

AGRY 515 2008

Root Morphology and the Rhizosphere

PowerPoint File: **RootMorphology_Slides_2008.ppt**

Individual root scale: Common features (**Fig. 1**)

- Root-tip

 - Root cap

 - Meristematic zone

 - Elongation zone

 - Root hair zone (**Fig. 2**)

- Mucigel

- Lateral root initiation/emergence zone (**Fig. 3 – 5**)

- Role of IAA, Cytokinins, hormones (**Fig. 6**)

Root system scale: (**Fig. 7 - 11**)

- Taprooted systems: most dicots and gymnosperms

 - Cases: Primary axis long

 - Primary axis short

 - Primary axis hard to distinguish from secondary

- Fibrous rooted systems: most monocots

 - Primary axis short-lived ~ adventitious roots emerge from stem

How similar are tap and fibrous root systems?

Environmental modification of morphology

- Root system characteristics that can be modified

 - Duration of length

 - Root mass

 - Root distribution

 - Root activity

- Modifying factors

 - Shoot environment

 - Root environment

 - Nutrient availability (**Fig. 12 – 14**)

 - Other soil chemical factors

 - Water/oxygen availability

 - Soil Structure

 - Other soil physical factors

Rhizosphere: what, where, why?