected time of sale or the end of the crop year and sales) is based on producer records³⁵ rather than on an EPL/PPS;
- In the event of an insured loss, the inventory at the time of the loss and sales records are used to document inventory to count and document the crop was not underinsured;
- The deductible used to establish an indemnity payment (if any) is calculated to address the total value of the insured basic unit (i.e., the sum of the area valuation based and the itemized inventory values); and
- The endorsements available under the Nursery Program are eliminated (as they would be unnecessary or redundant under the proposed alternative plan).

The area valuation based insurance requires different treatment for containers and field grown plants. Containers include liners, small pots, and large containers planted in blocks with a planting pattern. The blocks are planted uniformly with an appropriate limit set for missing plants within the pattern to qualify for 100 percent of the area-based value.³⁶ The producer specifies the expected maximum area by type for the container-grown plants. Each type has a per square foot value (price election). Historical records are used to assure the producer does not choose a price election for a type that exceeds the potential revenue for the declared area for that type based on block planting density and historical average sales price.

- Any plants can be insured on the uniformly planted area basis;

³³ The value(s) by type can be determined during development.

³⁴ However each size/species/variety in the basic unit needs to be insured under one or the other of the elements – the insured cannot be allowed to insure half of a size/species/variety under II and the other half under AV.

³⁵ Sales records for N year and appropriately adjusted catalog pricing for new size/varieties.

³⁶ This concept is similar to that underlying many crop provisions for perennial crops. The guarantee is not reduced unless the number of missing plants exceeds some predetermined percentage.

- The producer reports the maximum anticipated area by type;
- The pricing mechanism is based on a producer price election at or below the prices in a RMA published type prices list;
- The insured's sales records and block size/structure are used to document an appropriate price election;
- The deductible used to establish an indemnity payment (if any) is calculated to address the total value of the insured basic unit (i.e., the sum of the area valuation based and the itemized inventory value); and
- No options or endorsements, including the CAT Endorsement are available.

There will be a fewer types for field grown plants than for container-grown plants under the II/AV approach. Liners, annuals, ground covers, vines, or herbaceous perennials are generally grown in containers, with limited production of bare root perennial plants under the filed-grown practice. A block concept similar to that used for citrus groves is used to break fields into manageable elements for underwriting and loss adjustment. Missing plants are addressed in establishing the guarantee. Destroyed plants and missing plants are addressed during loss adjustment. Definitions for these terms, modeled on those in the tree insurance policies already offered by RMA could include:

- Missing plant – a plant whose location is not counted in the gross productive area because it was not planted, was removed (including being sold), died, or was insured under the inventory component of this insurance.
- Destroyed plant – A plant that, due to an insurable cause:
 - (1) is dead;
 - (2) was blown or washed away;
 - (3) is toppled, and rehabilitation is not possible; or
 - (4) that has no live wood above the graft union.

These two definitions will need to be crafted so the sets do not overlap and between them incorporate all the “gaps” appropriately. Agencies verify the declared area appropriately addresses missing plants. The Contractor believes the appraisal techniques for tobacco and other row crops can be adapted to meet the needs of the nursery program. Destroyed plants are indemnified after the deductible is met.

The development effort may need to establish appropriate per unit area values for each of the insurable types (e.g., see Table 2). The precision of these values is not essential to the design of the hybrid (II/AV) approach. Instead, the value per unit area is comparable to a price election for a field or row crop (i.e., a reasonable and broadly representative “maximum” per unit of insured value).

Table 2. Hypothetical per Unit Area Value by Types and Practices (\$/ft²)

Type	Practice		
	Field-grown (007)	Container (008)	Grafted (00N)
Annuals (067)	N/A	1.25	N/A
Broadleaf Evergreen Trees (057)	4.24 ³⁷	5.12	4.78
Broadleaf Evergreen Shrubs (061)	3.15	4.10	N/A
Coniferous Evergreen Trees (058)	4.68	5.30	N/A
Coniferous Evergreen Shrubs (062)	3.65	4.23	N/A
Deciduous Shrubs (060)	3.90	4.16	N/A
Deciduous Trees (056)	4.52	4.85	4.98
Fruit & Nut Trees (059)	4.80	5.10	5.25
Foliage (068)	N/A	1.65	N/A
Ground Cover & Vines (066)	N/A	2.63	N/A
Herbaceous Perennials (064)	N/A	2.87	N/A
Liners (071)	N/A	1.25	N/A
Palms and Cycads (070) and	6.23	7.25	N/A
Roses (065)	N/A	2.16	3.25
Small Fruits (063)	N/A	1.78	2.22

Source: The Contractor's Research Department.

The total value for a type can be checked against the producer's historical wholesale sales, against the sales plus retained inventory, against an adjusted gross revenue, or against a wholesale inventory record. The rules and guidelines established for the Adjusted Gross Revenue (AGR) and AGR-Lite crop insurance programs will provide assistance developing validation procedures. If the underwriting check is successful, the amount of insurance under the AV component is calculated by multiplying the total area value by the number of square feet used for production of the type. After making appropriate adjustments for share, the itemized inventory value by type is added to the area value by type to establish the total insurable value. The guarantee for each type is established by multiplying the total insurable value by the coverage level.

Loss adjustment introduces the need to establish the area occupied by destroyed plants in the area valuation using sampling procedures. During loss adjustment, the adjustment team inventories damage to plants in the inventory-based insured blocks. Procedures for assigning damaged plants to the destroyed category will need to be established as part of a full development effort. A current issue with the existing Nursery Program is the expectation following a loss that plants will be rehabilitated. Disagreements about which plants can be rehabilitated and the costs associated with rehabilitation were a common theme in discussions during the listening sessions associated with the Nursery Program evaluation. Development of a new product offers an opportunity to address some of these issues in a new context.

³⁷ Note that under this approach a young broadleaf evergreen tree planted on one foot centers would have a maximum insurable value of \$4.24, but a tree of the same type with an 8 foot crown would have a maximum insurable value of almost \$275. While the per unit area valuation approach is not nearly as precise as the current approach to inventorying nursery plants, the approach does scale the valuation of insured plants of different size.

In the rare instances plants are blown or washed away because of an insured cause of loss, records-based adjustment is used in place of on-farm sampling and adjustment procedures. The total losses are the idemnifiable losses to inventoried plants (Σ (the product of the destroyed inventoried plant $\times$ declared value) plus idemnifiable losses to areas (the product of the destroyed area at the time of the loss and the per unit area value)) for the type/practice. An indemnity is the maximum of (0, ((total loss $\times$ share) minus the deductible).

Units

The Contractor recommends the current unit structure (by practice and type) be maintained. Each basic unit can be insured at a different producer-elected coverage level. This represents no change from the current program. This avoids any need to adjust historical losses to reflect any difference in unit structure. Producers appear satisfied with these provisions.

Coverage Levels

The Contractor recommends the development effort specifically examine the scope of coverage levels offered under a revamped program to determine if the current limit of 75 percent is an impediment to participation.

Types

Pending discovery during the development effort of evidence supporting a wider range of types, the type structure for the existing Nursery Program is anticipated to be maintained.

Methods to Formulate Per Area Valuations

The recommended per unit area value is a “typical” value for a “planted” area. RMA has a substantial dataset related to the per item value. For containerized plants, typical spacing in the nursery can be calculated for a variety of pot sizes. For example, an area of one square foot theoretically could contain 16 three inch pots. With normal nursery practices, the included pots may be slightly less than 16; one goal of the development effort would be to determine what is reasonable. Typical spacing times typical plant value yields a unit area value ($\$/\text{plant} \times \text{plants}/\text{ft}^2 = \$/\text{ft}^2$). A judgment call must be made to establish the reasonable maximum unit area value from among the range of values for a type/practice that will be established by this approach. The Contractor believes a higher value with underwriting to avoid over-insurance will be more attractive to growers than will a lower value with more limited underwriting. This underwriting effort increases operating costs for the insurance companies, but should make it easier to market the II/AV product. As part of the development effort RMA will need to determine if different area values by type and region are necessary or if type alone is sufficient.

Insurance Dates

Since some growers raised issues about the impact of the current inventory-based program on their workload in the March-April time period, the development effort should include an evaluation of the ability of the hybrid plan to alleviate those concerns. If workload at this time of year remains a concern under the hybrid, the effort should consider alternative dates for the beginning of the crop year subject of course to the needs of the insurance providers and RMA.

Pilot Region

The II/AV approach is theoretically valid for all production areas. It seems reasonable, if nursery insurance is converted to the hybrid approach that a brief pilot be run in areas with substantial production where the significant reductions in participation with the current plan's structure have occurred in recent years (e.g., North Carolina and Tennessee).

Insurable Causes of Loss

The insurable causes of loss contained in the existing crop provisions are adequate.

T-Yields and Yield Substitution

T-yields and yield substitution are not relevant concepts to this approach.

