

RISK MANAGEMENT AGENCY



RESEARCH & EVALUATION DIVISION PROJECTS FEBRUARY 1998

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RESEARCH AND EVALUATION DIVISION

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FEBRUARY 1998

Completed or canceled projects are denoted by shading of their project numbers. Most completed projects have project reports available upon request from Research and Evaluation Division at (816)926-6343, or by FAX at (816)926-7343. Additional program and product information may be found on the Research and Evaluation Division Homepage at <http://www.act.fcic.usda.gov>.

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PROJECT #51: DEVELOP EXPANDED GRP PILOTS

OBJECTIVES/BENEFITS TO RMA : This project was funded to assist the Risk Management Agency (RMA) in developing new or improved products for a comprehensive risk management portfolio. The Group Risk Plan (GRP) of Multiple Peril Crop Insurance (MPCI) was implemented in pilot form for soybeans in 1993. In 1994, GRP was expanded to include barley, corn, cotton, forage, grain sorghum, peanuts, soybeans, and wheat. GRP is designed to provide a new type of risk management tool, increase participation, and operate over the long run at a 1.00 loss ratio. The project is a joint research project between the Commercial Agriculture Division of the Economic Research Service (ERS), the University of Kentucky, and the Research and Evaluation Division.

This project has three potential phases. Phase 1 developed expanded GRP programs for barley, corn, cotton, grain sorghum, peanuts, soybeans and wheat for the 1994 crop year. This phase defined GRP areas and developed rates and levels of protection for these areas. Procedures were documented for RMA use in future GRP expansion and updating.

Phase 2 would design a potential modification to the GRP program to include an individual coverage component for one or more pilot areas and crops.

Phase 3 would assess the potential for improving GRP and MPCI performance through use of new data sources and methodologies. These include weather data and associated new technologies to project yields and improve rate-making, using early season weather data to curb inter-temporal adverse selection, and the development of homogeneous GRP zones at other than the county level.

DELIVERABLES/TIMELINE: Phase 1 of the project is complete. Premium rates, amounts of protection, and county average yields were established by the University of Kentucky for barley, corn, cotton, forage, grain sorghum, peanuts, soybeans, and wheat for the 1994 crop year. In the 1994 crop year, there were 1,872 GRP county crop programs available in 1,158 counties in 27 states. For the 1995 and 1996 crop years there were 1,922 GRP county crop programs available in 1,169 counties in 27 states. For the 1997 crop year there were 2,398 GRP county crop programs available in 1,388 counties in 36 states. For the 1998 crop year there are 2,603 GRP county crop programs available due to expansion of the GRP forage program into 205 additional counties.

The preliminary research on Phase 2 has been completed by the University of Kentucky. A manuscript on ways to improve rate-making was received as scheduled. A manuscript on zone definition, authored by Mike Weiss of ERS, was provided in February 1995. Haiping Luo, Jerry Skees, and Agapi Somwaru provided a report on GRP early payment determinations for corn in June 1995. Further work on this projected is not planned at this time.

PROJECT #52: EVALUATE GROUP RISK PLAN (GRP) PILOT AND BROAD AREA-YIELD ISSUES

This project is complete. The evaluation was conducted by the Commercial Agriculture Division of the Economic Research Service (ERS).

The non-diversified risk associated with insuring against crop yield losses was the focus of a September, 1994 report to FCIC. This report analyzed the feasibility of reinsuring non-diversifiable risk.

At the end of the pilot period, RMA is required to provide Congress a report of the operations of the GRP pilot program including recommendations with respect to implementing the program on a national basis. To meet this mandate, ERS, in cooperation with the University of Kentucky, conducted a survey of producers in selected pilot areas in summer 1994. The perceptions and characteristics of farmers in three sample categories were examined; those who purchased GRP, those who purchased APH, and those who purchased neither GRP or APH. The report to FCIC analyzed the survey results, as well as FCIC data on GRP, and was received from ERS as scheduled in January 1995. Experience data through the 1997 crop year is being compiled. The updated report will be submitted to Congress in 1998.

PROJECT #53: WHOLE FARM CROP INSURANCE

This project is complete. A project report is available upon request.

PROJECT #54: ANALYZE REVENUE INSURANCE

This project is complete. The evaluation was conducted jointly by Research and Evaluation Division and the Commercial Agriculture Division of the Economic Research Service (ERS).

A revenue insurance program could combine crop insurance, disaster assistance, and the deficiency payment system into an integrated safety net. The project developed an overview that outlined and characterized the opportunities and pitfalls associated with a revenue insurance program, focusing on the Cost of Production (COP) approach, and provided a detailed analysis and evaluation of various COP based revenue insurance designs.

In other studies, researchers simulated the performance of prototype revenue insurance designs using per-acre returns, total returns, risk reduction, and Federal outlays as the primary performance criteria. Recommendations were made on one or more prototypes in terms of coverage, rate-making guidelines, and other issues.

ERS contracted with Mario Miranda of Ohio State University to assist in the development of a modeling framework that includes internal price determination and other components. This model was used to provide an analysis of various revenue insurance designs in comparison to the current program. This work was conducted cooperatively between Miranda and ERS, and a report was provided by ERS in August 1995.

In a separate report, Dick Heifner of ERS compared the effects of alternative kinds and combinations of revenue insurance, crop insurance, replacement coverages, USDA programs, and forward pricing strategies on the income risks of individual farms. This analysis estimated the joint probability distributions of farm and county yields and prices for selected crops and locations, and analyzed risk reduction and per-acre returns for the various scenarios. This report was provided to FCIC in February 1995.

PROJECT #55: INSURANCE BASED ON COST OF PRODUCTION (INCOME PROTECTION PILOT PROGRAM)

The implementation phase of this project is complete. The Federal Crop Insurance Reform Act of 1994 required RMA to implement a pilot Cost of Production (COP) insurance program in selected counties for the 1996 crop year. The project was conducted jointly by Montana State University, Research and Evaluation Division, and the Commercial Agriculture Division of the Economic Research Service (ERS).

This project developed and evaluated various COP type insurance products and addressed the various measurement and data issues involved with each. It also examined the potential relationship of COP designs to the commodity programs.

The researchers developed supporting program detail to establish the pilot insurance program, called the Income Protection pilot program, for the 1996 crop year. The Income Protection (IP) pilot program is designed to insure the producer against reductions in gross income from insurable reductions in yield or price. Yield setting, loss adjustment, and underwriting procedures are based on the current Actual Production History (APH) program. The dollar amount of protection is the result of the APH yield times the selected coverage level times the projected price times the net acres insured. The projected price is the average of the daily futures market closing price for the commodity for a period preceding the sales closing date of the crop, as defined by the insurance policy.

The IP policy pays when the harvested and appraised production to count multiplied by the harvest price, as defined in the insurance policy, is below the Income Protection guarantee. The harvest price is the average of the daily futures market closing prices for the crop during the month of harvest. If yield loss is offset by a price increase or vice versa, no indemnity is paid. Since the goal of the program is to protect revenue at the enterprise level, the insurance unit is the insured's share of all acres of the insured crop in the county. The pilot program will operate through the year 2000.

For the 1998 crop year, IP is available for corn in Champaign, Ford, Iroquois, Livingston, and McLean counties, Illinois; Benton, Fountain, and Warren counties, Indiana; and Adair, Audubon, Cass, Dallas, Guthrie, and Shelby counties, Iowa.

IP is available for cotton in Autauga, Lawrence, Limestone, and Madison counties, Alabama; and Brooks, Colquitt, Dooly, and Worth counties, Georgia.

IP is available for grain sorghum in Anderson, Andrews, Aransas, Archer, Armstrong, Atascosa, Austin, Bailey, Bandera, Bastrop, Baylor, Bee, Bell, Bexar, Blanco, Borden, Bosque, Bowie, Brazoria, Brazos, Briscoe, Brooks, Brown, Burleson, Burnet, Caldwell, Calhoun, Callahan, Cameron, Carson, Castro, Chambers, Childress, Clay, Cochran, Coke, Coleman, Collin, Collingsworth, Colorado, Comal, Comanche, Concho, Cooke, Coryell, Cottle, Crosby, Dallam, Dallas, Dawson, Deaf Smith, Delta, Denton, De Witt, Dickens, Dimmit, Donley, Duval, Eastland, Ellis, Erath, Falls, Fannin, Fayette, Fisher, Floyd, Foard, Fort Bend, Franklin, Frio, Gaines, Galveston, Garza, Gillespie, Glasscock, Goliad, Gonzales, Gray, Grayson, Guadalupe, Hale, Hall, Hamilton, Hansford, Hardeman, Harris, Hartley, Haskell, Hays, Hemphill, Hidalgo, Hill, Hockley, Hood, Houston, Howard, Hunt, Hutchinson, Irion, Jack, Jackson, Jefferson, Jim Hogg, Jim Wells, Johnson, Jones, Karnes, Kaufman, Kent, Kerr, Kimble, King, Kleberg, Knox, Lamar, Lamb, Lampasas, La Salle, Lavaca, Lee, Leon, Liberty, Limestone, Lipscomb, Live Oak, Lubbock, Lynn, McCulloch, McLennan, McMullen, Martin, Mason, Matagorda, Maverick, Medina, Midland, Milam, Mills, Mitchell, Montague, Moore, Morris, Motley, Navarro, Nolan, Nueces, Ochiltree, Oldham, Palo Pinto, Parker, Parmer, Potter, Randall, Reagan, Red River, Refugio, Roberts, Robertson, Rockwall, Runnels, San Patricio, San Saba, Schleicher, Scurry, Shackelford, Sherman, Starr, Stephens, Sterling, Stonewall, Swisher, Tarrant, Taylor, Terry, Throckmorton, Titus, Tom Green, Travis, Upton, Uvalde, Victoria, Waller, Washington, Webb, Wharton, Wheeler, Wichita, Wilbarger, Willacy, Williamson, Wilson, Wise, Yoakum, Young, Zapata and Zavala counties, Texas.

