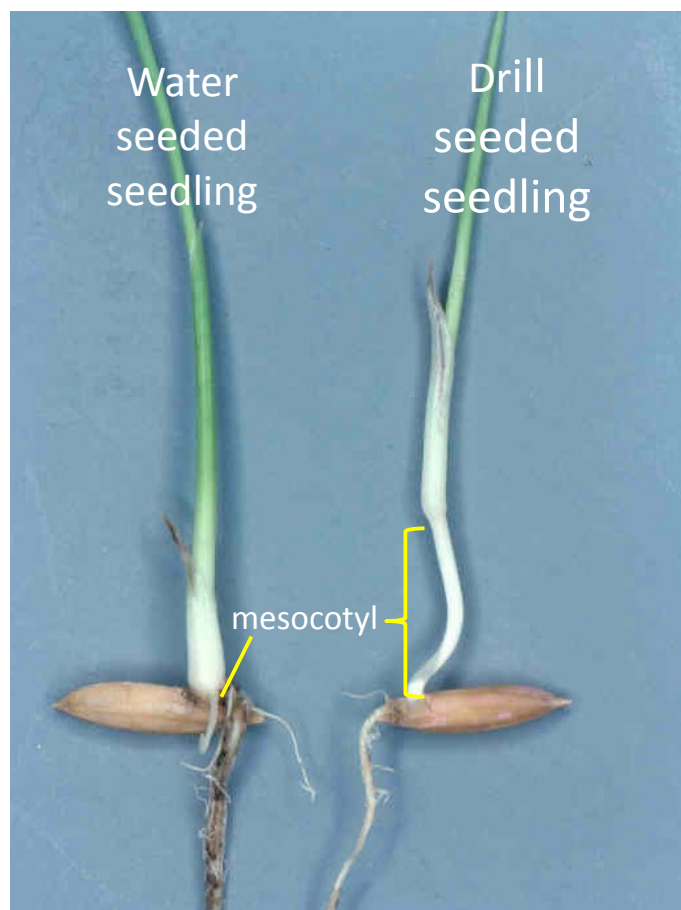
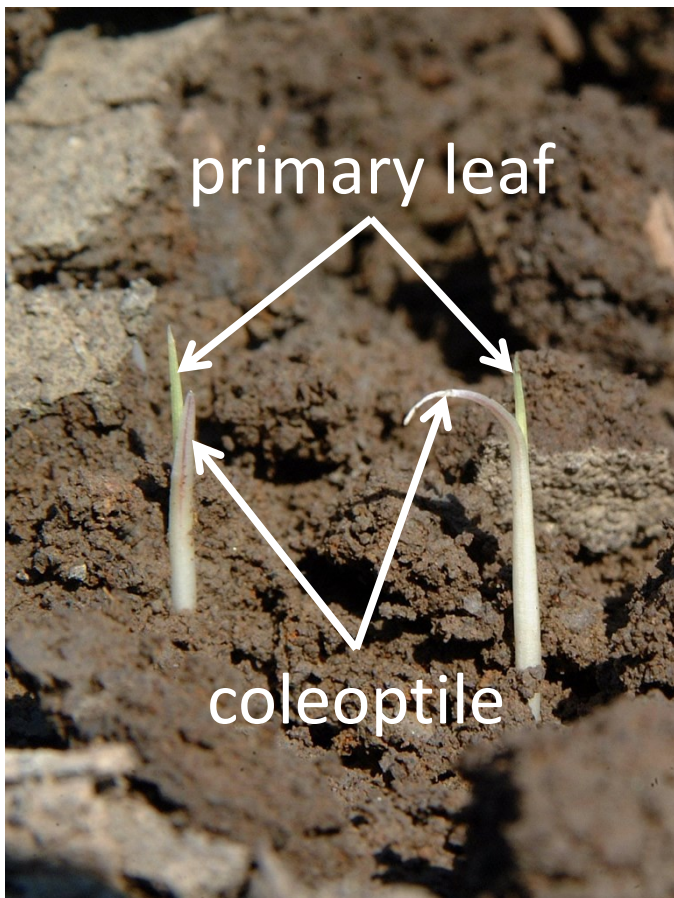


If I had to put a label on this season I would call it the “slow motion” season. Cold weather and sporadic rain events with more expected tomorrow and Sunday have really slowed planting progress. Rice that has been planted has benefited from the few days of warm weather and is progressing, but we have had more cloud cover than I would like to see at this time of year. We must have sunshine if plants are going to grow. Not having a whole lot of interesting things happening in the field I thought it would be a good time to review seedling anatomy and growth and development.



