

PLNT 1213
Fall 2009
Exam 2 Review Guide

Agroecosystems

Definitions:

allelopathy	fallow	monoculture
alley cropping	interspecific competition	polyculture
cover cropping	intraspecific competition	strip cropping
crop rotation	Leibig's Law of the Minimum	yield potential
double cropping	mixtures	

Concepts:

- Differentiate between natural ecosystems and agroecosystems.
- List some yield limiting factors.
- Describe cropping systems that increase stability in agroecosystems.
- Describe the benefits of crop rotation.
- Describe interactions in an ecosystem.

Soil physical properties

Definitions:

bulk density	soil horizon	soil tith
macropore	soil organic matter	soil water content
micropore	soil particle	soil water potential
ped	soil structure	
soil	soil texture	

Concepts:

- Describe the process of soil development.
- Know the four soil horizons discussed in lecture.
- Know the relative sizes of the three soil particle classes.
- Use the soil textural triangle to determine soil texture.
- Describe how soil bulk density is related to soil aeration and soil water content.

Water management

Definitions:

aquifer	microirrigation	water use efficiency
evapotranspiration	salinization	
gravity flow irrigation	sprinkler irrigation	

Concepts:

- Why do plants need water?
- What factors regulate plant water use efficiency?
- Describe the three types of irrigation we discussed in lecture.

Tillage

Definitions:

conservation tillage	no till	secondary tillage
conventional tillage	primary tillage	strip till
mulch till	ridge till	

Concepts:

Describe the purpose of tillage.

Identify tillage implements.

Compare conventional and conservation tillage systems.

Soil conservation

Definitions:

conservation tillage	drain tile	soil erosion
contour farming	grassed waterway	strip cropping
cover crop	NRCS	terraces

Concepts:

Describe the importance of soil conservation.

Describe soil conservation methods.

Seed Selection

Definitions:

common weed seed	mechanical damage	seed viability
dormancy	prohibited noxious weed	seed vigor
embryo	restricted noxious weed	testa
endosperm	seed	
inert material	seed purity	

Concepts:

What are the parts of a seed? Be able to recognize them on a diagram.

What factors should a farmer consider when selecting seed?

How does a farmer determine which species and variety to plant?

What factors determine seed quality?

Know how to calculate seed purity (see practice problems).

Know how to calculate pure live seed (see practice problems).

Why is it important to have seed that is free of pathogens, insects, and weed seed?

What causes mechanical damage to seeds?

Planting

Definitions:

broadcast spreader	drill seeder	seeding rate
direct seeded	row crop planter	transplanting

Concepts:

What factors influence planting date?

What factors influence planting depth?

What are the three planting patterns we learned?

Why is the proper seeding rate important?

Know how to calculate seeding rates.

Practice Problems

Practice problems

1. You're a seed analyst who has been asked to determine the purity (*not* the pure live seed) of a soybean seed sample. The sample provided weighs 150 grams and yielded the following data:

Seeds from other crops: 0.9 grams

Weed seeds: 4.6 grams

Inert material: 3.1 grams

What is the purity of this lot of seed?

2. You're trying to determine the pure live seed content of some wheat you saved back last year. Your tests have yielded the following information:

Rolled towel germination: 24/25 seeds

Inert material: 0.3 g in a 100 g sample

Other crop seed: 0.8 g in a 100 g sample

Weed seeds: 2.7 g in a 100 g sample

What is the PLS content of your seed?

3. You're planning to plant 400 acres of sunflower this year. You know from previous years that you'd like to have a final stand count of 20,000 plants per acre. You've purchased seed with 95% purity and a 98% germination rate. How many 50 pound bags of seed do you need to purchase? (Hint: there are 6,000 seeds per pound.)

4. You are planting sorghum on 560 acres and desire a target population of 40,000 plants per acre. You have purchased seed with a 96% germination rate and 93% purity. How many bags of seeds will you need to purchase in order to have a final stand of approximately 24,000 plants per acre? (Hint: each bag of seed contains 120,000 seeds.)