IP is available for soybeans in Arkansas, Ashley, Chicot, Clay, Conway, Craighead, Crawford, Crittenden, Cross, Desha, Drew, Faulkner, Franklin, Greene, Hempstead, Independence, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lee, Lincoln, Little River, Logan, Lonoke, Miller, Mississippi, Monroe, Perry, Phillips, Poinsett, Pope, Prairie, Pulaski, Randolph, Sebastian, Sevier, St. Francis, White, Woodruff and Yell counties, Arkansas; Champaign, Ford, Iroquois, Livingston, and McLean counties, Illinois; Benton, Fountain, and Warren counties, Indiana; and Adair, Audubon, Cass, Dallas, Guthrie, and Shelby counties, Iowa.

IP is available for spring wheat in Kittson, Marshall, Polk, and Roseau counties, Minnesota; and Grand Forks, Pembina, and Walsh counties, North Dakota. IP is available for winter wheat in Harper, Harvey, Jewell, Kingman, Mitchell, Osborne, Phillips, Reno, Rooks, Sedgwick, Smith, and Sumner counties, Kansas; Cascade, Fergus, Judith Basin, Pondera, and Teton counties, Montana; and Whitman county, Washington.

IP was expanded for the 1998 crop year for winter wheat for 12 counties in three states; Idaho, Montana, and Oregon. Beginning with the 1998 crop year, IP is now available for winter wheat in Latah, Lewis and Nez Pierce county, Idaho; Big Horn, Choteau, and Yellowstone counties, Montana; and Gilliam, Morrow, Sherman, Umatilla, and Wasco counties, Oregon.

Interim evaluations of the pilot program will be conducted annually, and a comprehensive evaluation will be conducted after the 2000 crop year.

PROJECT #56: EXAMINE CROP INSURANCE AND SUSTAINABLE AGRICULTURE

This project is complete. A project report is available upon request.

PROJECT #57: DETERMINE THE INSURANCE NEEDS OF LIMITED RESOURCE FARMERS

This project is complete. This project was funded to assist RMA in developing new or improved products for a comprehensive risk management portfolio, and for the improvement of program design. The investigation was conducted by the Commercial Agriculture Division of the Economic Research Service (ERS).

The project analyzed the characteristics of limited resource farmers and recommended how RMA could serve them better. The project defined limited resource farmers, identified farming patterns for limited resource farmers, and proposed ideas for new marketing approaches and new program options.

The Farm Costs and Returns Survey (FCRS) and Census of Agriculture data, as well as discussions with extension specialists in limited resource farming areas and officials at the Inter-Tribal Ag Council and other organizations were used as the basis for the analysis.

A second aspect of this project was the development of a cooperative agreement between ERS and the Federation of Southern Cooperatives. The Federation conducted approximately 60 outreach sessions on crop insurance reform. At these sessions, Federation personnel collected demographic and economic data from the participants as well as recommendations for making crop insurance more attractive to this segment of the market. The Federation compiled, analyzed, and provided the survey data to ERS.

PROJECT #58: CROP INSURE SOFTWARE

This project is complete. The Crop Insure software was last updated for the 1995 crop year. The 1995 crop year version of Crop Insure is a software package that provides farm level risk analysis and a tool to quote Actual Production History (APH) plan coverages and rates for all crops insured by RMA. This software is available to insurance agents, Cooperative Extension Service staff, lenders, agribusiness consultants, and others. This project upgraded the Crop Insure software for the 1995 crop year with new and revised APH premium rates, rules and procedures, and general software improvements. The upgraded Crop Insure takes the producers' farm yields provided by the user, applies the APH rules and premium rates and presents APH information for the farm. The information includes the APH yield for each farm, the choices of APH protection amounts and deductibles, and several cash flow scenarios. Features added in the 1995 version include the use of APH with grain marketing tools such as hedges, forward pricing, cash sales and others, the complement of private crop insurance products such as crop hail and MPCCI supplementals, and a file manager to store individual case information.

This software illustrates the APH concept and its compliment to several risk management strategies by applying APH rules, procedure, and premium rates to farm data entered by the user. The 1995 upgraded version of Crop Insure contains routines that calculate program changes resulting from passage of the Federal Crop Insurance Reform Act of 1994. No update to the 1995 version of Crop Insure was funded.

Crop Insure was released by Michigan State University in January 1995. Materials (software, price and data files, premium rates and default yields) are available from Dr. Roy Black, Cooperative Extension Service, Michigan State University, 305 Agriculture Hall, East Lansing, Michigan 48824, Attention: Nicole Alderman. Dr. Black can be reached by phone at (517) 353-9649.

PROJECT #59: CROP INSURANCE PREMIUM DISCOUNTS FOR UNIT SIZE-HOW BIG SHOULD THEY BE?

This project is complete. A project report is available upon request.

PROJECT #60: AGRONOMIC, ECONOMIC, AND DEMOGRAPHIC CHARACTERISTICS OF PREFERRED CROP INSURANCE FARMS IN THE GREAT PLAINS AND CORN BELT

This project is complete. A project report is available upon request.

PROJECT #61: FLORIDA FRUIT TREE INSURANCE

The research phase of this project is complete. The project is now in the pilot phase. The pilot program was implemented for the 1996 crop year and is scheduled to continue through the 1999 crop year. Data from the pilot will be gathered annually. A comprehensive evaluation of the pilot program will be conducted after the third year. This pilot is available in five Florida counties: Dade, Highlands, Martin, Palm Beach, and Polk. The insured crops vary by county.

This pilot program indemnifies a grove owner for replacement or rehabilitation of trees damaged by three perils: freeze, wind, and excess moisture. The insurable tree types include all citrus and carambola fruit trees. Insureds may select a dollar amount of protection that represents their tree replacement cost up to a maximum. The cost approximates the variable expenses of replacing or rehabilitating damaged trees, and annual expenses until the income from production equals expenses.

Beginning with the 1998 crop year, a new program was developed for avocado and mango trees in Dade county. This program varies from the original program by measuring losses using the canopy reduction technique. This technique calculates the percent of canopy reduction calculated using the canopy volume before damage and after pruning. The dollar amount of protection is limited to the replacement of the damaged tree.

PROJECT #62: RESEARCH ON 27 SPECIALTY CROPS. THESE INCLUDE ASPARAGUS, AVOCADOS, BLUEBERRIES, BROCCOLI,

CANTALOUPE, CARROTS, CAULIFLOWER, CELERY, CHRISTMAS TREES, FORAGE AND TURF SEED, HAY, HONEYDEWS, HOPS, LETTUCE, MILLET, MINTS-PEPPERMINT AND SPEARMINT, MUSHROOMS, IN-GROUND NURSERY CROPS, PECANS, PINEAPPLE, PISTACHIOS, STRAWBERRIES, SWEET CHERRIES, SWEET POTATOES, TURFGRASS SOD, AND WATERMELON.

This project is complete. The feasibility studies were conducted by the Economic Research Service (ERS). These studies assessed the risk management alternatives available to producers by region and the potential problems associated with developing a viable insurance program. Information is provided from the Census and other sources on farm characteristics such as enterprise and income diversification, ownership structure, and size distribution of farms. Most of these studies are available in WordPerfect format for downloading from the Research and Evaluation Division website, and all are available in hard copy format.

PROJECT #63: BLUEBERRY PILOT PROGRAM

This pilot program continues. FCIC utilized ERS feasibility data in combination with data from grower groups, marketing associations, universities, and other research organizations to develop a pilot program for the 1995 crop year. Production records, grower interest, and RMA Regional Service Office recommendations were used to select 13 pilot counties in 4 states. These are: Ottawa and Van Buren, Michigan; Covington, Forrest, Jones, Lamar, Pearl River, Simpson, Smith and Wayne, Mississippi; Atlantic and Burlington, New Jersey; and Bladen, North Carolina.

The pilot program was expanded for the 1997 crop year to include lowbush blueberry production in Hancock and Washington counties, Maine.

For the 1996 crop year, 297 policies were purchased representing 12,844 net acres of blueberries. For the 1997 crop year, 335 policies were purchased representing 15,682 net acres of blueberries.

A research study is currently underway to test an individual bush mechanical harvester which may have potential for loss adjustment assessment. This study will be conducted at three field locations during the 1998 harvest year.

PROJECT #64: CANOLA PILOT PROGRAM

A pilot canola program for spring planted varieties was introduced in 11 selected counties in Idaho, Minnesota, Montana, North Dakota and Washington for the 1995 crop year. Fall planted varieties of canola/rapeseed were added to the pilot beginning with the 1997 crop year in selected counties in Georgia, Oregon, and Idaho. Participation in the canola pilot program was 77 percent of all planted canola acreage in 1996. More than 2,000 producers and approximately a quarter-million acres were insured for both the

1995 and 1996 crop years. Performance as measured by loss ratio has been less favorable for canola relative to the comparative crops, barley, sunflowers, and wheat. Prevented planting provisions in 1995 and 1996 were identified as the cause for the unfavorable comparative loss ratio of canola. This problem was addressed for the 1997 crop year. The Agency expects the changes to the prevented planting provisions to correct the comparative unfavorable loss ratio experience and has converted the pilot to a permanent program for the 1998 crop year..

PROJECT #65: PECAN REVENUE PILOT

The research phase of this project is complete. The project is now in the pilot phase. The pilot program was implemented for the 1998 crop year and is scheduled to continue through the 2000 crop year. Data from the pilot will be gathered annually. A comprehensive evaluation of the pilot program will be conducted after the third year. This pilot is available in Dougherty, Lee, and Mitchell counties in Georgia; Culberson, El Paso, and Pecos counties in Texas; and Dona Anna, county New Mexico.

This pilot insures pecan growers from loss of revenue due to reductions in yield or price. The pilot requires the growers to insure for two consecutive years because pecan trees have a tendency to alternately produce a small crop following a large crop. However, premium and indemnity will be on an annual basis.

PROJECT #66: DEVELOP A FUNCTIONAL CROP EXPANSION REQUEST TRACKING SYSTEM

This project is complete. The objective of this project was to create an internal on-line data base system that would allow an objective approach to analyzing crop expansion requests. It was also designed to provide a mechanism to store, retrieve and track the requests and print detailed reports. The tracking system was developed by the RMA Information Resources Management Branch. This internal database system provides management report queries, drop down screens, and a log of users.