Recommended Year of Implementation

Since significant variables are outside the Contractor's control, it is impossible to state an exact date for implementation of a revised program. Realistically, given the anticipated scope of the development effort, 2015 appears to be the earliest possible crop year for implementation on a pilot basis only. To meet the current contract change date of January 31, 2014, for the 2015 crop year, the entity contracted for development would need to deliver a completed, fully-vetted report not later than August 31, 2013. This would allow six months for RMA to achieve legal and Board approval and make and test any needed systems changes; the Contractor is not in a position to determine whether this is an adequate amount of time. With this timeline, the Contractor believes the development contract must be let not later than September 1, 2012. This allows 12 months to gather stakeholder input, devise parameters of the revised program, develop new program materials, and schedule several interactions with RMA.

Once the II/AV approach has been shown to be effective, in light of the general frustration with the existing Nursery Program, relatively rapid replacement of the existing inventory-based approach should be considered. The requirements of the Administrative Procedures Act are a factor in the ability to achieve this transformation.

Recommended Producer Documents

The Contractor does not see any need for additional or different types of documentation from the producer than those used in the current program. The program is structured to use the producer's inventory records rather than a third-party inventory form under the inventory component of the hybrid product.

III.A. Pros

- Simplifies the policy and program;
 - Substantially reduces paperwork;
 - Provides a simple approach for insuring lower-value production;
 - Eliminates the need for species/variety/size-based price list; and
 - Eliminates the requirement for program software;
- Empowers producers with a choice of approaches for insuring high value plants;
 - Prices high-value plants/production in a way acceptable to producers; and
 - May allow contract pricing for high-value production;
- Simplifies loss adjustment;

- Provides a simpler approach for establishing losses for lower-value production;
- Maintains the basic unit structure currently available under policies with additional coverage;
- Allows different coverage levels by basic unit;
- Mitigates concerns from the insurance industry about limited compensation for handling CAT paperwork; and
- Aligns the producers' incentives to avoid over-insurance with those of the government.

III.B. Cons

- Requires a full development effort;
- Substantial underwriting efforts will be required to avoid over-insurance for plants insured under the area valuation approach;
- For plants insured under the area valuation approach, lower-value plants are priced more generically which can lead to complaints from insureds producing higher valued plants as compared to the market about being under-insured;
- Transfers the pricing of inventoried plants to the producer from the insurer, introducing the potential for moral hazard;
- May not address issues about percent of damaged issues/salvage value; and
- Some losses producers feel are substantial (e.g., losing all the remaining stock following a successful sales season) will not exceed the proposed "fixed" deductible, creating the potential insureds will feel "cheated" by the coverage they have purchased.

III.C. Origin of the II/AV Approach

A common complaint from producers and the insurance industry about the Nursery Program is the overwhelming nature of the paperwork burden. Much of the burden is the requirement of creating the detailed the nursery inventory to support the PIVR. The timing of the requirement for generating the PIVR inventory was also an issue of concern. In discussions with nursery growers and others knowledgeable about the industry, the Contractor learned that inventory maintenance practices vary widely. Most often, detailed information about high-value plants is maintained at a level required by the Nursery Program. Inventories of lower-valued plants such as liners of bedding plants and smaller plants in small containers are not maintained as precisely; the cost of maintaining precise inventories of lower-value plants may exceed the benefits of having that knowledge. This distinction led to the conceptualization of the hybrid II/AV approach.

While it is easy to conceptualize a hybrid approach, a substantial development effort is required to establish precise details of the policy and procedures. Fortunately, RMA has accumulated a great deal of data concerning nursery production. Unfortunately, the producer population participating in the Nursery Program has declined over time. An analysis of bias in the RMA data as changes in participation occurred will assist in understanding how the data reflects the industry as a whole as well as how the producer populations and populations of insureds intersect.

For the development, in addition to analysis of the existing RMA data, the Contractor believes substantial additional producer input will be required to refine the elements of the proposed

hybrid product before launch. Due to the history of listening sessions associated with the evolution of the Nursery Program, in some regions it may be difficult to obtain broad participation from a range of producers. This creates a risk the new product will target a limited producer population (those motivated to attend information gathering sessions) rather than the whole nursery segment of the agricultural economy. The Contractor feels strongly that any input sessions should be structured to include active nurseries that have stopped participating in the current Nursery Program.

III.D. RMA Questions

RMA requested responses to several questions concerning details of the proposed hybrid product. The Contractor provides “conceptual” responses below. Since in most cases the RMA questions focus on details of the approach, and these details will be established empirically during a development effort, some will need to be revised during the development.

RMA asked: At what value is the dividing line between a low-valued plant and a high-valued plant?

Contractor reply: RMA has in its possession substantial data concerning the wholesale prices of individual plants. Establishing a “dividing line” between a low-valued plant and a high-valued plant requires first a review of these data, then a decision about whether there is a single line for all nursery plants or whether there is a dividing line for each type.

The Contractor’s initial reaction is the hybrid II/AV approach would be most simple if there is a single line. In conceiving the II/AV hybrid, the Contractor intended the inventory component to address per-plant values above \$25 or \$50. This would exclude inventorying much of the production of annuals, herbaceous perennials, and stock grown for production agriculture.

There is likely to be more producer satisfaction with the II/AV concept if there are dividing lines between low and high-value plants by type. Regardless of whether one dividing line is set for all types or there are different lines for each type, an area value by type will need to be set. Control of over-reporting of area value will need to result from implementation of appropriate underwriting standards. Any attempt to compel use of per area valuation to control over-reporting is sure to elicit dissatisfaction from producers who obtain the highest prices because of the quality of their production.

RMA asked: What happens when a plant crosses the “dividing line” during the crop year?

Contractor reply: Conceptually, this is no different than the situation under the current program. Currently, the value of a plant is declared as of May 1, the date the PIVR is filed. A plant may be in a 2-inch pot on that date and may be moved into 3- and 4-inch pots during the course of the crop year. This sort of activity is happening continuously in a large nursery. The producer has two opportunities to revise the PIVR. If damage occurs before the PIVR is revised, an under-report factor may be triggered. Due to this, it was the Contractor’s intention that plants would be insured as reported for the crop year. The feasibility of this approach is a matter for the development effort. This simplification introduces potential underwriting issues.

There is undoubtedly a trade-off between simplicity and the moral hazard of overvaluing production.

RMA asked: How is an area valued when there are differing plants/plant types within a specified area?

Contractor reply: Mixed species beds are highly unusual under the most common nursery practices. Mixed type beds are even more unusual. Consequently, it should be relatively easy to divide a nursery into blocks. Some of the blocks would be insured based on area valuation, while others (the highest valued blocks) would be insured based on inventory and declared value. Within a block, only one plant type/practice would be allowed. Consequently, a block with different plant types would be uninsurable, just as a container with “two or more different genera, species, subspecies, varieties or cultivars” is uninsurable under the current program. As part of the development effort, the impact of using this block approach will need to be considered. Existing “tree” crop insurance products (e.g., the Florida Fruit Trees Pilot) use the block approach to address valuation of groves despite potentially widely disparate ages and conditions of individual trees.

RMA asked: Does the value of the insured area remain static during the crop year, or do the producers have the option to change it via something similar to a Peak Endorsement or revised PIVR?

Contractor reply: The proposed construct is that the insured liability is static during the year. Consequently, the deductible is also static. The value for indemnification is based on actual losses of production areas. Consequently the value of the insured area at the time of a loss is a function of the static production area minus the harvested production area minus the saleable production area. Indemnification only occurs if the insured loss (i.e., lost area times price) exceeds the deductible.

SECTION IV. ENDORSEMENT PACKAGE PRICING NURSERY CROP INSURANCE

The proposed Endorsement Package Pricing (EPP) for insuring nursery crops focuses on issues related to pricing. These include:

- A potentially wide range of individual plant values within an operation;
- Changing value of individual plants over time;
- A wide range of individual plant values between operations; and
- Carefully nurtured niche markets (with niche market pricing) for some of the nursery production.

No single pricing approach adequately addresses these issues.

As noted previously, the Contractor believes a viable alternative nursery crop insurance approach needs not only to accommodate the different species, markets, and business models of nursery operations, but if possible should accomplish four broad-reaching goals to increase satisfaction among the insureds, the insurance industry, and the RMA personnel responsible for administration of the program. These include:

- Simplifying the policy and program;
- Addressing liability/underwriting issues associated with the current inventory approach; and
- Addressing loss adjustment issues associated with the current inventory approach.

The conceptual basis for the proposed EPP is the common homeowner's insurance policy. This insurance typically consists of a relatively simple policy³⁸ (e.g., a fire policy) that provides basic coverage but includes multiple endorsements that customize the coverage to address the insured's risk needs and tolerance. The endorsements establish specific extensions of the basic coverage. Endorsement Package Pricing is designed to reflect this familiar structure.

The current Nursery Program already offers four endorsements:

- Nursery Peak Inventory Endorsement (08-073a);
- Nursery Crop Provisions Rehabilitation Endorsement (06-073b);
- Nursery Growers Pilot Price Endorsement (06-073c); and
- Catastrophic Risk Protection Endorsement (09-cat-4).

