Presentation Format

• Conservation practice resource concerns addressed
• Minimum planning requirements
• Certification requirements and procedures
• Planning tools and Plan format
SECTION 1: Nutrient Management

• Definition
  – Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.
  – “4Rs” of nutrient management
    • Right Amount
    • Right Source
    • Right Time
    • Right Place
Resource Concerns - Nutrient Management

• Primary:
  – Water quality
  – Plant condition

• Secondary
  – Air quality
  – Soil condition
Nutrient Management

- Nutrients from inorganic sources ("fertilizer")
- Guaranteed analysis
- Usually "concentrated"
- Form is flexible
- Placement is flexible
Nutrient Management

• Nutrients from organic sources (manure)

• Nutrient content is uncertain
  – Needs at least an annual analysis
  – Best if done when applied
Nutrient Management Plan

- Essential items (1)
- Location map/plat map
Nutrient Management Plan

• Essential items (2)
  – Map showing field boundaries and any application setbacks
Nutrient Management Plan

• Essential items (3)
  – Soils map
Nutrient Management Plan

• Essential items (4)
  – A four-year budget for NPK
    • Nutrients applied minus Nutrients utilized = Nutrients remaining in soil
    • Usually apply nutrients according to a recommendation
    • For USDA programs in Missouri, must use University of Missouri-Columbia Extension recs
Nutrient Management

• A four-year budget for NPK
  – This is hard to do by hand
  – Utilize computer tools
### Manure Management Planner (MMP)

#### Storage Status
- **Pit**:
  - Oct 2012: 0.0
  - Nov 2012: 5.0
  - Dec 2012: 0.0
  - Jan 2013: 5.0
  - Feb 2013: 0.0
  - Mar 2013: 5.0
  - Apr 2013: 0.0

#### Field Status
- **Wheat Field**: 2.5 / 22.8
- **Hay Field**: F
- **Road Field**: F
- **Rented Pasture**: 5 / 15.2
- **Rented Hay**: F

#### Other Information
- **What is Application’s Manure Source?**
- **Application Equipment**
- **Days To Incorp.**
- **Rate (/Acre)**
- **Loads**
- **Amount Applied**
- **Area Covered (Acres)**
- **Apply At Or For**

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**Note:** Area of field that has been manured after this month’s applications (bottom grid) and whether fertilized (press F2 to apply fertilizer).
Comprehensive Nutrient Management Plan (CNMP)

- A conservation plan for animal feeding operations
- Engineering and agronomic issues
- Addresses the production area (animals, manure storage)
- Addresses land application area
- Complication—Regulatory
Comprehensive Nutrient Management Plan (CNMP)

• WAY too complicated to get into here

• Attend MU’s course
Demo

- Mapping
- Manure Management Planner (MMP) for a fertilizer-only operation (no manure)
- Export to a report generator website
Certification

- Three options in Missouri
  - Organizations—e.g., Certified Crop Advisor
  - Education-BS in agronomy or allied plant nutrient field
  - Experience-Three years within the last five in nutrient management planning
Certification

• All options require:
  – Knowledge of tools such as RUSLE2, WEPS, WEQ, P-index, Leaching Index
  – NRCS course-Modules 1-7 of *Nutrient & Pest Management Considerations in Conservation Planning*. Module 7 is a proctored test administered by NRCS State Office staff.
  – Two customer references where technical service has been provided. A completed nutrient management can be substituted.
Certification

• Maintaining certification
  – Eight hours/yr of Continuing Education
  – Provide current nutrient management materials provided to landowner once every three years.
  – Maintain technical proficiency. All assistance is subject to random review.
  – Additional formal training as required by reviewing staff
Definition: **Integrated Pest Management**

A site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies.
Resource Concerns - Integrated Pest Management

• Primary:
  – Water quality
  – Plant condition
  – Animal health

• Secondary
  – Air quality
  – Soil condition
Integrated Pest Management (IPM)

• An IPM conservation plan
  – Sustainable management of pests
  – Minimizes risk to
    • Human health
    • Beneficial/non-target organisms
    • “The Environment”
Integrated Pest Management (IPM)

• A decision-making process
• Determines management solution that is
  – Appropriate
  – Cost effective
SECTION 2: Integrated Pest Management (IPM)

- Establishes pest tolerance levels
- Establishes monitoring protocols
- Develop an effective, site-specific and low-risk strategy to manage the pest
Integrated Pest Management (IPM)

- Possible tools/techniques:
  - Chemical tools
Integrated Pest Management (IPM)

• Possible tools/techniques:
  – Biological control
    • Conservation (of natural enemies)
      – Lacewings, lady beetles
    • Classical control-importing and releasing natural enemies to control an introduced (“exotic”) pest
      – Often used when an introduced pest is not controlled by natural enemies
      – European corn borer controlled by *Trichogramma ostriniae* (Chinese parasitic wasp)
Integrated Pest Management (IPM)

• Possible tools/techniques (2):
  – Biological control
    • Long-lasting, inexpensive
    • Best against exotic pests
    • Not always effective; sometimes due to ineffective introduction, poor adaptation to new environment, or poor synchrony of life cycle between enemy species and pest
Integrated Pest Management (IPM)

• Possible tools/techniques (3):
  – Inoculative release of natural enemies
  – Habitat manipulation-refuge, food source
Integrated Pest Management (IPM)

• NRCS Responsibility
  – Meet NRCS quality criteria for soil erosion, water quality, air quality, plant quality
  – Comply with federal, state, tribal, local laws, regulation, and permit requirements
  – Address operator objectives
Integrated Pest Management (IPM)

- NRCS Responsibility (2)
  - NRCS *does not* make chemical recs or change chemical labels
  - NRCS *does* provide guidance and mitigation strategies for existing recs
  - Protect resources
Integrated Pest Management (IPM)

• Possible tools/techniques:
  – Chemical tools
  – Biological control
  – Habitat manipulation
  – Modified cultural practices
  – Resistant varieties
IPM Plan Requirements

• Identify target pest(s)
• Identify control methods
• Risk assessment
• Identify mitigation strategies
• Determine effectiveness
IPM Plan Requirements (2)

• Use a Job Sheet – JS-AGRÓN-31
  – Crop Management
    • Crops
    • Tillage type and timing
    • Residue
  – Identify pest(s)
  – List control method(s)
IPM Plan Requirements (3)

• Use a
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