PROJECT #67: DEVELOP AN ASSESSMENT METHODOLOGY FOR PROVIDING RELIABLE ESTIMATES OF CROP LOSSES WHEN NEEDED TO SUPPORT MANAGEMENT INFORMATION REQUESTS

OBJECTIVES/BENEFITS TO RMA: The purpose of this project was to design an objective model for estimating RMA crop losses. Two different approaches were used. The input for the first model consisted of Vegetative Index Numbers (VIN) derived from remotely sensed satellite data and RMA experience data. The project attempted to provide estimates of RMA loss cost and loss ratio by crop reporting districts.

A discriminant analysis technique was used to categorize RMA crop losses based on the VIN satellite data. The statistical model showed a weakness in discriminating loss categories when crop conditions were mixed in a crop reporting district. When crop losses or favorable conditions were widespread the model could not correctly classify the RMA loss ratio groups. It was learned that the level of resolution from the satellite data was too low to adequately provide significant results. The aggregation of data over very large areas did not capture important field level information. The high resolution data required for accurate estimates is currently cost prohibitive and require significant amounts of man hours and computer power.

An alternative approach employed the use of the Crop Moisture Index (CMI), derived from weather and soil data. Sixteen weeks of CMI data were used in a regression analysis to estimate loss ratio and loss cost at the crop reporting district level. The regression analysis produced artificially high coefficients of determination due to the large number of independent variables relative to the number of years in the data series. Using fewer independent variables did not produce accurate estimates. This method may produce better results with a longer CMI data series in the future as Research and Evaluation Division continues to accumulate these data.

DELIVERABLES/TIMELINE: Further work on this project has been suspended until additional data are accumulated.

PROJECT #68: RESEARCH INTO GROUP INSURANCE CONCEPT

OBJECTIVES/BENEFITS TO RMA: This project was proposed to determine if there are specific groups of lower risk farmers, such as cooperatives or grower associations, that would qualify for a separate program, possibly at lower premium rates.

DELIVERABLES/TIMELINE: This project has been put on hold indefinitely.

PROJECT #69: WEEKLY WEATHER AND CROP SUMMARY

This project is complete. The project resulted in the generation of the Weekly Weather and Crop Summary is to keep RMA management informed of current weather events and crop conditions. Weather and crop information are gathered from several sources and summarized along with maps and graphs detailing specific problem areas where RMA has significant liability exposure. As weather and crop information continue to be accumulated, RMA will benefit from increased knowledge about the specific events which result in weather related problems and excessive indemnity payments within an insurance program. The Weekly Weather and Crop Summary is released weekly throughout the growing season via cc:Mail on RMA's network.

PROJECT #70: CROP INSURANCE PROGRAM EFFECTS ON CHEMICAL INPUT USE

This project is complete. A project report is available upon request.

ABSTRACT: This project was precipitated by a paper by Horowitz and Lichtenberg claiming that the MPCI program has increased the use of some toxic chemicals by some participating farms. Project results were not consistent with the Horowitz and Lichtenberg conclusions. While this project was limited to wheat producers, the research from this project strongly indicates that wheat producers who purchase crop insurance actually use fewer agricultural inputs. The study also indicates that farmers who use agricultural chemical inputs more intensively are less likely to purchase crop insurance. The researchers disseminated their findings to farm management extension specialists to assist and enhance their educational efforts in risk management and environmental quality.

PROJECT #71: EFFECTIVENESS OF DISASTER PROTECTION AS PROVIDED BY MPCI, MPCI MARKET VALUE REPLACEMENT COVERAGE, GROUP RISK PLAN AND DISASTER AID

OBJECTIVES/BENEFITS TO RMA : This project has been put on hold indefinitely. This project was planned as a cooperative effort with Extension Service personnel in the Department of Agricultural Economics at Kansas State University. This research project had five objectives. The project would identify the level of yield loss and indemnity payments over a specific period for Kansas wheat farmers, estimate farm level wheat disaster payments received by wheat farmers, and analyze the farm financial conditions as measured by net income, changes in asset position, financial ratios, and income variability, under a variety of scenarios. Under these same scenarios, the project would evaluate reductions in net farm income, and for each risk management alternative, estimate the number of farmers who would have had negative net incomes and have been forced into liquidation. Last, the project would identify the effect of a replacement endorsement, GRP, and APH on RMA's loss ratio, and provide an analysis of several alternative models of replacement coverage. This study would provide valuable information to decision makers as they design future agricultural policy on disaster protection.

PROJECT #72: NEW PROGRAM DEVELOPMENT HANDBOOK

This project is complete. A copy of the handbook, FCIC 23010, is available upon request. The handbook was last updated November, 1996.

ABSTRACT: The purpose of the New Program Development Handbook is to provide a general outline of the process and procedures by which the RMA responds to requests to add a new crop to the crop insurance program. The handbook outlines the data necessary to perform a comprehensive analysis of the new crop program request, and provides a framework to plan, implement, and evaluate any subsequent

new crop expansion pilot program. As with all handbooks, continual improvements will be made as the discovery process continues.

PROJECT #73: OPTIONS BASED REINSURANCE FOR REPLACEMENT COVERAGE

OBJECTIVES/BENEFITS TO RMA : This project is currently on hold. This project will investigate an alternative strategy for RMA to manage the risk of reinsuring replacement coverage. It is one of several proposals put forward by the Risk Management subgroup of the USDA Farm Bill Task Force for potential inclusion in the 1995 Farm Bill. By transferring risk to the market place through the purchase of market instruments such as put options, and coupled with replacement coverage crop insurance, it may be possible to reduce the cost to the Treasury of providing revenue stabilization.

DELIVERABLES/TIMELINE: This project was planned as a cooperative effort with Extension Service personnel in the Department of Agricultural Economics at Kansas State University. It is currently on hold pending completion of other projects by the researcher.

PROJECT #74: REDEVELOP AND EXPAND ANALYSIS OF NORMALIZED LOSS RATIOS

This project is complete. A project report is available upon request.

PROJECT #75: DEVELOP TABLES FOR QUALITY ADJUSTMENT FACTORS

This project is complete. A project report is available upon request.

ABSTRACT: At the request of the Product Development Division, Research and Evaluation Division analyzed price and discount data from the Office of Farm Programs, and developed quality adjustment factors. A statistical multiple range test was used to group homogeneous terminal markets based on prices from 1988-1993. These homogeneous groups formed 4 to 6 regions for each crop studied. The loading order discount data were divided by the average price in each region to develop the quality adjustment factors. Discount data from the Commodity Credit Corporation (CCC) were used to supplement the loading order discount data. Quality adjustment factors were created for corn, barley, oats, rye, soybeans, flax, and grain sorghum. Factors were developed for test weight, kernel damage, smutty/garlicky/ergoty, shrunken/broken kernels, musty, sour, commercially objectionable or foreign odor, black barley, thin barley, and sound barley. Regional differences in price data were substantially reduced when the final factors were calculated, allowing an average factor to be used in most cases.

PROJECT #76: CITRUS TREE EVALUATION

This evaluation is complete.

OBJECTIVES/BENEFITS TO RMA : The evaluation's objective was to identify factors contributing to the citrus tree insurance program's poor loss experience. RMA citrus tree insurance is available in three Texas counties. The citrus tree insurance program had the highest loss ratio (7.85) and the tenth highest net loss (\$48 million) for the crops RMA insured for the 1987 through 1991 crop years.

FINDINGS: Producer participation in the citrus tree crop insurance program is high. Approximately 90% of the citrus tree acreage (for the three Texas counties) is covered by RMA citrus tree insurance.

Freeze was the largest contributing factor on the loss experience. Citrus trees in Texas were severely damaged by two freezes (1983 and 1989) within the past thirteen years. This caused the yearly loss experience to fluctuate between total loss and no loss (high severity and low frequency). This variable loss pattern caused citrus trees to be unique from the majority of crops RMA insures, yet RMA uses the same catastrophic rating model for citrus trees as used in other crops with dissimilar loss patterns.

About half of the citrus trees insured have been dehorned (a process of cutting back the main limbs of the tree to a length that is not more than one-fourth the height of the tree) at least once or twice. This is an approved method to renovate an orchard and return it to production after a loss. A dehorned tree is not as structurally sound as a replacement tree. The more times a tree is dehorned the less sound it becomes. RMA has no guideline for modifying citrus tree insurability based on dehorning. Therefore, despite how many times a tree has been dehorned, it is eligible for insurance with the same coverage as a replacement tree.

RMA bases citrus tree coverage (amounts of insurance) on cost estimates to renovate the orchard using replacement trees. Renovating an orchard by dehorning trees costs approximately 50-90% less than it does to renovate the orchard using replacement trees (depending on the size of trees) yet RMA indemnities are the same despite how the orchard is renovated. This causes indemnity payments to producers who dehorn rather than replace their trees to exceed the producer's actual costs.

Other topics covered in the evaluation include insurance by tree type, the value of RMA obtaining additional tree statistics from the reporting organizations, micro sprinklers, and water pouches.

PROJECT #77: PEANUT UNIT EVALUATION

This evaluation is complete.

OBJECTIVES/BENEFITS TO RMA : This evaluation was to determine whether the current unit structure affects the peanut loss experience. The peanut program had a net loss (indemnity minus premium) of \$221 million and a loss ratio of 2.56 for the 1987-1991 crop years.

The current unit structure is defined in the peanut policy by farm serial number (FSN). A premium discount for basic/policy units is not an option of the peanut program. Producers with one FSN are paying the same rate as producers with multiple FSNs.

FINDINGS: The majority (53%) of peanut contracts had multiple units. Multiple unit contracts had a 19 percent higher cost than single unit contracts. Loss ratio and loss cost remain constant regardless of the size of the unit for the overall peanut program for the 1989-1993 crop years. An empirical study showed a 12 percent reduction in indemnity by converting multiple unit contracts to single unit contracts for the 1989 and 1990 crop years.

As a result of this and other studies, several revisions have been recommended for the 1998 crop year. Unit language has been revised to conform with the Common Crop Insurance Policy Basic Provisions, providing a basic unit by ownership. Basic units would not be divided into optional units on any basis other than that the unit be located in a separate farm identified by the single FSA Farm Serial Number.

Furthermore, the ownership of farm poundage quota has been realigned in the new legislation. Effective for the 1998 crop year, peanut quotas would be forfeited for farms in two classifications. The first includes farms owned or controlled by municipalities, airport authorities, schools, colleges, refuges, and other public entities. The second category includes people who are not peanut producers and whose primary residence and place of business are located outside the state in which the quota is allocated. Beginning with the 1998 crop year, the Secretary of Agriculture will establish a farm poundage quota for a farm owned or controlled by these two classifications.