The Nursery Growers Pilot Price Endorsement already provides an alternative to address pricing. However, this approach is built on the inventory-based foundation of the Nursery Crop Provisions.

Under EPP, the inventory-based EPL/PPS approach would be replaced entirely by an area valuation based approach with pricing per unit of production area. A variety of endorsements to enhance or extend pricing could be offered, similar to the present Nursery Growers Pilot Price Endorsement. A variety of endorsements addressing loss adjustment might also be offered (e.g., the functional equivalent of the Rehabilitation Endorsement). One feature of this approach is that producers who elect CAT coverage have limited insurance coverage while those who elect additional coverage can considerably enhance the amount of coverage.

³⁸ In the case of crop insurance the "simple" policy language is contained in the basic provisions, crop provisions, and special provisions.

It is important to note that simply layering additional pricing approaches on the already complex Nursery Program cannot address the goal of simplifying the policy and program. Instead, without modifications to the underlying base policy (i.e., the Nursery Crop Provisions (08-073)), adding another alternative price endorsement increases the complexity of the program. Consequently, the Contractor will continue this discussion assuming a simpler base policy is drafted as part of a development effort. Most likely, the base policy would be constructed to reflect the maximum area under production during the year and a minimum per area valuation by practice.³⁹ The simplest base policy approach would not even distinguish area valuation by type.

As with the existing Nursery Program, the EPP nursery insurance approach requires different treatment for container and field grown plants. Containers are planted and maintained in blocks. The blocks are expected to be maintained so the “planting pattern” is uniform with an appropriate limit on missing plants. Unless an endorsement is purchased, in place of a PIVR the producer declares the maximum anticipated area by practice (an acreage report). Terms of insurability could remain similar to those presently established (i.e., some retail sales are allowed). The pricing mechanism is an RMA published price for the practice (most likely with regional variations). Few insureds would elect to purchase the base policy at additional coverage levels without an endorsement, but it would offer some coverage for major losses.

Field grown plants often have more variable spacing than containerized plants. This could be accommodated in an area based plan by specifying densities of planting (e.g., 0.167 plants per square foot would result from 3x2 spacing) and associated area value. For field grown plants the maximum area under production will need to address missing plants (i.e., a plant whose location is not counted in the productive area because it was not planted, was removed (including being sold), or died prior to insurance attaching or as a result of an uninsured cause of loss). The insurance needs to be structured so as not to insure or indemnify missing plants. Subfield sampling approaches commonly used in loss adjustment along with the block concept (e.g., from the Florida Fruit Tree Pilot insurance) will be used to break fields into manageable elements for underwriting and loss adjustment.

Having agreed to purchase a base policy, an insured can then elect endorsements that adjust value. For example, these might include:

- Type-Block Endorsement (i.e., separate prices for blocks by type);
- Species-Block Endorsement (i.e., separate prices for blocks based on species);
- Producer Wholesale Sales Price Endorsement ((i.e., separate prices for blocks based on producer prices by species or variety);
- Contract Price Endorsement (i.e., allows basic units for contract production priced at the contract price); or
- Plant Replacement Price Endorsement (i.e., separate prices for blocks based on actual replacement cost with the same sort of indemnity structure and replacement requirements as in the Florida Fruit Tree Pilot Crop Insurance Comprehensive Tree Value Endorsement).

³⁹ The need for this differential valuation is to recognize that field planted nurseries have a much lower planting density than containerized nurseries and consequently a lower per area value.

For these endorsements, the development effort needs to establish appropriate values by practice, type, and species. The precision of these values is not essential to the design of the EPP approach because the losses are addressed primarily in terms of area. However, appropriate underwriting standards to avoid over-insurance are required. Due to the structure of some wholesale nurseries, with a variety of plant values within a type, the trade-off between simplicity and precision of valuation has the potential to be quite large for producers with highly diverse inventory.

In loss adjustment, plants would be designated as saleable or destroyed. Sampling of blocks determines the total area of destroyed plants. An insured purchasing just the base policy would receive an indemnity only if the area of destroyed plants exceeded (1 minus the coverage level) times the area insured. This approach is exceptionally simple, but because the base price is set conservatively, for most producers the base policy without endorsements would offer only a modest indemnity even in the case of a relatively large loss.

The Contractor anticipates under this base policy approach an indemnifiable loss would be less common than for typical field crops, since the area under production at any given moment on a nursery operation is often smaller than the maximum area under production for the year. Consequently, since the base policy price election is based on some minimal per area valuation, the coverage is in some ways comparable to that offered under the CAT endorsement (i.e., it has some of the attributes of a high deductible with low price election). The EPP approach consequently introduces a new concept for insuring what would in other sectors of the agricultural economy be a catastrophic loss. The EPP base policy would allow the producer to choose to insure at a level that would simply help them start over, but without the tremendous administrative burden of CAT coverage under the existing Nursery Program.

Maintaining the CAT option in addition to the providing a range of pricing options would make this product more like products with which agents are familiar. But the chance a CAT indemnity would be sufficient to even allow a producer to “start over,” much less resume their pre-existing business is minimal. Furthermore, few nursery producers’ experiences with CAT have been satisfactory.⁴⁰ The conceptual structure of CAT does not lend itself to the ebb and flow of nursery plants within a typical nursery operation. Consequently, a decision to eliminate the CAT option for the EPP product would be an appropriate topic for consideration during a development effort.

Units

The base policy under the EPP approach establishes a basic unit by practice. The Endorsements would allow basic units by practice and type.

Coverage Levels

The Contractor recommends that the development effort specifically examine the scope of coverage levels offered under a revamped program to determine if the current limit of 75 percent is an impediment to participation.

⁴⁰ It is interesting to note that only 0.7 percent of Nursery Crop CAT policies were indemnified in 2011, while 13 percent of CAT policies under all RMA plans were indemnified. Among the major crops, 13 to 20 percent of producers insured under the corn, soybean, and wheat CAT policies received an indemnity.

Types

Pending discovery during the development effort of evidence supporting a wider range of types, the type structure for the existing Nursery Program is anticipated to be maintained.

Methods to Formulate Per Area Valuations

As with the II/AV plan, the recommended per unit area value is a representative value for a “planted” area. RMA has a substantial dataset related to the per item value. For containerized plants, typical spacing in the nursery can be calculated for a variety of pot sizes. Typical spacing times typical plant value yields a unit area value ($\$/\text{plant} \times \text{plants}/\text{ft}^2 = \$/\text{ft}^2$). A range of unit values by practice is anticipated to be revealed during the price discovery process; a judgment call will establish the unit area value from that range. While the underlying assumption for the II/AV plan is that a generous base value will be established with substantial underwriting procedures to avoid over-insurance, under the EPP approach, the unit area value for a practice is anticipated to be much more modest.⁴¹

The process for establishing unit area valuation based on RMA price lists can be repeated by practice/type and by practice/species to establish per area values for the Type-Block Endorsement and the Species-Block Endorsement. The Producer Wholesale Sales Price Endorsement would use a formula or set of formulae to establish area values based on producer wholesale prices realized. The Plant Replacement Price Endorsement would use actual replacement costs as the basis for establishing losses and indemnities (mimicking the replacement cost options in many home insurance policies). The endorsements provide an opportunity to increase unit area valuation, concomitant with more detailed documentation of production. The trade-off between the valuation and the record keeping requirements is intended to align the incentives of the insurance companies and the producers regarding the insurance of these potentially unique and valuable assets.

Insurance Dates

Since some growers raised issues about the impact of the current inventory-based program on their workload in the March-April time period, the development effort should include an evaluation of the ability of the hybrid plan to alleviate those concerns. If workload at this time of year remains a concern under the hybrid, the effort should consider alternative dates for the beginning of the crop year subject of course to the needs of the insurance providers and RMA.

Pilot Region

The EPP approach is theoretically valid for all production areas. It seems reasonable, if nursery insurance is converted to the hybrid approach, that a brief pilot be run in areas with substantial production where the significant reductions in participation with the current plan’s structure have occurred in recent years (e.g., North Carolina and Tennessee).

Insurable Causes of Loss

The causes of loss specified in the existing crop provisions are adequate.

⁴¹ The EPP basic unit pricing by practice is intended to provide a simple insurance product for some nursery crop producers. Many producers indicated they would like to buy crop insurance but are discouraged by the level of detail required to document production under the current FCIC approach. The EPP basic unit pricing by practice provides an entrée into the Federal crop insurance program with minimal requirements for documentation.

T-Yields and Yield Substitution

T-yields and yield substitution are not relevant concepts to this approach.

Recommended Year of Implementation

Launching a product using the EPP approach will require a full development effort and substantially more price discovery than for the II/AV approach. Since significant variables are outside the Contractor's control, it is impossible to state an exact date for implementation of a revised program. Realistically, given the anticipated scope of the development effort, 2016 appears to be the earliest possible crop year for implementation on a pilot basis only. To meet the current contract change date of January 31, 2015, for the 2016 crop year, the entity contracted for development would need to deliver a completed, fully-vetted report not later than August 31, 2014. This would allow six months for RMA to achieve legal and Board approval and make and test any needed systems changes; the Contractor is not in a position to determine whether this is an adequate amount of time. With this timeline, the Contractor believes the development contract must be let not later than September 1, 2012. This allows 24 months to gather stakeholder input, devise parameters of the revised program, develop new program materials, and schedule several interactions with RMA.

