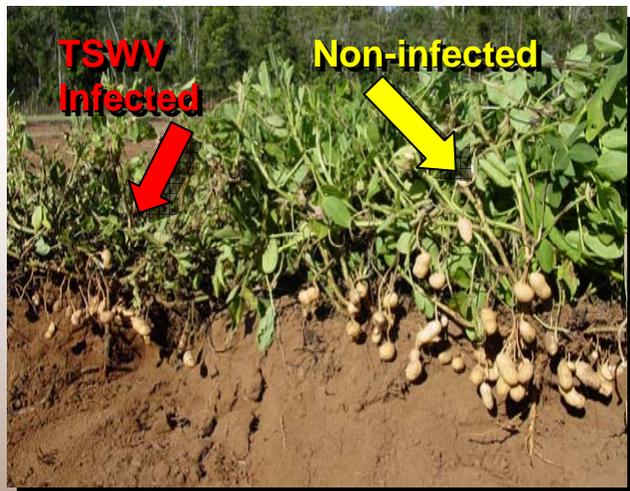


### 3. **DISEASE:** TSWV causes roots to die

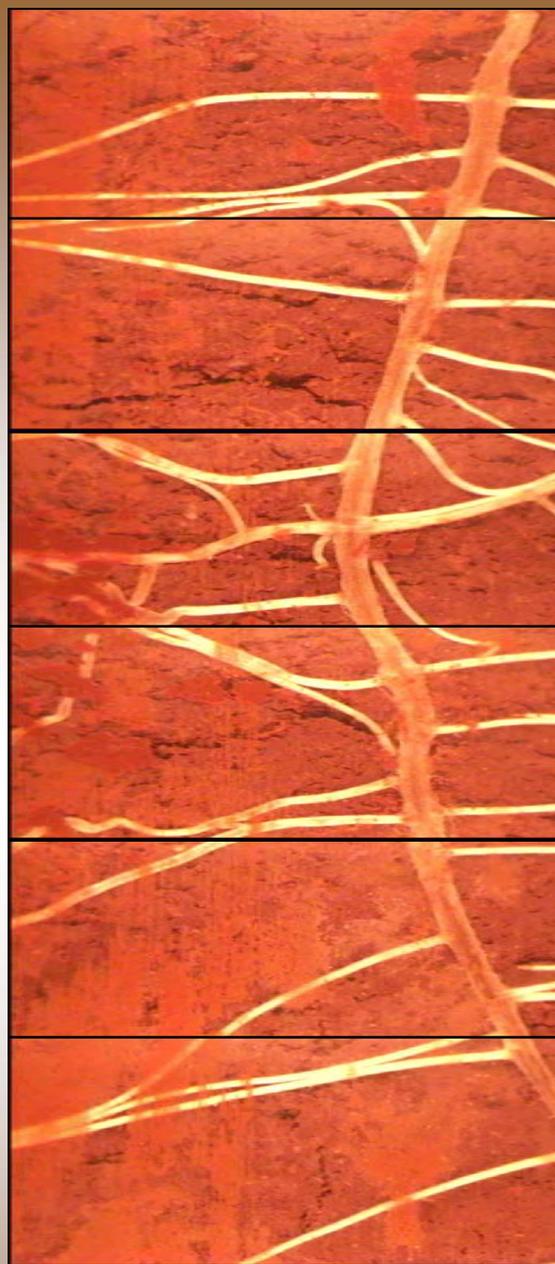
*Tomato spotted wilt virus* (TSWV) causes severe stunting in the canopy of the crop.

**Non-infected**

**TSWV Infected**

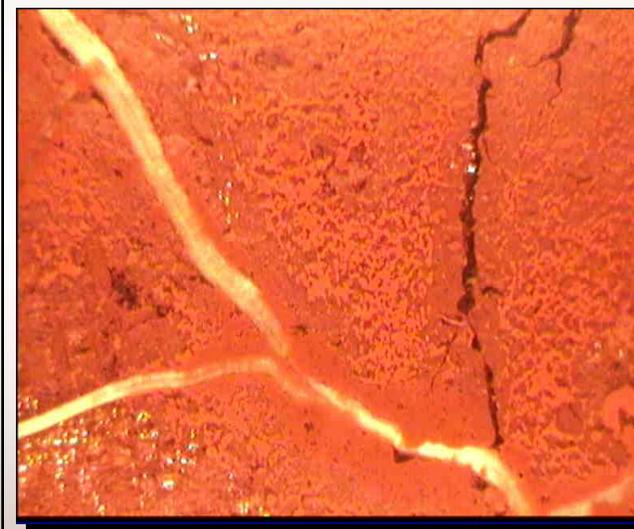


Just like the aboveground portion of the plant, the roots are severely stunted (necrosis) along with decreased pod production.