Yield spans should be reviewed. In some states like Georgia, where the loss experience was the worst, policies with a yield span above the median incurred substantially higher loss ratios than those below the median.

Planting dates should be reviewed. The ERS's evaluation indicated that poor loss experience on early plantings in Georgia suggest a narrow planting window in that state.

The interaction of crop insurance and peanut commodity programs is a must. The Agricultural Market Transition Act (AMTA) of 1996 made significant changes in the peanut program. Lease and transfer of quota for the fall is proposed in the new language to exclude the fall transfers of the FSA effective poundage marketing to another FSA Farm Serial Number. Therefore, when settling the producers claim, the effective poundage marketing quota for each unit will be limited to the lesser of the amount of quota reported on the acreage report, or the amount of the FSA effective poundage marketing quota minus fall transfers of the FSA effective poundage marketing quota.

According to the evaluation the quota price has been 68-127 percent higher than the market price in the last two decades. This is a problem when there is double benefit of quota losses. When an insured has a quality loss or a quantity loss on the quota guarantee, FCIC indemnifies the loss at the quota price. The insured can save the unused quota unless he or she puts lower-graded peanuts into the Quota Loan Pool. While the insured has received the quota price benefit through FCIC indemnity payments, the saved quota

can be reused for in-farm transfer or out-of-farm lease (under previous farm bills, the unused quota can be carried over for next year use. This has allowed the insured to receive a double benefit of quota losses. The new farm bill eliminates the carryover.

The new farm bill limits the support price for lower-graded peanuts to 70% of the quota price. FCIC will indemnify the 30% difference to guarantee that the insured gets the quota price for quota production under the circumstances of quality loss. For the amount of peanuts being out into the Quota Loan Pool, the producer cannot reuse the quota. FCIC probably should be adjusting the support price to parallel with the new farm bill language.

RMA must try to simplify some of the technical and administration areas between the Peanut Crop Insurance Program and FSA Peanut Commodity Program. The last two years have been very confusing to the farmer and agency personnel.

PROJECT #78: COTTON EVALUATION

OBJECTIVES/BENEFITS TO RMA: The purpose of this evaluation was to identify factors contributing to the cotton insurance program's loss experience. For crop years 1988-1992, RMA's cotton program experienced a loss ratio of 2.05 and a net loss (premium less indemnity) of \$378 million. Cotton ranks fourth in premium collected (1989-1993) of the crops RMA insures.

Comments regarding cotton program improvement were solicited through the Federal Register. As a result of the comments received, many concerns were reviewed. Two problems were reported as being major contributors to the poor program performance. One was the 1987 elimination of staged guarantees, and the second was the absence of an actuarial yield restructuring after the modification to the 1989 Actual Production History (APH) program for cotton. Other topics covered in the evaluation include the quality of APH historical information, loss adjuster tracking, and a unit analysis.

The evaluation results and recommendations for program improvement have received Research and Development (R&D) Division level concurrence.

PROJECT #79: COTTON HARVEST INCENTIVE.

OBJECTIVES/BENEFITS TO RMA: The Cotton Harvest Incentive (CHI) was a pilot program for the 1995 and 1996 crop years in Bailey, Cochran, Dawson, Fisher, Hale, Haskell, Howard, Jones, Lamb, Mitchell, Nolan, and Scurry Counties, Texas. The harvest incentive should result in more accurate loss determinations, and has the potential to provide more cotton to the marketplace. More accurate loss determination will provide a more representative data base for use in preparing actuarial structures.

The Board of Directors of the Federal Crop Insurance Corporation (FCIC) approved a new modified CHI pilot program for the 1997 and 1998 crop years. It will continue to be available in the same Texas counties as listed above.

The new CHI was approved on a pilot basis as an optional endorsement. The new CHI includes the following changes from the previous CHI:

1. The incentive is changed from 35 pounds to 7.5 percent of the approved yield with a 35 pound maximum.
2. The penalty for unharvested acres is eliminated.
3. The option is restricted to basic units.
4. The surcharge is 12 percent of the base premium.
5. The rate option code is 'IH' for the cotton harvest incentive effective for the 1997 crop year.

DELIVERABLES/TIMELINE: The new CHI pilot will be evaluated after the 1998 crop year.

PROJECT #80: AIR-SEEDED SOYBEAN PILOT PROGRAM EVALUATION

OBJECTIVES/BENEFITS TO RMA: The purpose of this project was to examine crop year 1993 air-seeded soybean experience relative to the one year's data (crop year 1992) obtained from the pilot air-seeded soybean program to determine the feasibility of insuring air-seeded soybeans as a standard insurance offer in future years.

DELIVERABLES/TIMELINE: This project is complete. The evaluation of crop year 1993 experience was completed August 1, 1994. The findings were not sufficient to make a determination of whether to eliminate or continue the pilot study, or allow an insurable practice in future years. The Research and Evaluation Division has estimated from information received from air-seeding applicators in the pilot program states that at most 5 percent of the soybean acreage in the pilot program area is air-seeded. The same applicators did not foresee an increase in the use of the practice. They did foresee increased use of minimum-till and no-till drilling as a practice. Research and Evaluation Division recommended elimination of the air-seeded soybean pilot and establishment of the practice in those counties recommended by the Regional Service Offices.

PROJECT #81: GRAIN SORGHUM EVALUATION

OBJECTIVES/BENEFITS TO RMA: It is RMA's intent to evaluate each of its crop insurance programs periodically. Crop insurance programs experiencing high loss ratios and net losses are priority programs for RMA to evaluate. For crop years 1989-1993, RMA's grain sorghum program experienced a loss ratio of 1.66 and a net loss (premium minus indemnity) of \$71 million.

The evaluation included a review of insurance areas for actuarial and underwriting performance; the establishment of accurate program dates (sales closing, final planting, acreage reporting, and contract cancellation); the effect of unit division and related rate impacts; and the determination of insurance coverage, an analysis on cause of loss, frequency and severity of losses, and other pertinent program factors.

DELIVERABLES/TIMELINE: The evaluation results and recommendations for program improvement have received Research and Evaluation (R&D) Division level concurrence.

PROJECT #82: POTATO EVALUATION

OBJECTIVES/BENEFITS TO RMA: It is RMA's intent to evaluate each of its crop insurance programs periodically. Crop evaluations provide valuable insight into how programs are operating and the extent to which they are serving the customer. Programs experiencing high loss ratios are priority programs for RMA to evaluate. For crop years 1989-1993, RMA's potato program experienced a loss ratio of 2.00 and a net loss (premium minus indemnity) of \$57 million.

DELIVERABLES/TIMELINE: The evaluation results and recommendations for program improvement have been reviewed by the Research and Evaluation (R&D) Division.

PROJECT #83: RICE EVALUATION

OBJECTIVES/BENEFITS TO RMA: This evaluation's purpose was to find the factor(s) contributing to the rice insurance program's poor performance. Actuarial, underwriting, loss adjustment, training, causes of loss, unit structure, and other appropriate areas were reviewed.

The main geographical focus of the evaluation was the 4-state area of Arkansas, Louisiana, Mississippi, and Texas. This 4-state area had over 80 percent of the planted rice acreage in the United States during the period of 1988 through 1993. It also had over 90 percent of the rice crop insurance program acres insured, premium, liability, and indemnity for this period.

The evaluation discovered that the approved actual production history (APH) rice yields of insured producers generally fell below the APH yields computed using the National Agricultural Statistics Service (NASS) county average rice yields. It also discovered that these insured producer yields generally placed these producers in the higher yield spans of the rice actuarial structure.

DELIVERABLES/TIMELINE: Evaluation results and recommendations for program improvement have been made by Research and Evaluation Division.

PROJECT #84: NONSTANDARD CLASSIFICATION SYSTEM (NCS) EVALUATION

This project is complete. A project report is available upon request.

ABSTRACT: The contractor estimated that \$69 million was saved in crop year 1992 by having NCS in place for corn, wheat, peanuts, cotton, grain sorghum, barley, and soybeans; and \$73 million was saved in 1993 when hybrid seed, oats, rice, and tobacco were added. The NCS selection process which uses a frequency test and a transformation of the loss ratio (Z score) was found to be a reasonable approach to identifying insureds with atypical loss frequency and severity. However, it was found that in catastrophic cases and low premium rate crops, that a variation in the frequency test and an adjustment in the Z score may be appropriate. This latter finding was examined in Project #85.

PROJECT #85: NONSTANDARD CLASSIFICATION SYSTEM (NCS) FOLLOW-UP EVALUATION

This project is complete. A project report is available upon request.

ABSTRACT: This study had three parts. In the first part, the contractor found that the data system proposed by the Reengineering Project of the Actuarial Division appears to provide an adequate basis for the suggested statistical analyses at various levels of aggregation which are outlined in the report. In the second part, changes generated by the modified Actual Production History (APH) plan were found to eliminate the need for a separate NCS yield computation in all cases except those with exactly four years of production data. This leads to questions of whether or not modified APH logically eliminates the need for a separate NCS underwriting program. In the third part which addresses the problems of "too few" and "too many" NCS selectees, a methodology outline is presented to modify the Z score as the base rate changes within a crop program when the selection level is equal to or less than three percent. When the selection level is greater than three percent the contractor recommended using the Z score and loss frequency in combination to make selections. Four categories of Z score and loss frequency were recommended.

PROJECT #86: RESEARCH ON CELERY, AND LETTUCE

Research and Evaluation Division has followed the New Program Development Handbook, FCIC-23010, to conclude that crambe is not a viable candidate for crop insurance at this time.

PROJECT #87: RESEARCH ON AQUACULTURE

Research and Evaluation Division is continuing to research aquaculture and is working with the Regional Service Offices (RSO's) that have expressed interest in the project. The Raleigh RSO is researching Hybrid Sea Bass, Cage Cultured Salmon, Calms, and Catfish. The Valdosta RSO is researching Catfish, Shrimp, Clams, and Ornamental Fish. The Jackson and Oklahoma RSO's are researching Catfish and Crawfish. The RSO's are in the process of answering the required questions outlined in the New Program Development Handbook and anticipate the development of an aquaculture mortality program for the year 2000. RSO representatives have attended aquaculture field days and have collected information on selected species. Project plans and time lines have been developed.