Once the EPP approach has been shown to be effective, in light of the general frustration with the existing Nursery Program, relatively rapid replacement of the existing inventory-based approach should be considered. The requirements of the Administrative Procedures Act are a factor in the ability to achieve this transformation.

Recommended Producer Documents

The Contractor does not see any need for additional or different types of documentation from the producer than those used in the current program. The program is structured to limit the use of inventories except when plant replacement is required under the Plant Replacement Price Endorsement.

IV.A. Pros

- Simplifies the policy and program:
 - Substantially reduces paperwork;
 - Provides a simple approach for insuring lower-value production;
 - Eliminates the need for species/variety/size-based price list;
 - Replaces the PIVR with an "acreage report" of sorts; and
 - Eliminated the need for program software;
- Simplifies the loss adjustment, especially for the base policy and policies with the Type-Block, Species-Block, and Contract Price Endorsements, limiting the need for inventorying production (as opposed to sampling);
- Provides producers a choice of approaches for valuing production;
- Prices production using approaches acceptable to RMA; and
- The Plant Replacement Price Endorsement provides for maintenance of the existing business.

IV.B. Cons

- Requires a full development effort;
- Requires extraordinary pricing exercises;
- May not price production in a way acceptable to producers unless the producer elects a pricing endorsement;
- Aggregates a variety of plants for pricing, which can lead to complaints from insureds;
- Requires substantial underwriting efforts for the Producer Wholesale Sales Price Endorsement;
- Requires substantial underwriting efforts for Plant Replacement Price Endorsement
- The Producer Wholesale Sales Price Endorsement transfers the pricing of plants from the insurer to the producer, introducing the potential for moral hazard; and
- May not address issues about percent of damaged issues/salvage value.

IV.C. Origin of the EPP Approach

The current Nursery Program already offers several endorsements to those purchasing insurance at additional levels of coverage. Several producers and agents indicated they welcome the variety of insurance packages that can be developed using the existing base policy and endorsements. No producer or agent suggested using pricing endorsements. However, some people commented their homeowner's insurance with its many endorsements was easier to understand than their nursery crop insurance (though indemnities under homeowner's policies are likely more rare than indemnities under crop policies). EPP is designed to reflect the familiar structure of homeowner's insurance, introducing endorsements to allow a variety of different pricing approaches. The EPP approach allows the producer to choose to insure at a level that would simply help them start over, but without the tremendous administrative burden of the existing CAT coverage under the Nursery Program. At the other extreme, it provides an endorsement for replanting the nursery, restoring the block structure that existed prior to the insured loss.

IV.D. RMA Questions

RMA requested responses to several specific questions concerning details of the proposed pricing approach based on endorsements to an underlying base insurance product. Since the RMA questions focus on details of the approach and these details will be established empirically during a development effort, the Contractor provides "conceptual" responses which might be altered during the development as the concept evolves into a mature submission package.

RMA asked: If a producer selects the "producer prices and inventories" endorsement, how would the insurable price be determined? Is it based on his catalog, his sales receipts, or something else?

Contractor reply: If "producer prices" are based on the "lesser of the producer's catalog price or some published price list" much of the simplification sought by introducing new approaches to the insurance is lost. All the 25,000 species/variety/size prices maintained by RMA would need to be maintained for the published list. That raises the question of whether producer prices by themselves provides a sufficient mechanism to avoid moral hazards associated with inflated

list prices designed to extract maximum insurance indemnities in the event of a loss. This is a question that merits considerable evaluation during development of a replacement nursery program. Is there a combination of documented sales records and other financial documents related to the nursery operation that can validate the insured values? Obviously, allowing an insured to name a price retroactively, after a loss is not an acceptable pricing mechanism. Naming a price when the insurance attaches, with documentation to demonstrate some appropriate level of sales have occurred at that price (or that the price is the mean or median price for the insured plants) is a more defensible approach.

Obviously, the biggest challenge in the development of the FCIC nursery crops insurance is the effect of premium subsidies on the behavior of insureds, agents, agencies, and AIPs. When the disparate incentives of these various stakeholders are layered over the complexity of the industry, the operations, and the constantly changing inventory, it becomes increasingly difficult to establish “simple” underwriting procedures that address the range of behaviors from the stakeholders.

RMA asked: How would EPP work if the inventory component of II/AV was added?

Contractor reply: The challenge to answering this question is that the principal goal of conceiving alternative approaches was to provide some simplification that both addresses the risk management requirements of the insureds and provides a product acceptable to the insurance industry and the government. A product that incorporates both pricing endorsements and the ability to inventory some high value production is certainly possible. The incentive for having an itemized inventory is to provide a precise and predictable level of coverage for plants the insured considers particularly valuable (i.e., plants whose potential losses are of greatest concern financially rather than biologically). The incentive for having an element of production insured under the area valuation is to provide a simpler mechanism to insure “generic” production. There is no reason the generic production can’t be insured based on a series of pricing endorsements. Part of the cost of those endorsements might reflect the administrative burden imposed by the greater precision of liability calculation and the precision of the activities required for loss adjustment.

The question is whether the increased complexity of the product is justified. Undoubtedly, some producers would find the II/AV/EPP approach attractive. Whether many, or most, or all would find it attractive is impossible to gauge. Regardless, there will always be a trade-off between the amount of precision provided in the structure of the nursery crop insurance and the paperwork burden imposed to realize that precision. If the crop year for nursery followed a typical annual crop pattern (i.e., plant acreage, maintain the acreage, harvest the acreage), it would be easier to quantify the burden the paperwork imposes. However, there are few nursery operations that reflect that simple cropping model. Inventory changes that occur throughout the crop year will always introduce issues that lead to misunderstandings between the stakeholders involved in the insurance transaction.

SECTION V. RELATIVE COSTS OF ALTERNATIVE DESIGNS

Given the mechanisms by which government contracting is managed, it is impossible for the Contractor to know the precise costs of the program development, software, and maintenance. However, the Contractor's extensive experience with development of crop insurance products for RMA allows identification of required activities for each approach and an assessment of the relative costs (i.e., modest, moderate, expensive, very expensive) of each approach. The activities related to product development, implementation, and maintenance are described first via a Work Breakdown Structure documenting phases, tasks, and subtasks to develop a new nursery crop insurance program, followed by the relative cost assessment. The process described below assumes RMA has selected a single alternative nursery crop insurance approach.

Development Phase 1. Confirmation of Stakeholder Interest in the Alternative Product Concept

Stakeholders have provided substantial information to RMA concerning their dissatisfaction with the current Nursery Program. Development of an alternative program should only proceed if the replacement has the potential to provide greater stakeholder satisfaction. Gathering stakeholder input about an alternative approach will be particularly challenging given the history of the program and the large number of listening sessions that have been conducted over the years. Nonetheless, the restrictions of the Paperwork Reduction Act (PRA) make listening sessions the most timely mechanism for gathering stakeholder input. Alternatively, trade show lecture sessions and/or staffing of booths could increase the number of producers responding, while still adhering to the letter and spirit of the PRA. Unfortunately, there is no national trade show that would serve as an appropriate venue for stakeholder information gathering. The vertical integration of the industry results in national tradeshow attendees being sufficiently large populations of non-stakeholders to limit the utility of the information obtained therefrom. At a minimum, two to five listening sessions or tradeshow events would be required to cover even a modest pilot area.

Phase 1 Task 1. Conduct Kick-off Meeting

Selected contractor and RMA personnel would participate in a kick-off meeting. The meeting would verify the criteria used to confirm stakeholder interest in the proposed alternative approach, the location of the target producer population, and the specific information gathering strategy/protocol. This task includes the following subtasks:

- Subtask 1.1.1 Develop Meeting/Teleconference Overview/Issues
- Subtask 1.1.2 Participate in Meeting/Teleconference

Phase 1. Task 2. Gather Producer and Stakeholder Input

In this task, the contractor will work with producers, producer groups, and other stakeholders to assess their interest in and acceptance of the potential new insurance concept. Data may be collected in teleconferences specifically targeting individual producers and insurance personnel, in listening sessions and/or at regional trade shows. Efforts will be made to include both producers participating in the current program and producers who had participated, but who had opted out of the program in recent years. Information gathering would be targeted to a specific potential pilot area and would address the implications of the selected alternate approach in detail (i.e., modeling a series of producer business structures, insurance approaches under the selected alternate approach, and hypothetical loss events and indemnities) to understand whether the new

approach might have greater acceptance than the existing insurance. This task includes the following subtasks:

- Subtask 1.2.1 Coordinate Meeting Schedule
- Subtask 1.2.2 Promote Input Sessions
- Subtask 1.2.3 Conduct Input Sessions
- Subtask 1.2.4 Develop Summary of Input

