Student's Name _____ **AGRICULTURAL MACHINERY AG 0227**

Directions: Evaluate the trainee using the rating scale below and check the appropriate number to indicate the degree of competency achieved. The numerical ratings of 3, 2, 1, and 0 are not intended to represent the traditional school grading system of A, B, C, D, and F. The descriptions associated with each of the tasks listed below.

Rating Scale:

0 - No Exposure - no information nor practice provided during training program, complete training required.

1 - Exposure Only - general information provided with no practice time, close supervision needed and additional training required.

2 - Moderately Skilled - has performed independently during training program, limited additional training may be required.

3 - Skilled - can perform independently with no additional training.

1. Number of Competencies Evaluated _____
2. Number of Competencies Rated 2 or 3 _____
3. Percent of Competencies Attained (2/1) _____

_____
Grade

_____ _____
Instructor Signature Date

01.0 Safety

The student will be able to:

0 1 2 3		
☐☐☐☐	01.01	Identify safety equipment necessary for agricultural power technology
☐☐☐☐	01.02	Apply basic laboratory safety instruction
☐☐☐☐	01.03	Describe safety practices when using electrical equipment
☐☐☐☐	01.04	Apply safety practices when using tractors, machinery or hydraulics

02.0 Tillage Equipment

The student will be able to:

0 1 2 3		
☐☐☐☐	02.01	Identify the characteristics and applications of the major types of tillage equipment
☐☐☐☐	02.02	Read and interpret an operator's manual for a major type of tillage equipment
☐☐☐☐	02.03	Calculate the potential field capacity of various sizes of tillage equipment
☐☐☐☐	02.04	Operate tillage equipment safely under field and transport conditions
☐☐☐☐	02.05	Set up the tractor for primary tillage operations
☐☐☐☐	02.06	Lubricate the appropriate points of primary tillage equipment
☐☐☐☐	02.07	Adjust primary tillage equipment for initial operation
☐☐☐☐	02.08	Trouble-shoot primary tillage equipment and operation under field and shop conditions

03.0 Seeding and Planting Equipment

The student will be able to:

0 1 2 3		
☐☐☐☐	03.01	Identify the major types of planting equipment
☐☐☐☐	03.02	Describe the major characteristics and applications of the different types of planting equipment
☐☐☐☐	03.03	Read and interpret and operator's manual for planting equipment
☐☐☐☐	03.04	Identify the major components of the different types of planting equipment
☐☐☐☐	03.05	Operate planting equipment safely under field and transport situations
☐☐☐☐	03.06	Adjust planter row spacing on planting equipment
☐☐☐☐	03.07	Adjust depth of seed placement on planting equipment
☐☐☐☐	03.08	Service and maintain fertilizer and seed hoppers, agitators, seed tubes and fittings on planting equipment
☐☐☐☐	03.09	Prepare planting equipment for storage
☐☐☐☐	03.10	Identify the major types of seed metering mechanisms used on planters
☐☐☐☐	03.11	Calibrate seed, fertilizer, herbicide and insecticide application rates under field conditions
☐☐☐☐	03.12	Trouble-shoot planting equipment operation under field and shop conditions

04.0 Pest Control and Fertilizing Equipment

The student will be able to:

0 1 2 3		
☐☐☐☐	04.01	Describe the major functions of chemical application equipment
☐☐☐☐	04.02	Identify the types of chemical application equipment
☐☐☐☐	04.03	Describe the characteristics and applications of the major types of chemical application equipment
☐☐☐☐	04.04	Describe the fundamentals of operation of the major types of sprayer pumps
☐☐☐☐	05.05	Trouble-shoot sprayer pump operation
☐☐☐☐	04.06	Describe the major characteristics and applications of the different types of sprayer nozzles
☐☐☐☐	04.07	Read and interpret nozzle selection literature
☐☐☐☐	04.08	Service and maintain sprayer nozzles and fittings
☐☐☐☐	04.09	Describe the importance of accurate crop spraying equipment calibration
☐☐☐☐	04.10	Select crop sprayer nozzles for desired application rate and spraying pressure
☐☐☐☐	04.11	Calculate the required quantities of solution for spraying specific acreages

05.0 Harvesting Equipment

The student will be able to:

0 1 2 3		
☐☐☐☐	05.01	Describe the alternative methods of harvesting crops.
☐☐☐☐	05.02	Describe the characteristics and applications of the major types of harvesting equipment
☐☐☐☐	05.03	Read and interpret an operators manual for harvesting equipment
☐☐☐☐	05.04	Calculate the potential field capacity for various sizes of harvesting equipment
☐☐☐☐	05.05	Identify the sources of harvest losses
☐☐☐☐	05.06	Operate harvesting equipment safely under field and transport situations
☐☐☐☐	05.07	Prepare harvesting equipment for storage
☐☐☐☐	05.08	Describe adjustments and operating controls on the basic types of harvesting equipment
☐☐☐☐	05.09	Trouble-shoot harvesting equipment operation under field and shop conditions

06.0 Agricultural Hydraulic Systems

The student will be able to:

0 1 2 3		
☐☐☐☐	06.01	Identify the applications of hydraulics in agriculture
☐☐☐☐	06.02	Identify the components of a hydraulics system
☐☐☐☐	06.03	Define terminology associated with hydraulic systems
☐☐☐☐	06.04	Describe operating principles of hydraulic systems
☐☐☐☐	06.05	List the advantages and disadvantages of utilizing hydraulics in agriculture
☐☐☐☐	06.06	Read and interpret basic hydraulic schematic diagrams
☐☐☐☐	06.07	Select the proper hydraulic fluid for a specific hydraulic system and operating condition
☐☐☐☐	06.08	Drain, flush and refill hydraulic systems on agricultural equipment
☐☐☐☐	06.09	Service and maintain hydraulic seals and packings
☐☐☐☐	06.10	Select hydraulic tubing, pipe and remove hoses to fulfill specific pressure, volume and exposure requirements
☐☐☐☐	06.11	Service, maintain and/or operate hydraulic fittings and couplers
☐☐☐☐	06.12	Service and maintain hydraulic fluid filters
☐☐☐☐	06.13	Trouble-shoot hydraulic motor operating problems
☐☐☐☐	06.14	Select hydraulic motors to fit specific applications on agriculture equipment and power units
☐☐☐☐	06.15	Determine relief valve pressure setting by the T-test method

07.0 Agricultural Machinery Management

The student will be able to:

0 1 2 3		
☐☐☐☐	07.01	Describe the relationship between machinery costs and other farm costs
☐☐☐☐	07.02	Identify the basic management skills required to manage agricultural machinery
☐☐☐☐	07.03	Describe the importance of good records in a farm machinery management program
☐☐☐☐	07.04	List the types of records used in a farm machinery management program
☐☐☐☐	07.05	Identify the sources of information that can be utilized to provide the farmer with assistance for his machinery management program
☐☐☐☐	07.06	Calculate field capacity for various types of agricultural equipment and machinery
☐☐☐☐	07.07	Calculate the material capacity for various types of agricultural equipment and machinery

0 1 2 3

☐☐☐☐ 07.08 Calculate throughput capacity for various types of agricultural equipment and machinery

☐☐☐☐ 07.09 Identify the variables that effect the theoretical capacity of agricultural machinery

☐☐☐☐ 07.10 Calculate theoretical capacity for various types of agricultural machinery

☐☐☐☐ 07.11 Define the term 'timeliness' as it relates to agricultural machinery

☐☐☐☐ 07.12 Describe how the time available for specific cropping operations effects decisions regarding machinery capacity requirements

☐☐☐☐ 07.13 Estimate economic and crop yield losses due to lost time or lack of timeliness in various cropping operations using a nomograph

☐☐☐☐ 07.14 Calculate the time available for specific cropping operations from past farm management records and university research data

☐☐☐☐ 07.15 List the factors that should be considered when matching agricultural machinery to a cropping system and/or power units

☐☐☐☐ 07.16 Compare the calculated ownership costs of various types of agricultural machinery and power units with differing capacities

☐☐☐☐ 07.17 List the factors that affect the field efficiency of agricultural machinery

☐☐☐☐ 07.18 Identify inefficient use of agricultural machinery and power units in a specific farming operation

☐☐☐☐ 07.19 Describe the ways that could be used to reduce the horsepower requirements for various types of agricultural machinery

☐☐☐☐ 07.20 Calculate horsepower requirements for various types of machinery based on needed capacity and available time

☐☐☐☐ 07.21 Describe the basic reasons why it is important to maintain a horsepower reserve when calculating horsepower requirements for agricultural machinery

☐☐☐☐ 07.22 List the factors to consider when selecting agricultural power units

☐☐☐☐ 07.23 Describe the methods used to rate agricultural power units and engines

☐☐☐☐ 07.24 Read an interpret university and manufacturer's literature, such as the Nebraska Tractor Tests, as it relates to the performance and specifications of agricultural power units and engines

☐☐☐☐ 07.25 Read and interpret data from a tractor dynamometer performance test

☐☐☐☐ 07.26 List the type of fixed costs that apply to agricultural machinery

☐☐☐☐ 07.27 Describe the term 'depreciation' as it relates to agricultural machinery

0 1 2 3

☐☐☐☐ 07.28 Describe the ways that can be used to prevent rapid depreciation of agricultural machinery

☐☐☐☐ 07.29 Identify the major methods used in a management program to depreciate agricultural machinery

☐☐☐☐ 07.30 Estimate the average annual fixed cost for various types and sizes of agricultural machinery

☐☐☐☐ 07.31 List the types of operating costs that apply to agricultural machinery

☐☐☐☐ 07.32 Calculate the total operating costs for various types of agricultural machinery and power units given the necessary data

☐☐☐☐ 07.33 List the alternatives to ownership of agricultural machinery

☐☐☐☐ 07.34 List the advantages and disadvantages of each of the alternatives to ownership

☐☐☐☐ 07.35 Calculate the break-even point in acres per year and tons per year of various types of agricultural machinery

☐☐☐☐ 07.36 Compare leasing and rental costs to ownership costs of various types of agricultural machinery

☐☐☐☐ 07.37 Estimate the average life expectancy of various types of agricultural machinery

☐☐☐☐ 07.38 Estimate the optimum time to trade-in various types of agricultural machinery

☐☐☐☐ 07.39 List the factors that effect the trade-in value of various types of agricultural machinery

☐☐☐☐ 07.40 Read and interpret prepared tables, such as tractor and implement bluebooks, to estimate trade-in and salvage value of agricultural machinery