PROJECT #88: RESEARCH ON MILLET

In response to requests for millet insurance, FCIC contracted with the Economic Research Service (ERS) to perform a study on the feasibility of insuring millet. Based on the ERS feasibility study, and millet risk analyses performed by the Research and Evaluation Division and the Topeka and Billings Regional Service Offices, FCIC developed a millet pilot program.

The millet pilot program is an Actual Production History (APH) plan of multiple peril crop insurance. Millet producers may sign up for catastrophic coverage through their insurance agent or the local FSA office. Additional coverage is available through an approved crop insurance agent. In the millet pilot program counties, linkage requirements to be eligible for certain other Department of Agriculture program benefits apply for millet as with any other insurable crop.

The millet pilot program was available for the 1996-1998 crop years for five counties: Logan, Colorado; Cheyenne and Deuel counties, Nebraska; Dickey, North Dakota; and Bennett, South Dakota. Production records, grower interest, and RMA Regional Service Office recommendations were used to select the pilot counties. The 1996 annual evaluation of the millet program has been completed. Research and Evaluation Division plans to submit the policy to the Federal Register for the 2000 crop year.

PROJECT #89: PEANUT EVALUATION

OBJECTIVES/BENEFITS TO RMA: It is RMA's intent to evaluate each of its crop insurance programs periodically. Crop evaluations provide valuable insight into how programs are operating and the extent to which they are serving the customer. Programs experiencing high loss ratios are priority programs for RMA to evaluate. For crop years 1989-1993, RMA's peanut program experienced a loss ratio of 2.53 and a net loss (premium minus indemnity) of \$272 million. The Research and Evaluation Division arranged an independent evaluation of RMA's peanut program by the Economic Research Service.

DELIVERABLES/TIMELINE: Evaluation results and recommendations for program improvement have been made received by Research and Evaluation Division.

PROJECT #90: NURSERY PROGRAM RE-DESIGN

OBJECTIVES/BENEFITS TO RMA: Extensive redesign of the current nursery policy has been undertaken over the past two years. Numerous meetings with nursery industry and grower groups have resulted in a completely new policy design. Features of the new policy design include elimination of inventory reporting requirements, inclusion of coverage for both containerized and in-ground nursery stock, and a peak season endorsement.

DELIVERABLES/TIMELINE: The proposed new nursery program is in the RMA regulatory concurrence process.

PROJECT #91: COOPERATIVE AGREEMENT FOR ACTUARIAL RESEARCH WITH ECONOMIC RESEARCH SERVICE

OBJECTIVES/BENEFITS TO RMA: The Research and Evaluation Division has expanded its Cooperative Agreement with the Economic Research Service (ERS) to include additional actuarial and underwriting research. The 1993 Omnibus Budget Reconciliation Act (OBRA) required the crop insurance program to achieve an overall projected loss ratio of 1.1 by the year beginning October 1, 1995. In response, the Federal Crop Insurance Corporation (FCIC) developed the Blueprint for Financial Soundness which, among other things, resulted in the Modified Actual Production History (APH) program, an expanded Non-standard Classification System (NCS), and a Catastrophic Yield Adjustment. These changes alone warrant a comprehensive evaluation of many crop insurance program business practices.

ERS has the resources to conduct approximately 50 percent of the actuarial and underwriting research required by RMA, and has developed a cooperative agreement with an actuarial consulting firm to conduct the balance of the research.

The top research priorities include a review of the crop insurance program's rating methodology, an evaluation of all aspects of the Modified APH program, and a review of the catastrophic yield adjustment program. RMA will use the findings of this independent evaluation to make necessary and timely program adjustments, and make additional progress on the initiatives outlined in the Blueprint for Financial Soundness.

DELIVERABLES/TIMELINE: The timetable for delivery of these products by ERS varies. Specific due dates are available upon request.

PROJECT #92: CROP INSURANCE, MORAL HAZARD, AND AGRICULTURAL CHEMICAL USE

This project is complete. A project report is available upon request.

ABSTRACT: To the extent that crop insurance subsidies encourage higher levels of planted acres, they also increase the aggregate amount of chemical fertilizers, pesticides, and herbicides applied to our soils. Recent empirical conclusions suggested that these chemical applications were at a relatively higher rate. The findings of this study indicate that, at least for Kansas wheat producers, input use and crop insurance decisions are made jointly, thus a simultaneous equations estimation approach is appropriate. Insured wheat farms used fewer chemical inputs than uninsured farms, and farms that used fewer chemical inputs were more likely to be insured. Thus, Kansas wheat farmers respond to moral hazard incentives by using fewer environmental pollutants as inputs.

PROJECT #93: RESEARCH PAPER ON GEOGRAPHIC INFORMATION SYSTEMS

OBJECTIVES/BENEFITS TO RMA : Geographic Information Systems (GIS) is a computer-based tool which creates, stores, manages, and analyzes geographic data. Since RMA deals with a tremendous amount of geographic data, GIS could provide immediate benefits. Technology has rapidly advanced in this area and farmers are already utilizing these resources from private industry. Within the next 5 years, most of the data sets and systems will be in place for widespread use. With the introduction of Global Positioning Systems (GPS) and Variable Rate Technology (VRT), farmers can precisely monitor yield variations within their fields and apply chemicals at a variable rate instead of one broad application to the entire field. Farmers will be able to obtain a tremendous amount of detailed data about their fields, and RMA will have to keep up with this trend to be able to adequately serve and service the farmer.

DELIVERABLES/TIMELINE: Research and Evaluation Division has compiled a paper outlining the progress of GIS development and its potential applications for RMA. The USDA is conducting an inventory and review of the GIS/GPS needs of its Agencies, with the objective of assuring that any thrust forward into these technologies is reasoned and consistent across Agencies.

PROJECT #94: RESEARCH ON AVOCADOS

OBJECTIVES/BENEFITS TO RMA : Collection of feasibility data regarding the potential coverage of avocados by RMA began in June 1995. Meetings were held with interested farmers in Ventura and San Diego Counties, CA in June 1995, and in Dade County, FL in July 1995. Another meeting with growers and grove care managers was held in Ventura County, California in January 1996. RMA has examined the costs and benefits associated with offering insurance on avocados. Research is continuing on variety data, obtained on individual and county bases. Crop provisions and premium rates have been issued. The Board of Directors approved the offering of a pilot avocado program for Ventura County, CA. Training materials and examinations were prepared and the agent certification examinations were given and the program was offered to growers.

DELIVERABLES/TIMELINE: A pilot program for Ventura County, California was established for the 1998 crop year, and will continue throughout the 2000 crop year.

PROJECT #95: DEVELOPMENT OF BLUEBERRY CROP ESTIMATION TECHNIQUES

This project is complete.

OBJECTIVES/BENEFITS TO RMA : RMA required an accurate, consistent method of estimating blueberry production on both high bush and rabbit eye types of blueberry bushes. Such an estimation

method was necessary to conduct the loss adjustment procedure for RMA's new blueberry pilot program of crop insurance. Appraisal methods for both harvested and unharvested blueberries were developed, including methods to evaluate quality adjustment and wind and hail damage.

PROJECT #96: AN INVESTIGATION OF THE INSURABILITY OF PASTURE LAND (Phase 1)

OBJECTIVES/BENEFITS TO RMA: The primary objective of this project is to investigate the feasibility of pasture insurance. The first phase will investigate the availability of appropriate data and the identification of insurance alternatives. Each insurance alternative will be specified and a preliminary evaluation of each will be conducted. An evaluation of the existing pasture insurance program in Alberta, Canada, will be included in this process. This is a joint research project between Montana State University and the Research and Evaluation Division.

DELIVERABLES/TIMELINE: This project has been canceled. The availability of sufficient, meaningful data proved to be a limiting factor. The Research and Evaluation Division is developing an area based rangeland insurance plan to address the needs of these ranchers.

PROJECT #97: EFFECTS OF CROP INSURANCE ON LAND USE IN ENVIRONMENTALLY SENSITIVE AREAS

This project is complete. A project report is available upon request.

PROJECT #98: GROUP RISK PLAN (GRP) FOCUS GROUPS

This project is complete. A project report is available upon request.

PROJECT #99: GROUP RISK PLAN (GRP) SOFTWARE

This project is complete. The GRP software is updated annually. The most recent version of the GRP software may be downloaded from the Pilot Program page of the Research and Evaluation Division website at <http://www.act.fcic.usda.gov>.

PROJECT #100: EVALUATION OF CURRENT CROP INSURANCE PROGRAMS

OBJECTIVES/BENEFITS TO RMA: This project has been funded to assist RMA in the improvement of program design. The evaluations will be conducted by the Commercial Agriculture Division of the Economic Research Service (ERS). These evaluations will examine actuarial, underwriting, and other issues associated with the respective program. RMA will also review the ERS evaluation process with the goal of improving its own evaluations.

DELIVERABLES/TIMELINE: ERS is currently conducting an evaluation of the peach insurance program.

PROJECT #101: YIELD FORECASTING WITH LIMITED DATA FOR CROP INSURANCE PREMIUM RATE SETTING

OBJECTIVES/BENEFITS TO RMA: This project has been funded to assist RMA in the improvement of program design. The research will be conducted by the Commercial Agriculture Division of the Economic Research Service (ERS). ERS will analyze whether the estimates of means and variabilities of individual farm yields can be improved by supplementing each farm's yield data with county yield data or data from nearby farms. Further gains in rate-setting accuracy may be attainable by quantifying the skewness in yield distributions.

DELIVERABLES/TIMELINE: This project is currently in the design phase. Once the project plan is developed, the timeline will be published.

PROJECT #102: REVIEW OF 'MVP' TYPE PRODUCTS

This project is complete. A project report is available upon request.

PROJECT #103: RESEARCH ON 18 SPECIALTY CROPS. THESE INCLUDE AQUACULTURE, CITRUS/TROPICAL FRUIT AND TREES, NUT AND NUT TREES, ARTICHOKEs, BEETS, BUCKWHEAT, CABBAGE, CHILI PEPPERS, CRAMBE, CUCUMBERS, EGGPLANT, FRESH MARKET SNAP BEANS, GARLIC, OLIVES, PUMPKIN/SQUASH, SESAME SEED, SPINACH, TART CHERRIES, AND WILD RICE.