Phase 1. Task 3. Prepare Stakeholder Interest Report

In this task, the contractor will prepare a report for RMA to document the methods used in gathering stakeholder information and results of those efforts. This task includes the following subtasks:

- Subtask 1.3.1 Prepare Draft Report
- Subtask 1.3.2 Review Internally
- Subtask 1.3.3 Prepare Final Report
- Subtask 1.3.4 Deliver Final Report
- **Deliverable 1a. Stakeholder Interest Report**

Phase 1 Task 4. Prepare and Deliver Oral Report

In this task, the contractor will prepare a concise and complete oral presentation for RMA staff concerning stakeholder interest in the potential new insurance concept. This presentation will not exceed two hours; one hour will be for formal presentation by the contractor, and the additional hour will be allocated for questions by RMA. This report will mark a decision point in the development process. The costs of development cannot be justified if producer interest in the existing product is greater than interest in the proposed alternative product. This task will encompass the following subtasks:

- Subtask 1.4.1 Prepare Oral Presentation
- Subtask 1.4.2 Conduct Oral Presentation
- **Deliverable 1b. Oral Presentation**

Development Phase 2. Prepare and Deliver Draft Submission Package

In this phase, assuming a decision by RMA to proceed, the contractor will prepare a draft submission package for the proposed alternative nursery crop insurance product. The content is described by the various tasks within this phase.

Phase 2 Task 1. Data Collection and Analysis

The contractor will obtain price and risk data primarily from RMA. Validation of the sufficiency of the data will be conducted with assistance of regional crop experts, who are familiar with local production and marketing. This task will encompass the following subtasks:

- Subtask 2.1.1 Collect RMA Data
- Subtask 2.1.2 Collect NASS Data
- Subtask 2.1.3 Validate Data Sufficiency
- Subtask 2.1.4 Analyze RMA Data
- Subtask 2.1.5 Collect and Analyze Relevant Weather Data
- Subtask 2.1.6 Analyze Correlations between RMA Data and Weather Data

Phase 2 Task 2. Prepare Policy

The contractor will create nursery crop provisions, special provisions, and, if appropriate, endorsements consistent with proposed alternative product concept. The contractor will build on the existing Basic Provisions (11-br). The documents will include complete and consistent provisions to form a legal and enforceable contract. The special provisions, a part of the contract between the insurance provider and the insured, contain certain regionally important terms and conditions of coverage. The contractor will prepare a database of required information for providing the special provisions for all pilot counties. In addition to the crop and special provisions, the contractor will explicitly detail a list and description of any additional elected coverage. This list and description will include how such coverage would be obtained. This task will encompass the following subtasks:

- Subtask 2.2.1 Create Crop Provisions
- Subtask 2.2.2 Create Sample Special Provisions
- Subtask 2.2.3 Create Additional Coverage List and Description
- Subtask 2.2.4 Submit Section for Internal Review

Phase 2 Task 3. Prepare Insurance and Loss Adjustment Standards Manuals

Building on the previous tasks, insurance standards and procedures needed to implement the proposed alternative product concept will be developed. Materials prepared will include an Insurance Standards Handbook that provides supplementary information for the Crop Insurance Handbook and other program documents. Any needed forms and sample calculations guides will be included.

The Loss Adjustment Standards Handbook will include appraisal procedures, calculations, and other information needed to document and process a claim. Instructions will include Appraisal Worksheets and a Production Worksheet. Information needed to provide appraisal parameters will be included. An especially challenging activity will be to develop quality adjustment procedures and loss forms. Wherever practical, the contractor will adapt existing procedures used in loss adjustment to assure straightforward implementation of the new program. This task encompasses the following subtasks:

- Subtask 2.3.1 Create Underwriting Materials
- Subtask 2.3.2 Create LASH Materials
- Subtask 2.3.3 Submit Section for Internal Review

Phase 2 Task 4. Prepare the Rating Methodology, Premium Rates, and Pricing Methodology and Obtain Certification from an Accredited Actuary

In this task, the contractor will identify and assimilate existing loss data. In addition to the sources previously identified potential sources to be contacted include state NASS and FSA offices, additional university researchers, and producer organizations. All data collected will be organized in a database amenable for analysis and transmittable to RMA. The contractor will examine the consistency of data from different sources as well as the suitability of the data for use in premium development. The data will be processed and summarized into a form amenable as input to appropriate models. All processed data will be documented and provided to RMA.

Rating Activities: The rating model will be used to estimate the level and probability of losses for alternate locations and coverage levels. These values will be used to calculate expected loss

cost ratios prior to loading for reserves and other factors. Inasmuch as possible, experience data from the current program will be incorporated into the rating models. The contractor will provide RMA with examples, samples, and documentation of all processes used in the estimation of expected loss cost ratios.

Estimated loss cost ratios generated by the simulation model will be adjusted by adding standard RMA loading rates to the loss cost ratios. The nature and levels of all loads applied during the development of premium rates will be documented for RMA. Worksheets shall be prepared that will enable RMA to verify premiums charged are consistent with policy and statutory provisions. The worksheets will provide the calculations in sequential order that establish producer premiums for different coverage levels both before and after subsidy.

Performance measures to be evaluated will include the performance of the proposed premium. The specific model used to conduct the simulations of performance will depend on the data available. This task also involves the estimation of crop insurance program costs. Administrative costs, operational costs, and subsidy costs as well as any other identified costs will be estimated. Documentation of all procedures and assumptions used in the performance cost evaluation will be developed and provided to RMA.

The contractor will submit a certification by a certifying actuary of all supporting documentation, rating procedures, and final rates. This document will certify that the proposed insurance program is consistent with sound insurance principles and will be provided to RMA.

Pricing Activities: Prices received by producers will be analyzed to assess the structure within the data. Alternative estimation techniques will be analyzed with a goal of deriving a solidly based statistical model that accurately describes the expected performance of the pricing system for practices, types, and species as appropriate. The goal will be to develop the simplest, most representative model. The developed pricing model will be completely documented and provided to RMA. The Contractor will submit the information deemed relevant by RMA for gaining approval of price election recommendations. Supporting data will be provided electronically to RMA.

These activities will be unique in the wealth of data available as RMA has collected catalogues for years and has generated type/practice/species/variety/size prices for the current program. The analyses of the disparate prices within a species and/or type and the comparison of unit area valuation by size provide substantial opportunities for modeling the impact of refinements to the proposed insurance program. On the one hand, it may become evident types can be combined; on the other, it may be come evident a wider range of types is requires. Nonetheless, the amount of price data available is a unique feature of the activities in this task. This task encompasses the following subtasks:

- Subtask 2.4.1 Develop Rating Methodologies
- Subtask 2.4.2 Formulate Premiums and Rates
- Subtask 2.4.3 Conduct Performance Simulations of Proposed Premiums and Rates and Analyze Impact of Simulations
- Subtask 2.4.4 Create Formula and Calculations Guide
- Subtask 2.4.5 Create Premium Update Application

- Subtask 2.4.6 Create Premium Rate File
- Subtask 2.4.7 Create FCI-35 Actuarial Document Sample
- Subtask 2.4.8 Create Premium Quotation Application
- Subtask 2.4.9 Create Pricing Methodology
- Subtask 2.4.10 Create Pricing for Practice, Type, Species as Appropriate
- Subtask 2.4.11 Submit Section for Internal Review
- Subtask 2.4.12 Submit for and Obtain Casualty Actuarial Society Certification

Phase 2 Task 5. Prepare Evidence of Conformance to Appendix III

This section of the deliverable will contain the detailed modifications to the instructions contained in Appendix III for relevant data fields in the Types 11, 15, and 21 records. Modifications will include all formulas, calculations, equations, and forms required to determine and report key DAS information or a determination that existing content of Appendix III is adequate. The contractor will determine if the submission requires a reinsurance agreement other than the Standard Reinsurance Agreement (SRA) and will provide all necessary justification for such a recommendation if needed.⁴² This task will encompass the following subtasks:

- Subtask 2.5.1 Evaluate Program Data Reporting Requirements
- Subtask 2.5.2 Check Standard Reinsurance Agreement Compliance
- Subtask 2.5.3 Coordinate Data Reporting Requirements Modifications if Required

Phase 2 Task 6. Prepare Required Statements and Certification by Contractor's Legal Counsel

The contractor will supply a statement from legal counsel that the submission meets and complies with all requirements of the Act, applicable regulations, and any reinsurance agreement or provide documentation of required changes if any exist.⁴³ This task will encompass the following subtasks:

- Subtask 2.6.1 Prepare Required Statements
- Subtask 2.6.2 Submit for Legal Council Review
- Subtask 2.6.3 Amend Required Statements as Necessary

Phase 2. Task 7. Update Producer and Stakeholder Input

In this task, the contractor will work once again with producers and other stakeholders to assess their interest in and acceptance of the potential new insurance program now that details of the program are established. The contractor proposes gathering data in teleconferences specifically targeting individual producers and insurance personnel, in listening sessions and/or at regional trade shows. The goal of these calls is to assess stakeholders' opinions of the more detailed nursery insurance construct that has been developed, including seeking out individual participants who had provided insights in the Phase 1 tasks. This task includes the following subtasks:

- Subtask 2.7.1 Coordinate Meeting Schedules
- Subtask 2.7.2 Promote Input Sessions

⁴² The Contractor does not believe a separate reinsurance agreement or substantial Appendix III modifications will be necessary since area and inventory programs are already reinsured under the SRA. The proposed insurance plan conforms in most respects to other products included within the SRA.

