PRECISION FARMING & CROP INSURANCE CLAIMS

2013 Crop Insurance Workshops
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National Crop Insurance Services
NCIS Industry Role

National Crop Insurance Services (NCIS) serves as the primary service organization for the crop insurance industry.
NCIS Functions

- MPCI and Crop-Hail Program Development and Analysis
  - Policy Analysis, Loss Adjustment Procedures, Legal Analysis, Agronomic Research
- Economic and Actuarial Analysis
- Education and Training
  - Loss Adjuster Schools – 17 (over 1,400 attendees)
  - National Conferences – 3 (654 attendees)
  - Annual Regional/State Meetings – 14 (467 attendees)
  - Crop Insurance Convention (387 attendees)
- Crop-Hail Advisory Organization and Statistical Agent
  - Licensed by individual State Insurance Departments
- Public Relations and Industry Outreach
Previously in the Crop Insurance Workshops…

2011: “Precision Farming and Crop Insurance”
      Luc Valentin, Vulgamore Family Farms

2012: “Common Land Unit Acreage Reporting Plan”
      Troy Brady, NCIS
Overview

- Definitions
- Jesson Farms
- Precision ag workflow
- Current crop insurance claims procedures
- Issues and opportunities
DEFINITIONS
Precision Farming/Agriculture

1) The use of the best available technologies, primarily based on the global positioning system, to tailor soil and crop management to fit the specific conditions found within an agricultural field or tract for the purposes of improving crop yields and management decisions, reducing input costs and pollution, and providing greater accuracy in farm record keeping.

2) Under the Agricultural Research, Extension, and Education Reform Act of 1998 (Sec. 403(a)(3)), an integrated information- and production-based farming system that is designed to increase long-term, site-specific, and whole farm production efficiencies, productivity, and profitability while minimizing unintended impacts on wildlife and the environment by…

– from the National Agricultural Law Center at the University of Arkansas
Precision Farming/Agriculture

(a) combining agricultural sciences, agricultural inputs and practices, agronomic production databases, and precision agriculture technologies to efficiently manage agronomic and livestock production systems;

(b) gathering on-farm information pertaining to the variation and interaction of site-specific spatial and temporal factors affecting crop and livestock production;

(c) integrating such information with appropriate data derived from field scouting, remote sensing, and other precision agriculture technologies in a timely manner in order to facilitate on-farm decision making; or

(d) using such information to prescribe and deliver site-specific application of agricultural inputs and management practices in agricultural production systems.

Also *prescription farming*, and *variable-rate application technology*.

– from the National Agricultural Law Center at the University of Arkansas
Precision Agriculture Technologies

Under the Agricultural Research, Extension, and Education Reform Act of 1998 (Sec. 403(a)(4)),

(a) instrumentation and techniques ranging from sophisticated sensors and software systems to manual sampling and data collection tools that measure, record, and manage spatial and temporal data;

(b) technologies for searching out and assembling information necessary for sound agricultural production decision making;

(c) open systems technologies for data networking and processing that produce valued systems for farm management decision making; or

(d) machines that deliver information-based management practices.

– from the National Agricultural Law Center at the University of Arkansas
Precision Farming in Crop Insurance

The utilization of systems’ technologies and agronomic principles to manage variability within and between fields and/or over time that is associated with all aspects of agricultural production. It requires the use of technologies, such as global positioning system (GPS) and geographic information systems (GIS) management tools for the purpose of improving crop management. Precision farming may include the combination of variable seeding and fertilizer rates, minimizing seed and chemical overlaps, and the use of GPS/GIS yielding mapping technology (i.e., a producer using variable seeding, cutting planting rate from 36,000 to 18,000 seeds/acreage for non-irrigated corners, indicating a discernible break in yield with the use of GPS/GIS mapping).

– RMA definition from the 2014 LAM and 2014 CIH
Jesson Farms

Brother-sister partnership with seasonal help and contracted services

Otter Tail County, Minnesota

- Conventional corn
- Specialty soybeans (food grade tofu)
- Free-range turkeys
Jesson Farms

- Jessica manages contracting/purchasing, insurance, finance/taxes, final sales.