OBJECTIVES/BENEFITS TO RMA: This project was funded to assist RMA in developing new or improved products for a comprehensive risk management portfolio. These studies are conducted by the Economic Research Service (ERS).

These studies assess the feasibility of developing crop insurance programs for specialty crops. The studies examine risk management alternatives available to producers by region, and identify the potential problems associated with developing a viable insurance program for each crop. Information is gathered from the

Census and other sources on farm characteristics such as enterprise and income diversification, ownership structure, and size distribution of farms. These studies are available in WordPerfect format for downloading from the Research and Evaluation Division website.

DELIVERABLES/TIMELINE: Feasibility studies have been received for all but the following crops:

aquaculture, canola/rapeseed, chili peppers, leafy greens, and nut trees

PROJECT #104: THE DEMAND FOR INSURANCE FOR NONINSURED FRUITS AND VEGETABLES

This project is complete.

OBJECTIVES/BENEFITS TO RMA: This project was funded to assist RMA in developing new or improved products for a comprehensive risk management portfolio. This project will detail the background, data acquisition methods, statistical analysis methods and the results from the researcher's efforts to identify the following: willingness to pay for crop insurance, other factors affecting the demand for crop insurance, cost of providing crop insurance, features of a viable insurance product for each crop, and the delivery system and private insurer incentive structure most likely to be conducive to the efficient marketing of the product. The project is a joint research project between Arizona State University, the Commercial Agriculture Division of the Economic Research Service (ERS), and the Research and Evaluation Division.

The researchers conducted a mail survey in December, 1995 which included questions concerning growers input use, yield levels, their crop yield histories, sales amounts, current risk management strategies, and the willingness to pay for different insurance products. A follow-up phone survey was conducted in Summer, 1996.

DELIVERABLES/TIMELINE: The draft final report for this project has been received, and comments are being assembled. The final project report will be made available when completed.

PROJECT #105: AN INVESTIGATION OF THE INSURABILITY OF DIRECT SALE PERISHABLE CROPS IN THE NORTHEAST

OBJECTIVES/BENEFITS TO RMA: The Federal Crop Insurance Reform Act of 1994 directed RMA to report to Congress on the feasibility of offering a crop insurance program designed to meet the needs of producers of vegetables and other perishable crops who market through direct marketing channels. In particular, RMA was directed to investigate insurance products for those producers who market through farmers' markets, pick-your-own operations, and roadside stands. The project is a joint research project between the University of Maine, the Extension Service, and the Research and Evaluation Division.

DELIVERABLES/TIMELINE: Phase 1 of the project investigated the availability of the necessary data required to evaluate the crops that are candidates for this insurance product. Phase 2 will provide RMA with an analytical and descriptive report on the survey results. The report is due to RMA by March 1998.

PROJECT #106: CROP INSURANCE PREMIUM ADJUSTMENTS FOR UNIT SIZE AND UNIT NUMBER

OBJECTIVES/BENEFITS TO RMA : This project was funded to assist the RMA in determining appropriate premium adjustments as a function of unit size and number of units. The project is a joint research project between the Commercial Agriculture Division of the Economic Research Service (ERS), and Texas A&M University. The analysis will be by crop and by region. This work will update Project #59.

DELIVERABLES/TIMELINE: This project is nearing completion. Results for major field crops will be available in Spring, 1998.

PROJECT #107: RESEARCH ON MELONS

OBJECTIVES/BENEFITS TO RMA : The objective of this research is to evaluate potential for melon insurance coverage.

The New Crop Program Development Handbook (FCIC 23010) guidelines were followed to evaluate the potential for a melon insurance program. Watermelons were selected as the melon crop to evaluate for a potential program due to their high relative value compared with cantaloupes and honeydew melons. At the request of the Valdosta Regional Service Office (RSO) a fact finding trip to Florida and Georgia was made by Valdosta RSO and Research and Evaluation Division personnel May 13-23, 1996. A synopsis of the findings is that market risk is the number one risk of watermelon production. As production moves northward from south Florida, production becomes more and more speculative. Speculative production is estimated to be 50 percent in north Florida and Georgia. Acquiring adequate data for establishing actuarially sound rates for the crop is of concern.

DELIVERABLES/TIMELINE: Information from the fact finding trip was reviewed by Research and Evaluation Division. A national melon program was not deemed feasible according to FCIC-23010. The Valdosta RSO has assumed responsibility to pursue a regional program. Please contact Dave Sherman, Project Leader, at the Valdosta RSO for more information about this project.

PROJECT #108: DEVELOPMENT OF PROSO MILLET YIELD ESTIMATION TECHNIQUE

OBJECTIVES/BENEFITS TO RMA: The purpose of this project is to determine the yield components of proso millet. This project is being conducted by Colorado State University. Data will be collected on: 1)the number of tillers per plant; 2)the number of tillers that produce viable heads and the number of viable heads per tiller; 3)the number of seeds per head and a measure of large and small heads; and 4)the number of seeds per pound. Also, data will be collected on the ratio, in weight, of seed to head. Seeding populations and varieties will be indigenous to the area. The benefits of this project will be to provide RMA with a reliable crop estimation technique to accurately determine production and losses, and make fair and equitable payments to insured growers.

DELIVERABLES/TIMELINE: A written report is being compiled describing the results of the 1996 crop year data. The project will continue through the 1997 crop year with a final report scheduled for completion by April, 1998.

PROJECT #109: DEVELOPMENT OF FACTORS TO ACCOUNT FOR VARIETAL GEOGRAPHICAL AND ENVIRONMENTAL VARIABILITY IN PROSO MILLET YIELDS

OBJECTIVES/BENEFITS TO RMA: The purpose of this project is to study the yield components of proso millet and the effects of stand reduction on yields. This project is being conducted by the University of Nebraska. The project will: 1)develop a detailed description of proso millet growth and development from emergence to physiological maturity by days; 2)determine the influence on yields of a range of stand reductions after both the emergence of the fourth leaf and in the boot stage; and 3)determine the components of proso millet yield for several populations and varieties of proso millet.

DELIVERABLES/TIMELINE: A written report is being compiled describing the results of the 1996 crop year data. The project was continued through the 1997 crop year with a final report scheduled for completion by April, 1998.

PROJECT #110: IMPACT OF REDUCED STAND DENSITY ON PROSO MILLET YIELD AND YIELD COMPONENTS:

OBJECTIVES/BENEFITS TO RMA: The purpose of this project is to determine the effects of stand reduction on proso millet seed yield and to identify the yield components responsible for yield expression under reduced stand conditions. This project is being conducted by North Dakota State University. The project will: 1)develop a detailed description of proso millet growth and development from emergence to physiological maturity; 2)determine the influence on seed yield from different levels of stand reduction imposed at two important plant development stages of proso millet; and 3)determine the yield components of proso millet varieties grown at varying plant populations.

DELIVERABLES/TIMELINE: A written report is being compiled describing the results of the 1996 crop year data. The project was continued through the 1997 crop year with a final report scheduled for completion by April, 1998.

PROJECT #111: INCOME PROTECTION INSURANCE: A PILOT PROGRAM EXPANSION

OBJECTIVES/BENEFITS TO RMA: The purpose of this project was to develop a rate making method and to provide rates for fall planted wheat under the Income Protection Program in selected counties in three geographical areas. This project was conducted by Montana State University.

DELIVERABLES/TIMELINE: This project is complete. The pilot program expansion was implemented for the 1997 crop year for winter wheat in selected counties of Kansas, Montana, and Washington.

PROJECT #112: AN EVALUATION OF VARIOUS FACTORS THAT MAY AFFECT EXPECTED INCOME PROTECTION INDEMNITY PAYMENTS

OBJECTIVES/BENEFITS TO RMA: This project will identify the factors that affect income protection indemnity payouts and quantify their impact, thus providing a basis for developing more accurate rates. This project is being conducted by Montana State University. The project will analyze: 1)unit size or acreage; 2)the availability of units; and 3)farmer yield history.

DELIVERABLES/TIMELINE: The project is scheduled for completion by Spring, 1998.

PROJECT #113: PLANTING DATE EFFECTS ON YIELD AND AGRONOMIC TRAITS OF CANOLA

OBJECTIVES/BENEFITS TO RMA: This project was undertaken to determine the planting date effect on canola seed yield and other agronomic traits in different geographic areas. This project is being conducted by North Dakota State University. The results will assist RMA in determining the optimal planting dates for different geographic regions.

DELIVERABLES/TIMELINE: A written report has been received which describes the results of the 1996 crop year data. The project was extended through the 1997 crop year with a final report scheduled for completion by April, 1998.

PROJECT #114: EVALUATION OF MARKET ADVISORY SERVICES FOR AGRICULTURAL COMMODITIES

OBJECTIVES/BENEFITS TO RMA: This project will provide information on the role of market advisory services in agricultural risk management. The project will: 1)collect objective and comprehensive data on the agricultural marketing recommendations provided by market advisory services; 2)analyze the yield risk, marketing, and hedging strategies recommended by agricultural marketing advisors; and 3)investigate the economic value of agricultural marketing recommendations provided by market advisory services. This project is being jointly funded by RMA, ERS, and the Cooperative State Research, Education, and Extension Service and is being conducted by Ohio State University.

DELIVERABLES/TIMELINE: This project began in August, 1996 and will continue through June, 1998. Results for the 1996 crop year have been published. Project updates will be provided semi-annually and a final written report submitted at project completion.

PROJECT #115: DEVELOPMENT OF A BLUEBERRY CROP ESTIMATION TECHNIQUE

OBJECTIVES/BENEFITS TO RMA: The results will serve to improve the reliability of RMA's blueberry crop estimation technique, allowing RMA to more accurately determine production and losses. The project was conducted by Michigan State University.

DELIVERABLES/TIMELINE: This project is complete. The field research was conducted in the summer of 1996. A written report was provided in February, 1997 which summarized the 1996 crop estimation technique research.

PROJECT #116: MANAGEMENT PRACTICES FOR CANOLA PRODUCTION

OBJECTIVES/BENEFITS TO RMA: The objective of this project is to evaluate the effects of delayed planting and reduced plant population on yield and other characteristics such as maturity, height, lodging, and seed yield and quality. This project is being conducted by the University of Minnesota. This project will 1)investigate the relationship of canola yields to planting date, 2)investigate the relationship of canola yields to seeding rate, and 3)disseminate canola management information to growers and the crop insurance industry.