⁴³ The Contractor does not anticipate there will be any provision of the policy not authorized under the Act, but the contractor undertaking development will need to document such provisions if they exist.

- Subtask 2.7.3 Conduct Input Sessions
- Subtask 2.7.4 Document Input

Phase 2 Task 8. Prepare General Information, Benefits of the Plan, Marketing Plan, and All Forms Applicable to the Submission

The submission package must contain general information about the submission. Preparing this section is scheduled near the end of the time allotted for preparation of the submission to assure all relevant information has been developed and can be incorporated.

The submission must also contain information describing how the submission offers coverage or other benefits not currently available from existing public or private programs. The demand for the insurance will be discussed, using information acquired from discussions with interested parties, especially in Task 7. This section also will detail how the submission meets public policy goals and objectives consistent with the Act and other laws, as well as public policy goals supported by USDA and the Federal Government. Development of this section is scheduled near the end of the time allotted for preparation of the submission to assure that all relevant information has been incorporated.

Under submission rules, a program development must include plans for marketing. Considering the history of the Nursery Program, this section will have relevance far exceeding that in a typical submission package. This discussion will be oriented toward indicating how agents will become informed marketers of the product. See the training materials tasks for additional information related to this goal. Effective presentations by agents are a key source of grower understanding and acceptance of the plan.

Finally, the submission must document the required forms for the insurance. This section of the submission will include all specific forms needed to apply for insurance, procedures for acceptance of an application, and all policy forms, instructions, and procedures necessary to establish the amounts of coverage or loss. The instructions for specific forms will be included. Some of these forms and instructions already will have been included in other sections of the deliverable (e.g., a Production Worksheet in the Loss Adjustment Standards Handbook). This task will encompass the following subtasks:

- Subtask 2.8.1 Prepare Sections
- Subtask 2.8.2 Finalize Sections
- Subtask 2.8.3 Conduct Internal Review

Phase 2 Task 9. Prepare Draft Submission Package

In this task, all previously prepared materials are compiled into a single volume and submitted to RMA in electronic form. The format will be in Portable Document Format (PDF), with materials in MS Word and MS Excel format available upon request. It is anticipated that SAS software will be used for the rating coding, unless RMA opts to accept alternative software. The Draft Submission Package will be concise and will be organized into the sectional descriptions of the Final Submission Package detailed previously. This task will encompass the following subtasks:

- Subtask 2.9.1 Finalize Submission Components
- Subtask 2.9.2 Assemble Components into a Draft Submission Package

- Subtask 2.9.3 Format Deliverable to Comply with Section 508 Formatting Requirements
- Subtask 2.9.4 Submit Deliverable to Internal Review
- Subtask 2.9.5 Submit Deliverable to RMA
- **Deliverable 2a. Draft Submission Package**

Phase 2 Task 10. Prepare and Deliver Oral Report

In this task, the contractor will prepare a concise and complete oral presentation for RMA staff addressing the draft submission package. This presentation will not exceed two hours; one hour will be for formal presentation by the contractor, and the additional hour will be allocated for questions by RMA. This task will encompass the following subtasks:

- Subtask 2.10.1 Prepare Oral Presentation
- Subtask 2.10.2 Conduct Oral Presentation
- **Deliverable 2b. Oral Presentation**

Phase 3. Prepare and Deliver Final Submission Package

In this phase, the contractor will incorporate appropriate responses to comments and revisions to the Draft Submission Package recommended by RMA staff. An Executive Summary will be prepared. The Executive Summary will include essential information about the proposed plan of insurance described concisely and accurately. The summary and submission package will be ready for presentation to the FCIC Board.

Phase 3 Task 1. Final Submission Package Development

The contractor will prepare and deliver to RMA a Final Program Submission Package that incorporates responses to all points raised by RMA staff during its review of the Draft Submission Package. This task will encompass the following subtasks:

- Subtask 3.1.1 Review and Address Comments from RMA
- Subtask 3.1.2 Revise Sections of Submission Package
- Subtask 3.1.3 Create Executive Summary
- Subtask 3.1.4 Assemble Final Submission Package
- Subtask 3.1.5 Submit Final Submission Package
- **Deliverable 3. Final Submission Package**

Phase 4. Expert Review

As required, the contractor will assist RMA in the preparation of materials concerning the Submission Package for review by outside experts. After the expert review panel has evaluated the Final Submission Package, the contractor will address any issues/questions raised. A comprehensive report of those issues and responses will be submitted to RMA. As necessary, adjustments to the Final Submission package will be made.

Phase 4 Task 1. Expert Review (primarily an RMA activity)

In this task, RMA will submit the Final Submission package and associated digital data to a panel of outside experts for review. This task encompasses the following subtasks:

- Subtask 4.1.1 Identify Expert Panel Members
- Subtask 4.1.2 Distribute Review Materials
- Subtask 4.1.3 Collect Reviews

- Subtask 4.1.4 Submit Reviews to Contractor
- **Deliverable 4a. Expert Reviews**
- **Deliverable 4b. Expert Review Package to Contractor**

Phase 4 Task 2. Review and Comment on Expert Review Responses

In this task, the contractor will review each of the expert reviewer responses and develop a summary, categorized with respect to similar comments or recommendations across the expert reviews. The contractor will then provide a response to each comment or set of comments. Responses to the expert reviews will be complete, concise, and fully address the issues raised by the reviewers in the aggregate. A document, including the recommendations and findings of the contractor with respect to these comments, will be provided to RMA. In addition, any revisions to the submission to respond to expert reviewer responses will be made and submitted to RMA in the revised final submission package. To assist in RMA's review of the submission, a "map of changes" listing specifically where any revisions to the submission were made and what issue the revisions were intended to address will be provided. This task encompasses the following subtasks:

- Subtask 4.2.1 Review Expert Responses
- Subtask 4.2.2 Develop Comments Responsive to Expert Review and Revise Submission
- Subtask 4.2.3 Prepare Map of Changes
- Subtask 4.2.4 Prepare Revised Final Submission Package
- Subtask 4.2.5 Submit to RMA
- **Deliverable 4c. Contractor Report on Expert Review Comments**
- **Deliverable 4d. Revised Final Submission Package**
- **Deliverable 4e. Map of Changes**

Phase 5. FCIC Board Review

As required, the contractor will assist RMA in the preparation of materials concerning the Submission Package for review by the FCIC Board.

Phase 5 Task 1. Preparation of Board Presentation (primarily an RMA activity)

In this task, the contractor will assist RMA in the preparation of a presentation on the submission package for the FCIC Board. This task encompasses the following subtasks:

- Subtask 5.1.1 Prepare Draft Board Presentation
- Subtask 5.1.2 Review Draft Board Presentation
- Subtask 5.1.3 Finalize Board Presentation
- **Deliverable 5a. Board Presentation PowerPoint**

Phase 5 Task 2. Deliver Board Presentation

In this task, to the extent required, the contractor will assist RMA in the presentation on the submission package for the FCIC Board. This task encompasses the following subtasks:

- Subtask 5.2.1 Schedule Presentation
- Subtask 5.2.2 Prepare Oral Board Presentation
- Subtask 5.2.3 Deliver Oral Board Presentation
- **Deliverable 5b. Oral Board Presentation**

Phase 6. Training and Education

Training is an essential element for the launch of any FCIC insurance product. Additional training and education have been identified as especially important activities for the Nursery Program. This phase incorporates tasks for development of training materials, delivery of training, and education of insureds. .

Phase 6 Task 1. Develop Materials for Training

This task proposes development and submission to RMA of an in-depth, comprehensive, well-constructed training package that will include all necessary crop specific procedures and documents required for program implementation. The package will include a certification process for agents who have been properly trained. This task will encompass the following:

- Subtask 6.1.1 Prepare Requirements Documents
- Subtask 6.1.2 Develop Training Modules
- Subtask 6.1.3 Refine Training Modules
- Subtask 6.1.4 Review Training Package
- Subtask 6.1.5 Finalize Training Package
- Subtask 6.1.6 Deliver Training Package
- **Deliverable 6. Training Package**

Phase 6 Task 2. Industry Training

The complexity of the nursery sector of the U.S. agricultural economy and the Nursery Program require extraordinary training efforts. A wide range of activities can be choreographed by the AIPs, with RMA oversight. This task will encompass the following:

- Subtask 6.2.1 Schedule Training
- Subtask 6.2.2 Provide Training
- Subtask 6.2.3 Evaluate Training Success
- Subtask 6.2.4 Refine Training Modules
- Subtask 6.2.5 Provide Additional Training

Phase 6 Task 3. Producer Education (primarily an AIP, agency, and agent activity)

While the Contractor recognizes the education of producers is a responsibility of the AIPs, agencies, and agents, the complexity of the nursery sector of the U.S. agricultural economy and the Nursery Program require extraordinary efforts. While the costs of the efforts will be borne by the AIPs, agencies, and agents, an analysis of cost of introducing a new program concept should include consideration of the effects on all stakeholders. This task will encompass the following:

- Subtask 6.3.1 Develop Education Materials
- Subtask 6.3.2 Review Educational Materials
- Subtask 6.3.3 Finalize Educational Materials
- Subtask 6.3.4 Deliver Educational Materials

Phase 7. Program Maintenance

In this phase, assuming the pilot has been launched, RMA would undertake all the activities associated with maintaining, and perhaps expanding, a pilot.