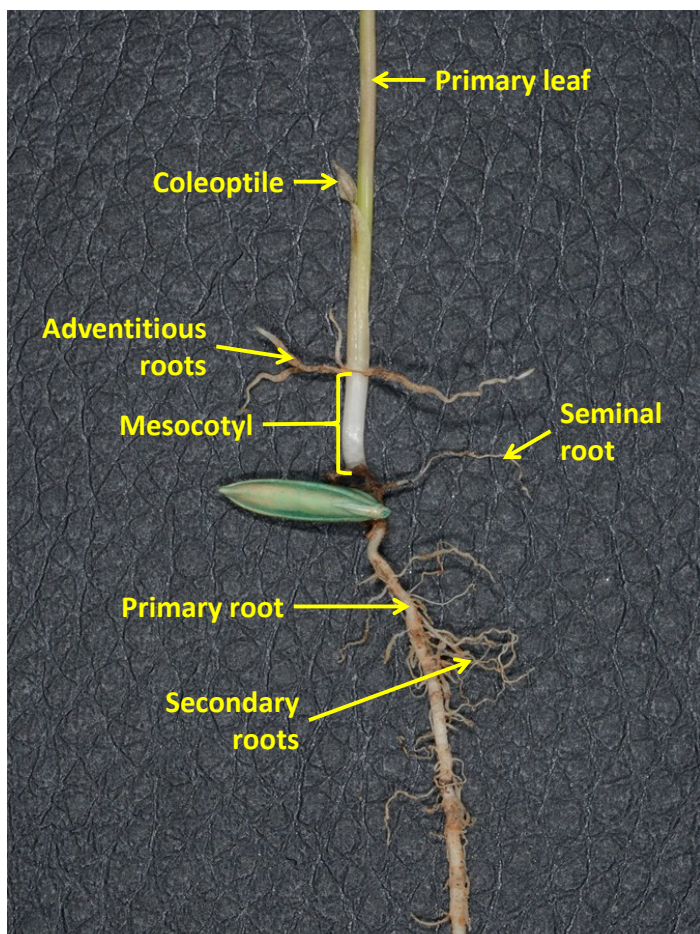
When rice is drill seeded or broadcast and covered with soil the first part of the seedling to emerge from the soil is the coleoptile which is wrapped around the primary leaf. Shortly after breaking through the soil surface the primary leaf emerges through the coleoptile. This is not a true leaf and should not be counted when determining leaf stage of the seedling.

Below the soil surface a small stem called the mesocotyl elongates, but if the seed are on the surface as in water seedling there is little or no mesocotyl development. The significance of this difference becomes apparent when root system development is studied. When you examine the drill seeded seedling shown above you can see the slight enlargement of tissue where the mesocotyl meets the coleoptile. This is technically stem tissue. From this tissue roots, called adventitious roots, will develop. As a group these adventitious roots are also known as crown or coronal roots.

In the image on the next page four different roots are labeled. The primary root is the first to emerge from the germinating seedling. In its early development it is called the radicle. If seed are covered with soil this root usually emerges before the shoot, but in water seeded rice I have seen instances of shoot development ahead of root development. From this primary root many small roots called secondary roots will develop. At the point where the primary root is attached to the seed seminal roots will develop.

Interestingly, the bulk of the root system that will sustain the plant beyond the seedling stage will be derived from the adventitious roots. Secondary roots will develop from these roots thus the root system will consist of adventitious roots arising from the stem tissue and the secondary roots that develop from the adventitious roots.

If the primary root continued to develop it would produce a taproot like that found on broadleaf crops such as soybeans and cotton. Grasses produce a fibrous root system consisting of many similar sized roots in contrast to the dominant tap root found on dicots.



The seeds shown at right are Jupiter flown into one of our verification fields on March 21. We called emergence on April 1, eleven days following planting. The photo was taken on March 24 when the field was being drained. Small primary roots are just beginning to grow from the seeds.

The difference in root development is at least partially responsible for the restriction of some herbicides to drill seeded rice or older seedlings.

I hope knowing a little more about seedling development will help you solve problems in the field.