DELIVERABLES/TIMELINE: A written report describing the results of the 1996 crop year data has been received. The project continued through the 1997 crop year with a final report scheduled for completion by April, 1998.

PROJECT #117: RESEARCH ON CRAMBE

A national crambe program was not deemed feasible according to New Program Development Handbook, FCIC-23010.

PROJECT #118: SWEET POTATO PILOT PROGRAM

OBJECTIVES/BENEFITS TO RMA : RMA utilized ERS feasibility data in combination with data from grower groups, individual producers, marketing associations, universities, Extension Service, and other research groups to develop a pilot insurance program for introduction in the 1998 crop year. Production records, grower interest and Regional Service Office recommendations were used to select the pilot counties. The pilot program will be available in Baldwin county, Alabama; Merced county, California; Avoyelles, Morehouse, and West Carroll parish, Louisiana; Columbus and Johnston county, North Carolina, and Horry county, South Carolina.

DELIVERABLES/TIMELINE: The pilot is effective for the 1998-2000 crop year. Data from the pilot program will be gathered annually. Interim evaluations of the pilot program will be conducted annually, and a comprehensive evaluation will be conducted after the third year.

PROJECT #119: 1/3 COST SHARE OF PRODUCTION EXPENSES FOR FARM BILL SATELLITE BROADCASTS

OBJECTIVES/BENEFITS TO RMA: This project co-funded a series of satellite broadcasts to provide information to farm management specialists, extension educators, and others on changes resulting from implementation of the 1996 Farm Bill. This project was jointly funded by RMA, CSREES, and Washington State University.

DELIVERABLES/TIMELINE: This project is complete. This project was conducted during the fall of 1996.

PROJECT #120: DISASTER AID, RISK MANAGEMENT PROGRAMS, AND SOIL EROSION IN ENVIRONMENTALLY SENSITIVE AREAS

OBJECTIVES/BENEFITS TO RMA: An extensive time series/cross section county level data set established under a previous research project will be used to assess the effects of disaster relief and other risk management programs on soil erosion in environmentally sensitive areas. Effects on crop substitution as well as crop land will be assessed. In addition to corn and soybeans, other crops, including wheat and grain sorghum, will be examined. This project is being conducted by Montana State University.

DELIVERABLES/TIMELINE: This project began in September, 1996 and will be completed by Summer, 1998. A written report will be provided at that time.

PROJECT #121: ECONOMIC RESEARCH SERVICE (ERS) - 1997 RISK MANAGEMENT PROJECTS

OBJECTIVES/BENEFITS TO RMA: Following is a listing of risk management research projects being conducted by ERS for RMA during FY97. Specific information or copies of reports are/will be available upon request.

- 1) Revenue Insurance - This report will extend our analysis of issues related to the Income Protection (IP) and Crop Revenue Coverage (CRC) programs. Further analysis of revenue distributions and price variability issues will be examined. This analysis will also examine the budgetary uncertainty of a large scale revenue insurance program.
- 2) Analysis of the appropriate yield span adjustment factors - RMA uses exponential factors to adjust the base county rate to farms with yields above and below the base county yield. The analysis will examine the most recent RMA data to estimate appropriate yield span exponents by crop and region.
- 3) Assess risk management strategies under the new Farm Act - The 1996 farm bill provides a new policy environment which presents farmers with a new set of risk management decisions. Because the fixed production flexibility contract does not respond to variations in farm revenue variability, farmers are likely to adjust risk management strategies across the next seven years. Risk management options analyzed in this work will include crop insurance, revenue insurance, price futures and options, yield futures, etc.
- 4) An examination of how farm-level decision making affects insurance decisions - This study will use farm-level business records to examine how crop yield and revenue risk fit into the total farm's risk portfolio. This research will provide a better understanding of how insurance interacts with savings, diversification, off-farm income, etc. The study will use time-series farm business records from Illinois and Kansas to characterize the total farm risk.
- 5) Assess the potential for producers to adversely select across RMA insurance products - This analysis will assess the potential for farmers to adversely select across insurance programs, as RMA develops a portfolio of insurance products (yield insurance, GRP, revenue insurance, etc.). For example, producers might choose IP in years of high price risk and then go back to MPCII the next year. This study will examine the likelihood of this occurring and the potential magnitude of the problem. Possible solutions will then be suggested.
- 6) Develop a dynamic aggregate risk model to assess policy decisions - This analysis will examine not only risk within the year, but also year to year interrelationships. The model will impose policy decisions at the farm level and then aggregate the effects to the national level. The model will be designed to provide better aggregate cost/benefit assessments of the alternative insurance designs and policy proposals.
- 7) Analysis of the appropriate participation continuity discounts and surcharges to be charged by RMA - RMA provides premium rate discounts to insureds who have been receiving the discounts due to their continuous participation through and after 1983 and who maintain low loss experience. Virtually no insured is qualified for such discounts. It is crucial for RMA to encourage continuous participation to improve intertemporal risk pooling. This project will investigate whether premium rates should vary by the length of continuous participation, what are the appropriate rate discounts

for different lengths of participation, and whether the continuity discounts should vary by crop and region.

8) Review and development of the Options Pilot Program - The 1996 farm bill provides for continuation of the Options Pilot Program. This program may need further revisions to be adapted for the new risk environment under the new farm bill. A report examining the past performance of the program and possible modifications will be provided.

9) Develop a new baseline model for RMA - RMA's baseline model contains five linked spreadsheets that incorporate projected indemnities, reinsurance losses, reimbursements to private companies, etc. There are however, inconsistencies inherent in the model, e.g. price elections increase, but the liability is flat; the premium per acre increases over time, but the loss ratio does not decline in response, etc. Further, there is no linkage with USDA commodity price and acreage projections. Development of the baseline will create these linkages and rectify existing inconsistencies.

10) Spring planted crop Income Protection (IP) plan rate setting - This work will provide the IP premium rates for spring planted crops where the pilot program is offered. The work will be done under a cooperative agreement with Montana State University.

11) Spring planted crop Group Risk Plan (GRP) plan rate setting - This work will provide the GRP premium rates for spring planted crops where the pilot program is offered. The work will be done under a cooperative agreement with University of Kentucky.

DELIVERABLES/TIMELINE: This research will be conducted during FY97 and FY98.

PROJECT #122: INTEGRATED MANAGEMENT OF JOINTED GOATGRASS IN PNW DRYLAND CROPPING SYSTEMS

OBJECTIVES/BENEFITS TO RMA: The objectives of this project are 1)to develop an integrated weed management system for the control of jointed goatgrass in winter wheat, 2)determine the effects of stubble burning, length of crop rotation, and date of planting of winter wheat on the longevity of jointed goatgrass seed in the soil, 3)identify profitable and economically stable crop production systems for fields infested with jointed goatgrass, based on a variety of biological, economic, soil and climactic conditions, and 4)develop a data base on jointed goatgrass economic thresholds for the Pacific Northwest to support bioeconomic modeling development by other National Jointed Goatgrass Initiative researchers. This project is a joint effort between RMA, USDA-ARS, and Washington State University with cooperative assistance also provided by Oregon State University and University of Idaho.

DELIVERABLES/TIMELINE: This project began in August 1996 and will continue through June, 2001. A written report will be provided at that time.

PROJECT #123: THE NEW RISK MANAGEMENT ENVIRONMENT IN AGRICULTURE

OBJECTIVES/BENEFITS TO RMA: This project will provide partial funding for a pre-conference workshop at the annual meeting of the American Agricultural Economics Association. This meeting will be held jointly with the Canadian Association of Agricultural Economists. The primary objective of the workshop is to bring together agricultural economists, policy makers and others interested in risk management in a setting that will allow open discussion. Participants will benefit from the combined experience of leading research, education, and public policy personnel from both the U.S. and Canada. Top level administrators of risk management programs from both sides of the border will make presentations about the political environment for risk management programs. Workshop participants will receive the latest information on risk management tools and use of those tools in both research and education settings. In addition, participants will have the opportunity to discuss current weaknesses in research and education programs as they relate to the new risk environment. This project is a joint effort between RMA and Montana State University.

DELIVERABLES/TIMELINE: This project is complete. Preparation for this workshop began in January, 1997. The workshop took place July 26, 1997, after which workshop proceedings were distributed.

PROJECT #124: INVESTIGATION OF BAYES METHODS AND THEIR APPLICATION TO RATING REVENUE AND YIELD INSURANCE CONTRACTS

OBJECTIVES/BENEFITS TO RMA: The principle objective of this project is to investigate how Bayes methods may be used in rating revenue or yield based crop insurance contracts. To satisfy this objective, the project must 1)investigate predicting models with respect to the influence of catastrophic yield realizations, 2)evaluate the performance of various reasonable priors for predicting revenue and yield, 3)estimate spatial dependence among units, farms, and counties, 4)estimate the correlation among yields and prices, 5)evaluate the performance of various reasonable priors in obtaining the distributions, and 6)case study an approach where rates for specific programs are also calculated using Bayes methods. The underlying motivation for this project is that Bayes methods, if incorporated properly, may significantly increase both the temporal and spatial stability of rates. By statistically incorporating external information into the rating process, not only should stability increase, but accuracy should be significantly improved. The final outcome could be better risk coverage for producers, greater equity among producers, and less adverse selection losses. This project is a joint effort between RMA and the University of Arizona.

DELIVERABLES/TIMELINE: This project will provide three deliverables to RMA. The deliverables are 1)a Background Technical Report, 2)a Cookbook for the General Implementation of Bayes Methods in Rating Contracts, and 3)a Case Study Report. This project began in December, 1996 and will conclude in Summer, 1998.

PROJECT #125: SUPPORT FOR THE RMA NURSERY CROP INSURANCE PROGRAM AND ADDITIONS TO THE ELIGIBLE PLANT LIST

OBJECTIVES/BENEFITS TO RMA: The purpose of this project is to provide expertise to continue expansion of the eligible plant list, review and revision as needed of winter storage guidelines, provide for a technical review of the risk of the cause of loss of disease to the nursery program, and provide technical support for developing an inground nursery policy. The project will provide a technical expert in ornamental horticulture to provide support for the RMA nursery crop insurance program. The researcher is knowledgeable of the current RMA nursery program, and has a broad understanding of nursery production throughout the United States. This project is a joint effort between RMA and the University of Florida.