Phase 7 Task 1. Data Collection and Analysis

RMA will collect insurance experience data. This task will encompass the following subtasks:

- Subtask 7.1.1 Collect Policy Data
- Subtask 7.1.2 Collect Loss Data
- Subtask 7.1.3 Evaluate Compliance
- Subtask 7.1.4 Analyze RMA Data

Phase 7 Task 2. Maintain Program Documents and Forms

The insurance documents must be maintained to provide a legal and enforceable contract, underwrite the insurance in logical and effective manner, and appropriately adjust losses as they occur. As the insurance experience accumulates, changes that are necessary for clarity are incorporated into the program documents and forms as necessary. This task will encompass the following subtasks:

- Subtask 7.2.1 Maintain Crop Provisions
- Subtask 7.2.2 Maintain Special Provisions
- Subtask 7.2.3 Maintain Insurance Standards Handbook
- Subtask 7.2.4 Maintain LASH
- Subtask 7.2.5 Maintain Program Forms

Phase 7 Task 3. Maintain the Premium Rates and Pricing

The insurance experience should support the validity of the rating methodology and structure. Adjustments to the rates reflecting that experience are made as the insurance experience and changing nature of risks may require. The prices need to be updates to reflect changes in markets. The process for collection of catalogues is not anticipated to change. The maintenance of prices is documented in the pricing methodology. If required by the insurance experience, adjustments to the rating and pricing methodology may also be required. This task encompasses the following subtasks:

- Subtask 7.3.1 Implement Premium Update Application
- Subtask 7.3.2 Refresh Premium Rate File
- Subtask 7.3.3 Update Pricing for Practice, Type, Species as Appropriate
- Subtask 7.3.4 Refresh Actuarial Browser Documentation

Phase 7 Task 4. Maintain Appendix III Instructions for Data Reporting

During the pilot, a review of relevant data fields in the Types 11, 15, and 21 records should indicate issues with Appendix III instructions. This task will encompass the following subtasks:

- Subtask 7.4.1 Evaluate Program Data Reporting
- Subtask 7.4.2 Implement Data Reporting Modifications as Required

V.A. Costs of Implementation, Operation, Software, and Maintenance

As noted earlier, given the mechanisms by which government contracting is managed, it is impossible for the Contractor to know precise costs of the alternative programs. However, the Contractor provides in Table 3 an assessment of the relative costs associated with the various development, third-party software, operations, and maintenance elements of the existing Nursery Program and the alternatives for insuring nursery crops discussed. The costs are ranked as modest (+), moderate (++), expensive (+++), and very expensive (++++). It is anticipated the

difference between steps is likely to be an order of magnitude with the most expensive activities potentially measured in hundreds of thousands of dollars.

Table 3. Relative Costs of Development, Third-party Software, Operation, and Maintenance of Nursery Crop Insurance Approaches

Activity	Relative Cost		
	Current Nursery Program	Itemized Inventory/Area Valuation	Endorsement Package Pricing
Kick-off Meeting	N/A	+	+
Stakeholder Interest Report	N/A	++	++
Data			
Preliminary Data Collection	N/A	+	+
Data Analysis	N/A	++	++
Submission Package			
First Section – General Information	N/A	+	+
Second Section – Plan Benefits	N/A	+	+
Third Section – Policy			
<i>Crop Provisions</i>	N/A	++	++
<i>Special Provisions</i>	N/A	+	+
<i>Additional Coverage List and Description</i>	N/A	+	++
Fourth Section - Marketing	N/A	+	+
Fifth Section			
Underwriting Materials	N/A	+++	+++
LASH	N/A	++	++
Sixth Section			
Rating			
<i>Rating Methodologies</i>	N/A	+++	+++
<i>Premiums and Rates</i>	N/A	++	++
Pricing			
<i>Pricing Methodology</i>	N/A	+++	+++
<i>Pricing for Practice</i>	N/A	++	++
<i>Pricing for Type</i>	N/A	+++	+++
<i>Pricing for Species</i>	N/A	N/A	+++
<i>Pricing for Variety/Size</i>	++++	N/A	N/A
Seventh Section – Actuarial Certification	N/A	+	+
Eighth Section - Forms	N/A	+	+
Ninth Section – Appendix III	N/A	+	+
Tenth Section – Training	N/A	+++	++
Eleventh Section – Legal Certification	N/A	+	+
Update Producer and Stakeholder Input	++	++	++
Draft Submission Package			
Prepare Draft Submission Package	N/A	+	+
Oral Report	N/A	+	+
Final Submission Package Development	N/A	+	+
Expert Reviews	N/A	+	+
Review and Comment on Expert Review Responses	N/A	+	+
Board Presentation			
Board Presentation PowerPoint	N/A	++	++
Oral Board Presentation	N/A	+	+
Training			
Producer Education	++	++	++

Activity	Relative Cost		
	Current Nursery Program	Itemized Inventory/Area Valuation	Endorsement Package Pricing
Inventory Software Required			
To Establish Liability	++++	N/A	N/A
To Establish Indemnity	++++	N/A	N/A
Administrative Costs to Establish a CAT Policy			
Producer	++	N/A	+
Agency	++	N/A	+
AIP	++	N/A	+
Administrative Costs to Establish an Additional Insurance Policy			
Producer	++	+	+
Agency	++	+	+
AIP	++	+	+
Administrative Costs for Adjusting a Loss			
Producer	++/++++	+ / ++	+ / ++
Agency	++/++++	+ / ++	+ / ++
AIP	++/++++	+ / ++	+ / ++
Costs of Maintenance			
Rating	++	++	++
Collection of Pricing Data	++	++	++
Pricing	+++	++	+++

SECTION VI. RECOMMENDATIONS

An acceptable insurance risk as defined by the Act, and RMA regulations and procedures, exists for nursery crop production. Yet the business models of nursery operations are as different from one another as they are different from the business model of a typical “farm.” One of the greatest challenges facing the Nursery Program is its intent to be inclusive (i.e., to address the risk management needs of the nursery segment of the U.S. agricultural economy in a single set of crop provisions, albeit with several endorsements available to insureds to offer additional insurance).

Nursery crop insurance is currently available to any U.S. producer operating a nursery that produces sufficient value of wholesale field-grown or container-grown production of plants listed in the appropriate EPL/PPS. Considering the thousands of species/varieties/sizes listed on the EPL/PPS and the more than 50,000 farms identified in the 2007 Census, it is not surprising a program designed to serve the entire industry sector is complicated, and it is appropriately viewed as complex by the insureds, agents, agencies, AIPs, loss adjusters, consultants, and RMA personnel.

The Contractor believes if the relevant language addressing insurance of a single nursery operation could be extracted from the existing program documents, all parties engaged in a discussion of that particular policy could have an intelligent and informed discussion of the policy. But that is not the way any conversation about the Nursery Program occurs. Consequently, the discussions that do occur are characterized by subtle and not so subtle miscommunication.

To illustrate these issues with communication, consider the statement: “A nursery crop is not a row or field crop.” An implicit corollary to that statement is that a nursery crop cannot be insured like a row or field crop. Yet any block of annual bedding plants or liners is planted, maintained, and harvested like row of field crops. For those producers, a nursery crop is not a row or field crop because they plant 10 or 25 or even 100 species and because they may plant sequential blocks over a period of many months to address wholesale markets in every growing zone in the contiguous United States. Compare that interpretation of the statement with the interpretation of a producer of fully grown hardwood trees. That producer is buying trees in 125 gallon containers to “line out” in his field. That person may maintain the trees for a few years or a decade or more. For those producers, a nursery crop is not a row or field crop because they plant an asset already worth hundreds of dollars per plant and the entire value can be lost if a major limb is torn off in a wind storm, regardless of the potential to salvage a large living tree from the damaged plant.

The Current Nursery Program

To address some of the differences between nursery crops and other crops, the mechanisms for establishing liability and indemnities for nursery crops are quite different from those for row and field crops. But acknowledging the differences through that approach has not been sufficient to gain wide acceptance of the existing Nursery Program. In fact, two of the most common complaints about the program are the amount of paperwork required to establish a policy and the irrelevance of the PIVR to the inventory on hand throughout the crop year. It is difficult translate the statement: “A nursery crop is not a row or field crop” into something addressing the

paperwork requirements of the program. Yet, the paperwork and administrative burdens of the Nursery Program are unique and, for many, perceived as overwhelming.