- Jason manages planting, fertilizing/treatment, harvesting, equipment purchase and maintenance.

- They share hiring duties, data development/analysis, and the turkey side-business.
PRECISION AG TECHNOLOGY & WORKFLOW
Farming Changes

**Large operations** – selling to other businesses
- Expansion of sensors and satellite imagery
- Drones
- GPS being replaced by Real Time Kinematic (RTK)
- Integration of water measurement
- Farm management control panels directing equipment
- Expansion into grain handling, trucking, feed operations

**Small operations** – selling to consumers
- Local fresh products, niche marketing
- Intensive specialty farms
Jesson Farms operation cycle (crop)

Planning & Documentation

Planting & Contracting

Growing

Harvesting & Selling

Prescription

Work Order Execution “As Applied”

Work Order Execution “Harvest”
Jesson Farms

- Agronomic prescriptions
- Real Time Kinematic (RTK) mapping
- Planting monitor
- Custom applicator
- Combine yield monitors and harvest maps
Work Order Summary

Account Details
Customer: Jesson Farms
Contact: Jessica TR

Service Provider
Local Provider
Contact: Jim T

Application Activity Details
Location
Farm name: Grandpa T
Field name: Sugarsand xxxxxxxxxx
Crop(s): Corn
Boundary Area: 56.85 (ac)
Task Area: 57.36 (ac)

Notes
Activity: 
Plan: 

Execution Dates
Apply by: Monday, September 23, 2013
Completed: Application plan has not been executed.

Products
Product 1
Variety A
Controller Map

Recommendations
Equation 1
Variety A Equation
Description:
Equation output: Variety A (Kilo-Seed/AC)
Minimum application rate: 0 (Kilo-Seed/AC)
Region of applicability: Any crop
Input data
Name | Data group Unit | Data
Custom Applicator Mobile Implement Control System (MICS)

- The ISOBUS Task Controller (TC) is software built into the MICS Display to allow back-and-forth communication between the display and any ISOBUS implement that supports TC functionality.
- Due to the task controller functionality, the MICS is able to perform accurate documentation of actual rates (seeds, fertilizer) as well as run prescription maps for variable-rate applications with any ISOBUS task controller-compatible implement.
- Prescription maps and documentation data can be transferred to and from the FMIS software.

*Slide Source: AgGateway*
“As-applied” Report

Grandpa T – Sugarsand xxxxxxxxxxxx
Variety A Application Rate

Customer:
Activity Date: November 22, 2013
Boundary Area: 0.00 (ac)
Task Area: 0.00 (ac)
Minimum: 0.00 (ac)
Maximum: 0.00 (ac)
Min Non-Zero: 0.00 (ac)
Average: 0.00 (ac)
Est. Total: 0.00 (ac)

k-seed/ac ac
0 0.01
28000 7.61
30070 37.55
32000 12.37
Field Boundary

Slide Source: AgGateway and TopCon
Crop Insurance Reporting View

Slide Source: AgGateway and Independent Data Management, LLC
Farm Management Information System (FMIS) Data Exchange

Slide Source: AgGateway
Compliance Reports

Crop Seeding Plan

Recommendation

Prescription

Work Order

Plan Development

• Crop Type
• Intended Use
• Seed ID
• Customer GLN
• Implement Use

Access Reference Data

AG Gateway

Data Clearinghouse

Seeds & Chemicals
USDA Crop and CropUse (CVT) Equipment

Handling Instructions
Restricted Areas
Target Pests

Compliance Reporting

Crop Seeding Plan

Compliance Reports

FSA NRCS RMA

Task Execution and Reporting

FMIS

ISO 11783 Taskdata

Source: AgGateway

Slide Source: AgGateway
PRECISION FARMING IN CLAIMS PROCEDURE

Loss Adjustment Manual
PF and Acreage Measurement

- Acreage measurements done by the AIP can be substituted by AIP-approved precision farming ("PF") technology system planter monitor records
What’s “Acceptable”? 

