Strip Tillage

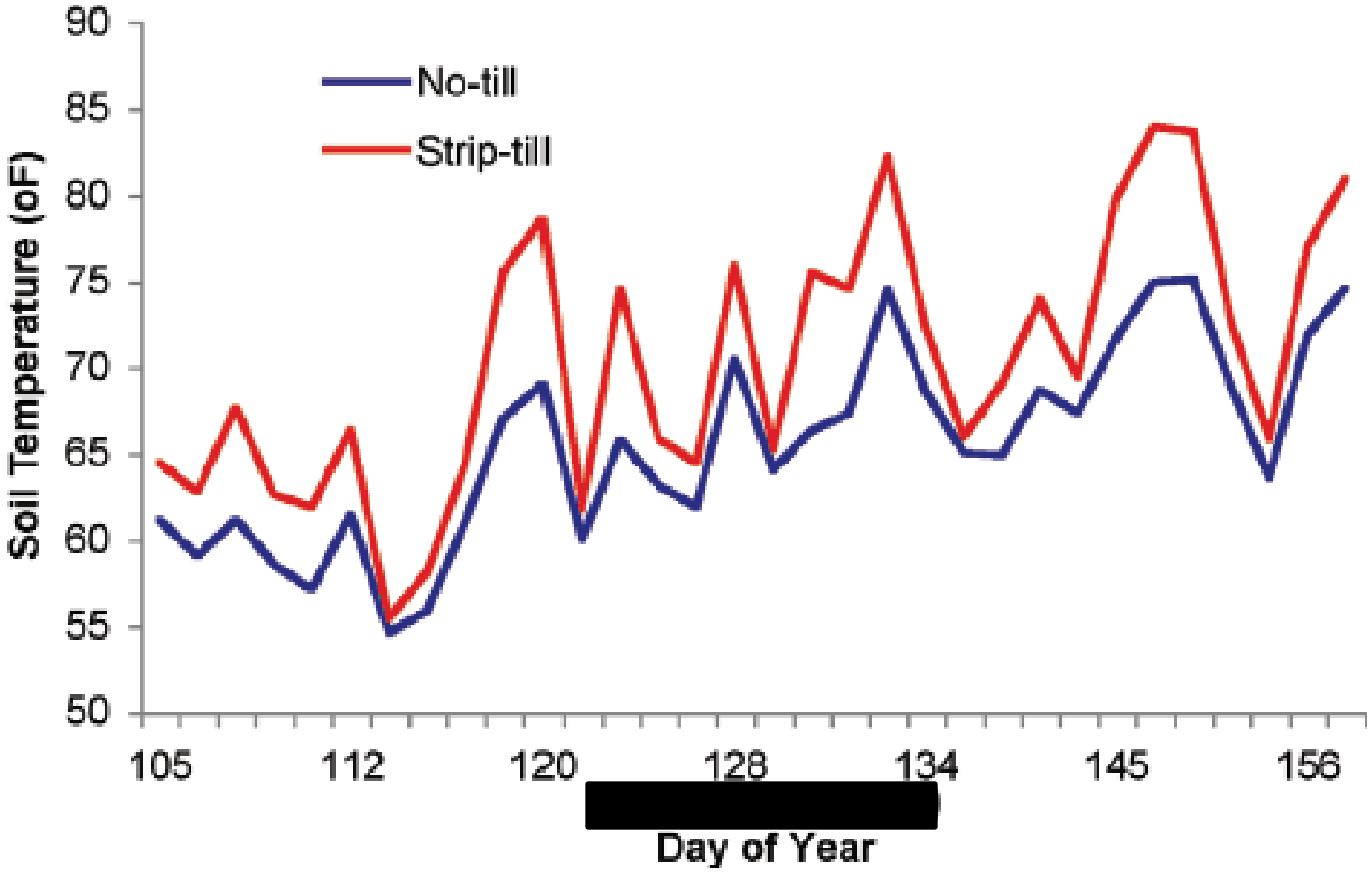
- Disturbs 30 % of surface
  - Meant to provide seed bed and increase soil temp in row.
- Remaining residues minimize wind and water erosion.
- Allows for potential increases in soil organic matter
  - Increased nutrient and water storage capacity
- Is considered “No-Till” by NRCS, eligible for cost share programs
- Provides for injection of fertilizer

Strip Tillage

Dry, Liquid and Gas fertilizers can be injected at multiple depths:
Increase fertilizer efficiency!