Some fraction of the nursery producer population has found ways to tolerate the paperwork burden. They have studied the policy and understood and accepted its structure (and its limitations). For this population, where the details of the Nursery Program are understood and accepted, simply implementing the recommendations from the earlier deliverables should provide a “better” product. The revised documents and procedures should eliminate ambiguity and decrease disagreements about covered losses. Yet the proportion of nursery producers who find this approach attractive will likely continue its current and sustained decline. The extensive use of CAT coverage will continue. Issues with inconsistencies between the PIVR and inventories following a loss are inevitable because of the nature of the production cycle and the business models.

Regarding the Contractor’s recommendation for a separate practice under the existing provisions for production of grafted plants, the Contractor believes the addition of the seedling size category for the 2013 crop year introduces an important improvement over the former system.⁴⁴ Once the grafted plants have been pruned, although the plant has been reduced to the “seedling” size, they should be insurable. In conjunction with the Nursery Growers Pilot Price Endorsement, the seedling size category addresses many of the concerns about lack of insurance at an appropriate price, albeit in a somewhat complicated way. Nonetheless, documentation of the value of lost grafted plants may be challenging under the current procedures, especially if the grafted plants are only sold after a year of growing out.

A New Program

In light of these considerations, the Contractor believes replacement of the current approach for determining liabilities and indemnities is an option RMA should seriously consider. Of the two options presented, the Contractor prefers the II/AV approach. The most attractive feature of the II/AV approach in this regard is the insured determines when precision is required (consequently introducing a substantial paperwork burden) and when insurance for a group of plants as a block is sufficient (eliminating much of the paperwork burden). What cannot be predicted from either the review of the existing program or from the additional research undertaken by the Contractor under Contract D11PS18819/0002 is whether the trade-off of less precision in exchange for less paperwork will be welcomed by many of the stakeholders in the event of a loss. There is no doubt simplicity would be welcomed. But layering the effects of the simplification over the production cycle and loss adjustment procedures will have consequences some stakeholders will not anticipate.

Consequently, the Contractor has recommended another round of producer input sessions at the onset of a new nursery product development. These would be targeted to a specific potential pilot area and would address the implications of the selected alternate approach in detail (i.e., modeling a series of producer business structures, insurance approaches under the selected alternate approach, and hypothetical loss events and indemnities) to understand whether the new approach has any greater acceptance than the existing insurance. The Contractor would only

⁴⁴ In the past, the Nursery Program excluded from insurance many grafted plants after pruning.

recommend proceeding with a full development effort if concrete evidence exists the alternate product or some other variation that results from the sessions would ultimately be welcomed by producers who understand its design and the implications in trading off precision for relative simplicity.

Appendix A

Existing Private Insurance Products

There are a number of private insurance products available to mitigate risks faced by nursery crop producers, including:

- Property and liability policies covering structures and contents;
- Farm owner's policies covering the farm's structures and equipment (i.e., tractors and farming implements) used in the farming operation;
- Riders to farm owner's policies covering the specialized equipment (e.g., soil mixers, potting lines, etc.);
- Equipment failure insurance covering failure due to electric power losses;
- Specialized policies covering items not covered under the farm owner's policies (e.g., an overhead sprinkler system vulnerable to damage from extreme weather); and
- Vehicle policies, covering cars and trucks used for the operations.

The property policies covering losses of contents if the structure is lost or damaged may provide coverage for losses of nursery production in greenhouses, shade houses, and similar protective structures. Growers and lenders generally considered available property coverage for damage to structures used for production to be adequate though costly. They rarely report such insurance provides sufficient coverage for production or revenue losses. In spite of the protection structures provide, the growth conditions for nursery production are rarely, if ever, completely controlled by such structures.

Crop-hail coverage is available as private insurance products in all states within the United States. Hail coverage provides protection against physical damage from hail and other named perils. Hail policies can be written to include insurance for losses from fire, lightning, vandalism, and wind. Coverage is provided on an area basis and premiums are structured to reflect the area covered rather than production or revenues. A dollar amount of coverage per acre is elected by the producer. Some policies allow coverage to be increased during the growing season to cover the increased value for the crop. Different deductible structures are available to permit a grower to self-insure either a portion of the entire area (with a much lower premium) or a portion of the area in which lost production has been documented (with a higher premium, especially in areas where summer storms frequently drop hail as the storm front passes). Under this later approach, damage that occurs on part of an operation may be eligible for indemnification even when the rest of the unit is unaffected.

Hail policies from some companies can be written with options to reimburse of replanting costs, losses in transit, and losses in storage. However, it is important to note hail coverage is most often provided for field or row crops. Due to the importance of quality in nursery crops, premiums for hail coverage in regions where hail is a common (but isolated) event may be high relative to the value of the crop and the perceived risks. Coverage, premiums, and options available vary by region.

Insurance providers offering hail insurance and optional additional insurance include, but are not limited to, ADM Crop Risk Services, Farmers Mutual Hail Insurance Company of Iowa, John Deere Risk Protection, ProAg Insurance Group, and Rain and Hail Agricultural Insurance. Since hail is a limited peril that occurs in isolated locations, hail losses tend not to overburden capital reserves of private insurance companies. Consequently, hail coverage is available from smaller companies in regions where they have actuarial experience. Financial institutions frequently

require coverage for production or revenue losses as an underwriting condition for loans. The financial institutions may offer hail coverage through either larger or smaller carriers.

From 2008 through 2010, insurance was offered for the value of live plants killed or damaged by a wide variety of named perils under the brand name Live Asset Insurance. Live Asset Insurance was advertised as a product of the JLS Group, Inc., a boutique insurance and risk management broker licensed in all 50 states. Live Asset Insurance was marketed primarily through a website¹ and, except in Florida, was offered in the southern half of the United States.² The company's online advertising described the insurance as follows:

Private crop insurance for nurseries, orchards, groves, plantations, vineyards, tree farms and forests; not affiliated with RMA/USDA Government Crop Insurance. Our coverage affords \$10,000,000 limit per occurrence for 17 named perils in 19 states. Our minimum premium is \$5,000 plus taxes and fees. The minimum deductible is \$10,000. We offer primary coverage for trees, shrubs, and vines for both commercial and residential risks. We are endorsed by the 132 year old ANLA American Nursery & Landscape Association; the industry voice for tree farms, nurseries, greenhouse growers, retail garden centers and landscaping risks. Our program is underwritten by a surplus lines, international, non-admitted, A-rated carrier.³

In researching private insurance alternatives to the existing Nursery Program, the Contractor found none of the telephone numbers nor websites associated directly with Live Asset Insurance and JLS Group are still active, although there are a number of business directory sites that still list both companies. A letter sent to the address supplied for Live Asset Insurance was not answered.

Some producers indicated private freeze insurance is available in the southern states. Ace Global Weather and All Weather Insurance Agency mention agriculture in their materials describing weather insurance, but only with the briefest reference to agricultural enterprises as potential customers for their instruments. MSI Guaranteed Weather, which describes itself as an online weather-risk management portal, has developed an agriculturally-oriented marketing strategy for their weather derivatives. Although some of the identified products are marketed as agricultural risk management tools, none of the products are structured primarily for agriculture. For the most part the coverage provides reflects a region and regional weather rather than local weather events. Most of the available commercial weather products that address local risk were developed to insure against perils that affect commercial, retail, social, or municipal events.

eWeatherRisk⁴ and the Climate Corporation (formerly WeatherBill)⁵ offer weather risk coverage on a much more local level with highly customized weather station selection. Both companies have targeted agricultural producers. The Climate Corporation has policies for corn, soybeans,

¹ <http://www.liveassetinsurance.com/> and <http://www.liveassetinsurance.com/index.htm>.

² Alabama, Arkansas, Arizona, California, Colorado, Georgia, North Carolina, Kentucky, Louisiana, Mississippi, Nevada, New Mexico, Oklahoma, Oregon, Utah, South Carolina, Tennessee, Texas, and Virginia. A principal related to the firm offering this insurance indicated he does not expect this line will ever be offered in Florida because of the "tail" risk associated with hurricanes.

³ From the company's website in 2010.

⁴ <http://www.eweatherrisk.com/>

⁵ <http://www.climate.com/>

and sorghum that cover five or six key weather events and windows for those commodity crops. Named peril policies from these companies allow producers to select a risk period, peril, and thresholds for indemnification that provide coverage for one or more critical weather events.

None of the insurance or derivative products available privately offer coverage in any way comparable to the multiple peril insurance available under the Nursery Program. As noted in the body of the report, even combining products to create a portfolio of instruments insuring or hedging against specific perils only protects against production losses for the risks covered under the crop-hail and structure contents policies, and then only for the perils insured under the specific contract. The majority of the available commercial instruments are hedges against conditions that cause losses rather than insurance that manages risks associated with those losses.