For farm management records from producers using precision farming technology systems… 

• Use full PF technology system from planting through harvesting 

• Minimum required components: 
  o GPS technology integrated with planter monitors, combine monitors, yield mapping software; 
  o Can produce summary reports that reflect planted acres, harvested acres, harvested production; and 
  o Report of calibrations performed per manufacturer’s requirements.
For Separate Optional Units

• IRR center pivot with NI corners
• If planting pattern/rows continue from IRR center to NI corners and
  o Have yield monitor data separating IRR from NI production; **and**
  o “Practice precision farming techniques” as defined in LAM
• May qualify for two units: one for the IRR center and one for the NI corners
For Separate Optional Units

• For automated planter records from PF technology systems to be acceptable for **separating optional units (OU) on center pivot irrigation systems**, the insured must:
  
  o Provide records of variable rate planting populations if recommended by ag experts;
  
  o Document automated planter monitoring systems used;
  
  o Provide acres planted and practice for each OU;
  
  o Provide production records by OU and practice; and
  
  o Provide required information in “required components” list.
For Determined Acres

- For planted acreage records from PF technology systems to be acceptable as determined acres, automated planter monitoring system must provide:
  - Insured’s name
  - Unit number
  - FSA farm/tract/field ID number [optional]
  - Legal description of acreage; and
  - A printout from the system showing
    - Crop name
    - Acres planted, and
    - Electronically-produced maps of planted acreage and acreage summary records that show a break between units/practices
  - If planted overlapping rows, determine if monitor records adjusted for the overlap.
For Production Records

Production records from:

• PF technology systems are acceptable if they meet all requirements (see “acceptable” slide)

• Combine monitors that are not part of a precision farming technology system are not acceptable for production records for loss purposes except for separating comingled production.

2014 LAM, Part 3, Section 4, Paragraph 211 A and Section 6, Paragraph 253 D(3)(b)
For Harvested Production

- Production records from PF technology systems:
  - May be used in lieu of settlement sheets and bin measurements if meet all requirements
  - Maintain acceptable alternate production records by unit
  - If acreage not harvested, production must be appraised
Acceptable Harvested Production Records

• Calibration of the automated yield monitoring system
  o Each crop, each crop year
  o Within 3% tolerance of actual weighed production harvested from the acreage
    ▪ If > 3% difference remains after calibration, can post-harvest calibrate yield maps
  o Provide documentation of sensor calibrations with dates performed and difference from prior setting

[continued]
Acceptable Harvested Production Records

- Insured’s name
- Unit number
- FSA farm/tract/field ID number
- Legal description of acreage

[continued]
Acceptable Harvested Production Records

- Print out, by unit, of:
  - Crop name
  - Acres harvested
  - Date harvested
  - Total production (unadjusted for moisture)
  - Average moisture content
  - Yield maps and acreage/production summary records
    - These PF system records must show separate production records were maintained by unit and/or practice and the maps must be reviewed to identify harvested and unharvested acreage. If the map indicates unharvested acreage, a visual inspection is required to determine if crop appraisals are needed.
If Harvested Production Meets PF Requirements

• The following LAM procedures are not required:
  o Production weighed and farm-stored*
  o Authorization to accept insureds’ structure markings, load records, and combine monitor records

*see next slide
Weighed Production (new for 2014)

• Use the insured’s weighed production for the current CY if such records (adjusted for excess moisture) are from a grain cart equipped with scales integrated with a wired or wireless interface capable of electronically recording and storing weight records on a field-by-field basis.
  
  o Insured must be able to print all individual load tickets and a detailed summary that includes all LAM required elements for acceptable scale tickets.
  
  o If insured uses multiple grain carts and not all have this capability, adjuster must verify production by other means.
  
  o **Adjuster not required to verify production records from such grain cart by other means** (i.e., bin measurements, sales records, etc.), unless there is reason to question the accuracy of records provided by the insured.
Weighed Production (new for 2014)

- If insured’s weighed production records are in question, adjuster must verify the production by other means (i.e., bin measurements, sales records, etc.).
- If the weighed production is within 3% of the adjuster-measured and calculated production, (adjusted for any excess moisture and pack factor (if applicable)), the weight records may be accepted.
AIP Right of Refusal

If…

- Automated planter monitor acreage records or production and yield map records provided by insured are not reasonable; or
- AIP has reason to question the records;

…the insured must provide PF technology system raw data and any additional records AIP requests.