DELIVERABLES/TIMELINE: This project is complete. This project provided RMA 1) further revisions to the Master List, 2) delimiting coverage for in-ground ornamentals, including development of special cold protection standards for this type of material, 3) policy amendment recommendations, 4) formulation of an education seminar for growers, field adjusters, and county agents reviewing guidelines established in the Master List, and 5) recommendations for revision of current winter storage guidelines. This project was conducted during FY97.

PROJECT #126: AN ANALYSIS OF CROP INSURANCE RATES IN THE MID-SOUTH

OBJECTIVES/BENEFITS TO RMA: The purpose of this project is to investigate the issues of poor participation and historically poor actuarial performance of crop insurance in the Mid-South. This project will 1) collect anecdotal information about the historical evolution of crop insurance market in the mid-south, 2) gather farm level yield data for farms in the region, 3) develop methods for combining farm level yield data with county level yield data to build empirical yield distributions, 4) generate empirical premium rates from the yield distributions, 5) conduct statistical comparisons of the empirical premium rates with current premium rates, and 6) analyze results and determine implications for various FCIC reinsured products in the Mid-South. This project is a joint effort between RMA and Mississippi State University.

DELIVERABLES/TIMELINE: Research findings will be provided to RMA and to extension educators for translation into educational materials. An interim progress report is scheduled to be provided to RMA in September, 1997, and a final research report will be provided in April, 1998.

PROJECT #127: REVIEW OF THE ASSIGNED YIELDS FOR NEW PRODUCERS PILOT PROGRAM

ABSTRACT: This project is complete. The Federal Crop Insurance Reform Act of 1994 required that a new producer pilot program be carried out in 30 counties in the 1995 and 1996 crop years. The Act stated that the new producers in the pilot counties be assigned a yield equal to not less than 110 percent of the transitional yield otherwise established. The intent of the pilot program was to increase the availability of ag credit to new farmers or farmers growing a crop they had not grown recently.

Surveys were conducted of commercial ag lenders, Farm Credit System banks, and the USDA's Farm Service Agency. Discussions focused on lenders' knowledge of the pilot program, the loan approval process, and their views on the effectiveness of the pilot program in making ag credit available. Most said that crop insurance is one part of what they consider during a loan application review. They said that a borrower's balance sheet is usually the most important factor. Although lenders did not always require crop insurance for loan approval, many said that whether the borrower insures is important. The level of the insurance guarantee was less critical. Almost all of the contacts stated that a slight increase in the yield guarantee, such as was offered by this pilot program, is unlikely to change a loan decision.

PROJECT 128: YIELD ESTIMATION OF SWEETPOTATO IN RESPONSE TO DEFOLIATION AND STAND REDUCTION

OBJECTIVES/BENEFITS TO RMA: The results of this study will aid crop insurance adjusters, sweetpotato growers, and extension personnel in estimating yield loss of sweetpotato in response to plant stand reduction and leaf defoliation. The specific objectives of this study are 1)determine the influence of amount and time of defoliation and stand reduction on biological and marketable yield of sweetpotato, 2)quantify the compensational ability of sweetpotato to stand reduction and defoliation, and 3)develop a predictive model for yield estimation of sweetpotato in response to stress that reduces plant population or leaf area.

DELIVERABLES/TIMELINE: The study was conducted May-October 1997. A final progress report is projected for Spring 1998.

PROJECT 129: WILD RICE AS A FUNCTION OF PLANT DENSITY AND NITROGEN LEVELS

OBJECTIVES/BENEFITS TO RMA: Wild Rice is a relatively new crop for the United States. More information is needed on the proper plant population and nitrogen fertilization. This project will plant wild rice at six plant densities superimposed by three nitrogen fertilizer levels each, at two separate sites. The objectives of this project are to 1)investigate the relationship between plant density and nitrogen fertilization levels with respect to wild rice yields at two locations, and 2)to disseminate wild rice management information to growers and the crop insurance industry.

DELIVERABLES/TIMELINE: Field days for growers and others was held in the summer of 1997 at the experimental locations. The data collected will be analyzed and reported to wild rice growers

at their annual meeting and to Extension educators in early 1998. The information will also be made available in early 1998 to RMA for use in developing a crop insurance program for wild rice.

PROJECT #130: CROP INSURANCE PILOT PROGRAMS FOR PEACHES: COST OF PRODUCTION V.S. INCOME PROTECTION

OBJECTIVES/BENEFITS TO RMA: The objective of this project is to determine the fair actuarial rates for two alternative insurance programs for peaches produced in Georgia and South Carolina. One of these programs will cover variable cost of production, the other will cover gross revenues.

DELIVERABLES/TIMELINE: This project will provide, both for cost of production and revenue insurance policies, information on loss measurement techniques, administrative costs, underwriting issues, county rate tables and worksheets to determine insurance rates for individual producers, and educational workshops for producers, county agents, bankers, and insurers. Quarterly project reports will be provided, and the project is scheduled for completion by December 30, 1998.

PROJECT #131: AGRISK

OBJECTIVES/BENEFITS TO RMA: The objective of the AGRISK project is to develop a comprehensive, easy-to-use computer decision support program that could be used by agricultural producers, lenders, and service providers to assess the implications of different risk management strategies for grain farms in the corn and wheat belts.

DELIVERABLES/TIMELINE: A Beta1 version of AGRISK was received in January, 1998. This project is scheduled to deliver a Beta2 version in May, 1998, followed by an update of programming progress in July, 1998, followed by a Beta3 version in September, 1998, followed by seminar training sessions for AGRISK 1.0 in May, 1999, followed by the release of AGRISK 1.0 in June, 1999.

PROJECT #132: SUGARBEETS MPCJ POLICY DESIGN, RATING METHODS, AND RISK CONTROL EFFECTIVENESS FOR FARMERS

OBJECTIVES/BENEFITS TO RMA: The objectives of this project are to conduct a needs assessment and product design review, estimation of parameters associated with various designs, and evaluation of the downside financial risk reduction for farms offered by different designs.

DELIVERABLES/TIMELINE: Meetings with grower groups took place in August, 1997, with suggested design changes due to the project leader by June 1, 1998. The area yield products rating component will be completed by July 30, 1998

PROJECT #133: SUPPORT FOR THE FCIC NURSERY CROP INSURANCE PROGRAM AND ADDITIONS TO THE ELIGIBLE PLANT LIST FOR ORNAMENTAL CROPS

OBJECTIVES/BENEFITS TO RMA: The objectives of this project are to 1) further revise the master list, 2) further revise the Sacramento RSO list, 3) delimit coverage for in-ground ornamentals, 4) develop and conduct an educational seminar for growers, field adjusters, and county agents, and 5) review the current winter storage guidelines.

DELIVERABLES/TIMELINE: The objectives of this project will be completed during the 1998 crop year.

PROJECT #134: PILOT INSURANCE PROGRAM FOR ALMONDS

OBJECTIVES/BENEFITS TO RMA: The objective of this project is to develop and implement a pilot almond revenue insurance program for the 2000 crop year.

DELIVERABLES/TIMELINE: The project has been terminated because program rates are uncompetitive with existing alternative programs.

PROJECT #135: MODELING YIELDS AS A SPATIO-TEMPORAL PROCESS: IMPLICATIONS FOR RATING REVENUE INSURANCE/ASSURANCE CONTRACTS

OBJECTIVES/BENEFITS TO RMA: Pilot programs of revenue type insurance are currently underway. The assumed spatial correlation and yield-price correlation are significant factors in the determination of premium rates. A necessary condition for accurate rates within these pilot programs and subsequent national programs is a good handle on both spatial correlation and yield-price correlation. The current understanding of spatial correlation, especially in the context of the new revenue insurance products, is unclear.

DELIVERABLES/TIMELINE: This project will have four deliverables. The first two reports, *Spatio-Temporal Modeling of Yields* and *Spatio Dependence and Yield-Price Correlation: Implications for Revenue Insurance* will be delivered by December 31, 1998. The last two reports, *A Review of Current Procedures for Rating Revenue Insurance/Assurance Contracts* and *Modeling the Spatio-Temporal Process of Yields with less than Ideal Data: A Bayesian Approach* will be delivered by September 30, 1999.

PROJECT #136: REVENUE INSURANCE FOR BARLEY PRODUCERS

OBJECTIVES/BENEFITS TO RMA: The primary objective of this project is to develop a rate making methodology and to provide rates for barley on a pilot basis. The rate making methodology will account for the relationship between individual producer yield variation and county level yield variation, and the interaction between prices and yields. In addition, the differences between barley grown for feed and barley grown for malt will be addressed.

DELIVERABLES/TIMELINE: This pilot program will be implemented for the 1999 crop year.

PROJECT #137: ECONOMIC RESEARCH SERVICE (ERS) - 1998 RISK MANAGEMENT PROJECTS

OBJECTIVES/BENEFITS TO RMA: Following is a listing of risk management research projects being conducted by ERS for RMA during FY98. Specific information or copies of reports are/will be available upon request.

- 1) Further analysis of revenue insurance issues - This report will extend our analysis of issues related to price variability for revenue insurance products. Several factors relevant to price determination either have recently changed or continue to evolve; including increasing openness to international trade and changes in government policy that allow greater planting flexibility. These changes may translate into a supply response by producers which could also alter market price dynamics. This study will address both the effect of grain stocks and alternative distributional assumptions, as well as allow rate stability comparisons between historically based price variability measures and options-based measures.
- 2) Evaluation of the potential for risk management savings accounts - Rather than pooling risk, risk management savings accounts (RMSA's) smooth individual income across time. This project will employ a dynamic programming model of a producer which will address risk reduction, how RMSA's substitute for personal savings, and tax and budgetary implications.
- 3) Addressing the implications of bio-engineered crops - This study will investigate the implications of insuring bio-engineered crops. As these crops are developed and become more common, they pose several insurability issues. Yield levels and risk may differ significantly from traditional varieties, posing a rating issue, while valuation and marketing of these crops may require alternative insurance design questions.

DELIVERABLES/TIMELINE: This research will be conducted during FY98.