

## **2019 Small Grain Indicators**

(Knowledge based questions) “Producers level of understanding” based on the program

### **Small Grains – Disease and Virus Management**

- Planting date influence on small grain viruses and wheat curl mite
- Varietal influence on small grain diseases
- Disease management strategies and options
- Testing procedures available for producers
- Identification of symptoms of disease in small grains
- Fungicidal options for small grain diseases and application timing
- Fungicides as a preventative measure
- Continuous planting vs. rotational planting as it relates to diseases
- Environmental surroundings and how that affects plant disease infections.
- Diseases transmitted by Aphids.
- Effects of Crop rotations to break disease cycles.
- What are soil borne diseases

### **Small Grain – Weed and Insect Pest Management**

- When and under what conditions to use insecticides
- Which insecticides are effective and why
- Effective timing and application of herbicides
- Proper sampling techniques for a given pest
- Proper insect identification
- Different tillage methods/practices to control weeds
- Proper weed identification and biology
- Importance of action thresholds and economics
- Wheat Curl Mite management
- Insect life cycle
- Herbicide Differences/Mode of action
- I-Wheat project understanding Varietal influences on small grain insect.
- Environmental surroundings and how that affects insect pressure.
- Understanding beneficial insect and what they do.
- Understanding pesticide labels.
- Law and Regulations affecting pesticide use.
- Bindweed control options.
- What insects affect small grain production?

### **Small Grain – Economic Risk Management**

- How to identify cost of production
- Importance of knowing your cost of production in developing your price targets
- Benefits of writing a marketing plan
- How to incorporate market fundamentals in a marketing plan
- How to incorporate technical analysis in a marketing plan
- Knowledge of annual Farm Bill considerations
- Understanding of insurance products available

- Economic implications of Grain vs Forage production
- FSA deadlines and crop signups.
- Farm assistance program and how it can be utilized
- Understanding of Contracts/Basis Contract/Price Contract/Acre Contracts
- Knowledge of marketing alternatives/outlets
- Incorporating economics into in-season management decisions

### **Small Grain – Hay/Grazing/Silage Considerations**

- Hay and Silage quality as it relates to growth stage of small grains
- Stocking Small Grains pastures
- Planting date consideration in relation to grazing small grains and forage production
- Dual purpose varieties
- Supplemental nutrition of cattle on wheat pasture
- Health considerations for wheat pasture cattle
- Small grain hay/grain value in feeding rations to cattle/sheep/goats
- Forage Quality vs Forage Quantity
- When to harvest hay and silage
- Small Grain Forage Production Comparisons (Triticale vs. Wheat vs. Oats, etc.)
- Expected livestock performance on small grain pastures.
- Seeding rate impact on forage production

### **Small Grains -- Varieties (Pre-plant Considerations and Wheat Development)**

- Why variety selection is important
- How the Texas High Plains wheat grain variety “picks” determined?
- Small Grains variety performance differences as determined in local and regional trials
- Dual Purpose small grain varieties (forage and quality)
- Differences between bearded v s. beardless wheat varieties
- Optimum planting depth and planting rates
- Impact of seed quality (test weight, vigor, etc.) on wheat production
- Seed Treatments
- Justification of seed treatments for insects in dryland and irrigated wheat production
- Understanding of varietal disease and insect resistance and tolerance
- Research role in variety development and impact on yield, grazing potential, pest control
- Optimum planting times for small grains (wheat, barley, oats, etc.)
- Differences between Registered vs Certified vs Producer captured seed
- Laws and Provisions related to certain varieties (trademarks, etc.), e.g. the Plant Variety Protection Act
- Genetically Modified Wheat Research
- Vernalization in Wheat, or Chilling Temperatures to Initiate Reproductive Growth
- Wheat Development Stages and Flowering Process
- Advantages and Research related to Wheat rotations

### **Small Grains – Soil Fertility**

- How to properly sample subsoil nutrient availability

- Available Sub-soil nitrate N and what is available to the plant
- Private Soil testing labs vs. Public Soil testing labs
- Understanding nutrient requirements for small grains
- Interpretation of soil test results and the value of available N, and other nutrients, in the soil
- Impact on phosphorus on wheat health, forage growth, and quality
- Knowledge of soil test critical levels for various nutrients
- Economic determination of nutrient sources of fertilizer
- Alternative sources of fertility and economic comparisons
- Deep soil sampling implications on fertilizer utilization
- Identification of key nutrient deficiency symptoms
- Application comparison including chemigation
- Timing and application decisions of top dress applications on yield potential
- Phosphorus advantages in forage production
- Understanding the availability of various forms of fertilizer (i.e. Urea, ammonium nitrate, manure, compost, UAN.)
- Fertilizer placements.
- How pH affects soil fertility.
- Organic matters role in soil health.
- Where to find my soil type, its potentials and limitations.
- Understanding nutrient requirements to produce 1 bushel of grain or 1 ton forage.
- Establishment of yield goals and its effect on nutrient requirements.
- Soil and water conservation strategies.

## **Small Grains – Water / Soil Relationship**

- Crop water requirements
  - Irrigation scheduling
  - Crop water productivity
  - Interaction of water and fertility
  - Water quality considerations
- Soil moisture management
  - Soil moisture characteristics / plant available water
  - Tillage systems and rotations
- Irrigation technologies and best management practices to improve water use efficiency
  - Terminology of irrigation systems (standard terms for clear communication)
  - Low Pressure Center Pivot Irrigation (LEPA, LESA, LPIC, MESA, PARM)
  - Micro-irrigation (including subsurface drip)
  - Surface irrigation
  - Best Management Practices (selecting and applying BMP's to improve technologies/methods)
- Irrigation efficiency and economics
  - Energy efficiency (pumping plants, system and management considerations)