If AIP determines planted acreage records are not acceptable, AIP must determine planted acreage using standard LAM procedure.

Production records from the yield monitor may still be used.

2014 LAM, Part 3, Section 3, Paragraph 201 l(4), Section 4, Paragraph 218 C(5)
Jesson Farms

They have a corn loss.

Recap of their technology systems:

- Agronomic prescriptions
- RTK mapping
- Planting monitor
- Custom applicator
- Combine yield monitors and harvest maps

Can they use their PF technology system records for their corn claim?

Do we know enough to be certain?
ISSUES & OPPORTUNITIES
Questions Jesson Farms May Ask

- What if you don’t have “backup” records?
- Are fields set up correctly in the farm management system to allow proper data overlay of current year’s harvest?
- How can we get yield monitor data from the combine to reflect total production accurately without editing for “gaps” where data wasn’t properly recorded?
- If all combines harvesting a field don’t have similar yields, or all planters planting a field don’t have similar seeding rates, which can you believe?
Issues and Opportunities

• Improve systems’ ability to “talk” to each other
• FMIS built for agronomic applications, not crop insurance
• Have field boundaries in FMIS read by planting monitors to stay true to boundaries/avoid overlap even if do not have row auto-shut-off in place
• Easier setup for linking yield monitor data to crop insurance units in all PF software
  o Makes data import directly from FMIS clean
Issues and Opportunities

• Farmer data privacy concerns
• If GPS goes down or software/system stops working, farmers are not likely to stop planting or harvesting
• Tolerance too small for variation between acres from planting monitor versus combine harvest records
  o For example, planted acres may not all be harvested (e.g., skip an area where water is standing); GPS for yield monitor may go down; software issues
Issues and Opportunities

- Manufacturer implementation of auto-calibration for all planter and yield monitors will improve accuracy and simplify procedure

- FSA CLUs vs. farmer plant/harvest field boundaries or GPS/RTK mapped field boundaries (graphic next slide) – if the FSA CLU acres and crop insurance acres don’t match, there is impact to the farmer’s qualification for FSA programs
  - New Farm Bill could make this less of an issue
Reporting Challenge = CLU Versus GPS Field Boundaries

Examples of CLU and GPS boundary misalignment:

CLU used have Producer Authorization and permission to be used.

Soybean fields (2) as planted intersect **5 CLU’s**.

Corn field as planted intersects **1 CLU** and an area of non-crop land between CLU’s.

This field was planted, however precision data was not captured.

Soybean field as planted intersects **2 CLU’s**.

*Slide Source: AgGateway and Independent Data Management LLC*
Issues and Opportunities

- Remove RMA requirement that precision farming technology systems are only allowed for crop insurance claims if precision farming is complete from planting through harvesting
  - Helpful for operations in a situation like Jesson Farms
  - Disagreement in the industry on whether it is sound practice to allow something less than start-to-finish precision farming records
Issues and Opportunities

• Substantial increase in number of farmers using precision farming technology
  o Farmers may not be informed of all the requirements to use PF records for crop insurance claims, acreage reporting, and production reporting
  o Some AIPs conducting more agent and adjuster training on precision farming requirements and systems so they can better assist farmers
Questions to Take With You

• How can precision farming be more seamlessly integrated into the crop insurance claims process?

• What small changes would make a big impact to simplify reporting and documentation for farmers and claims adjustment/acreage reporting/production reporting for AIPs?
Keep the conversation going!

Questions/comments about today’s presentation:
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