## Peanut Roots

### Effects on Growth and Architecture



For more information, contact Diane Rowland, USDA-ARS, National Peanut Research Laboratory, Dawson, GA

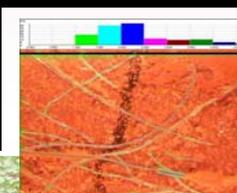
229-995-7400

[www.ars.usda.gov/saa/nprl](http://www.ars.usda.gov/saa/nprl)



# First, How do we study peanut roots?

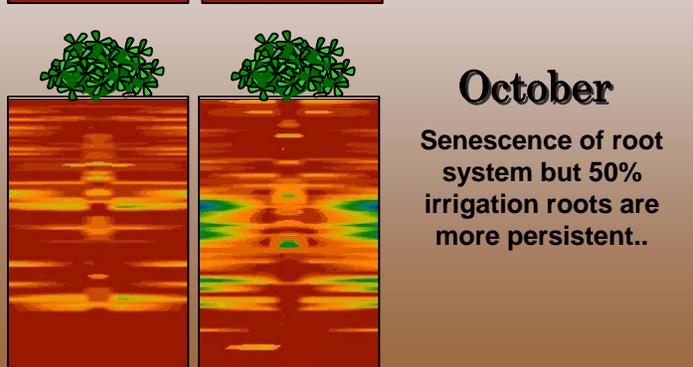
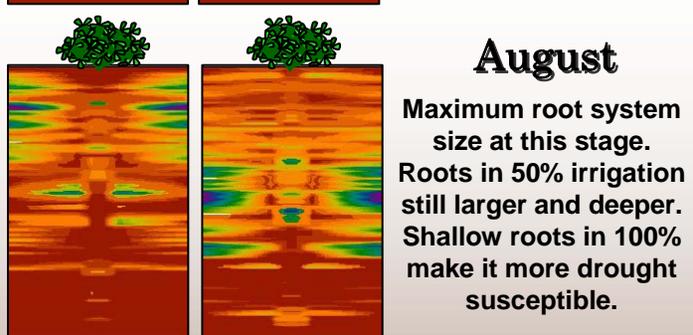
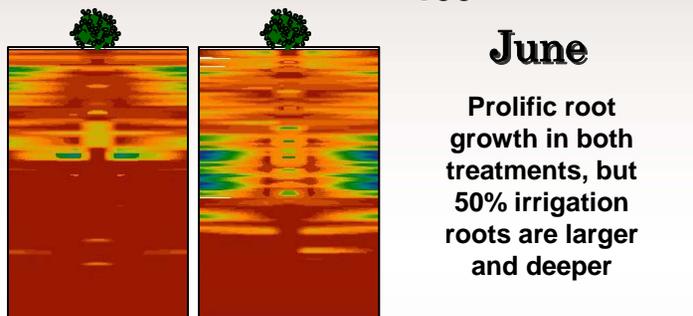
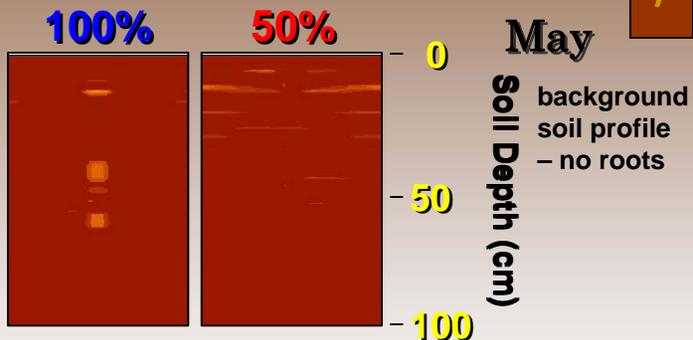
At NPRL, one tool we use are rhizotrons: clear tubes inserted at a 45° angle that allow us to take pictures of the root system through the season.



We then take those pictures and analyze them with software and get measurements of root length, diameter, size class, and overall architecture. We apply this technique in studies looking at root response to irrigation scheduling, tillage, disease and many other effects in the field.

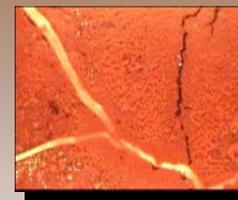
# Now, what changes the way roots grow?

## 1. WATER: deficits induce root growth

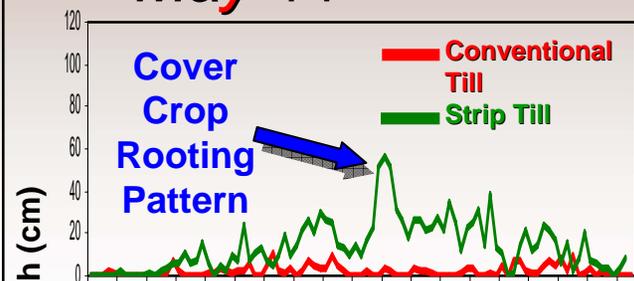


## 2. CONSERVATION TILLAGE: larger root systems

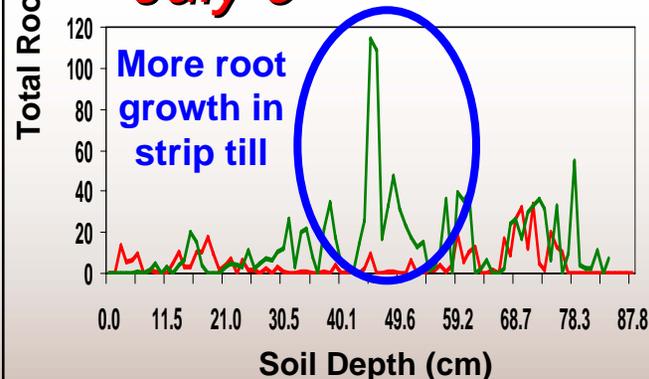
### Root Length Peanuts



May 11



July 9



The rooting pattern on May 11 for the conventional system shows a typical baseline pattern before peanuts are planted. However, the root growth in the strip till shows the rooting pattern for the cover crop. By July 9, dramatic differences in root growth between conventional and strip till can be seen: much larger and deeper root system in the strip till especially at the 50 cm depth which mirrors the primary root growth in the cover crop.