[Picture Source]

Strip Tillage (Soil Temp)

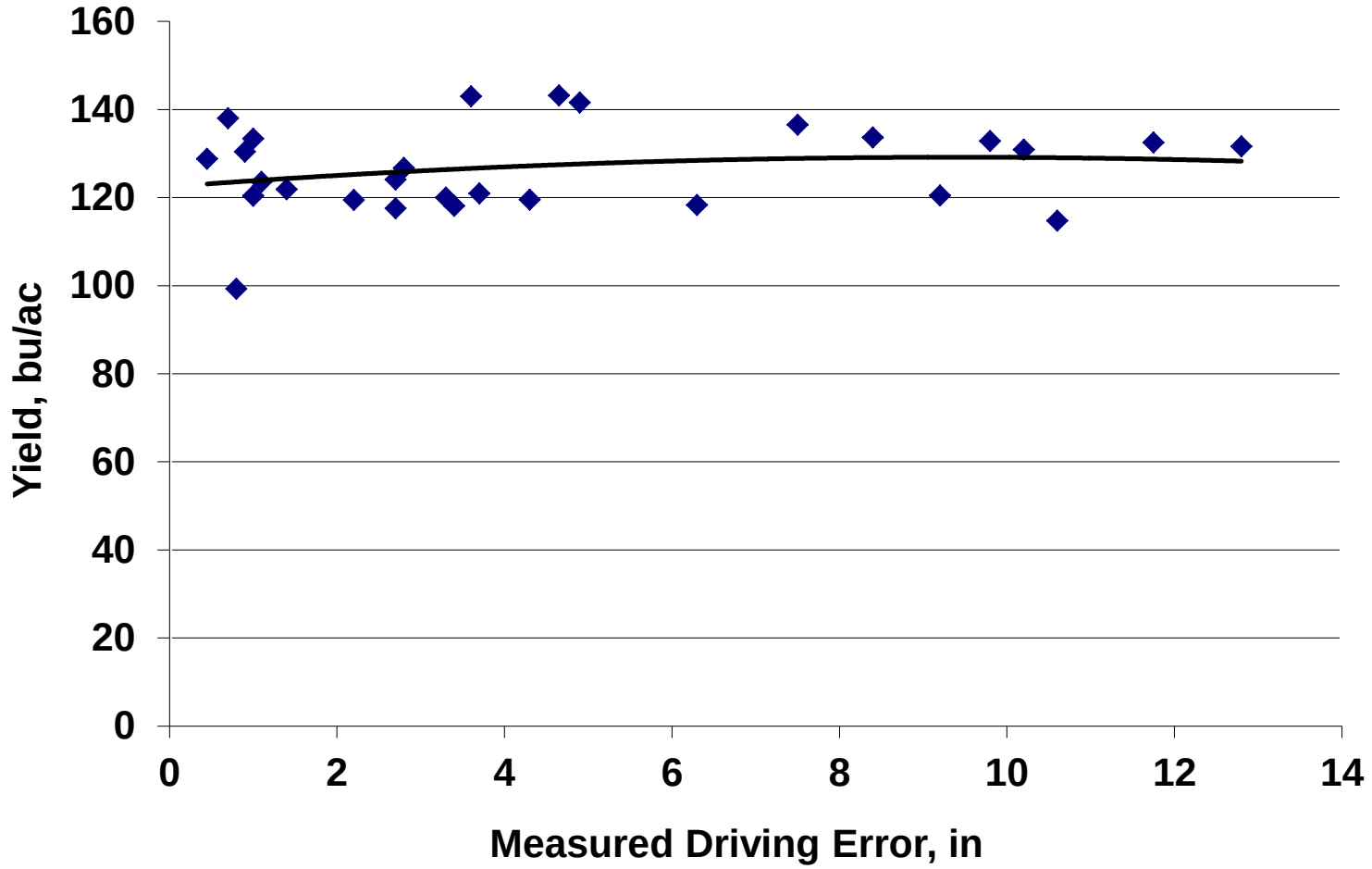


Manhattan, KS 2003

Driver Accuracy Study (Oklahoma)

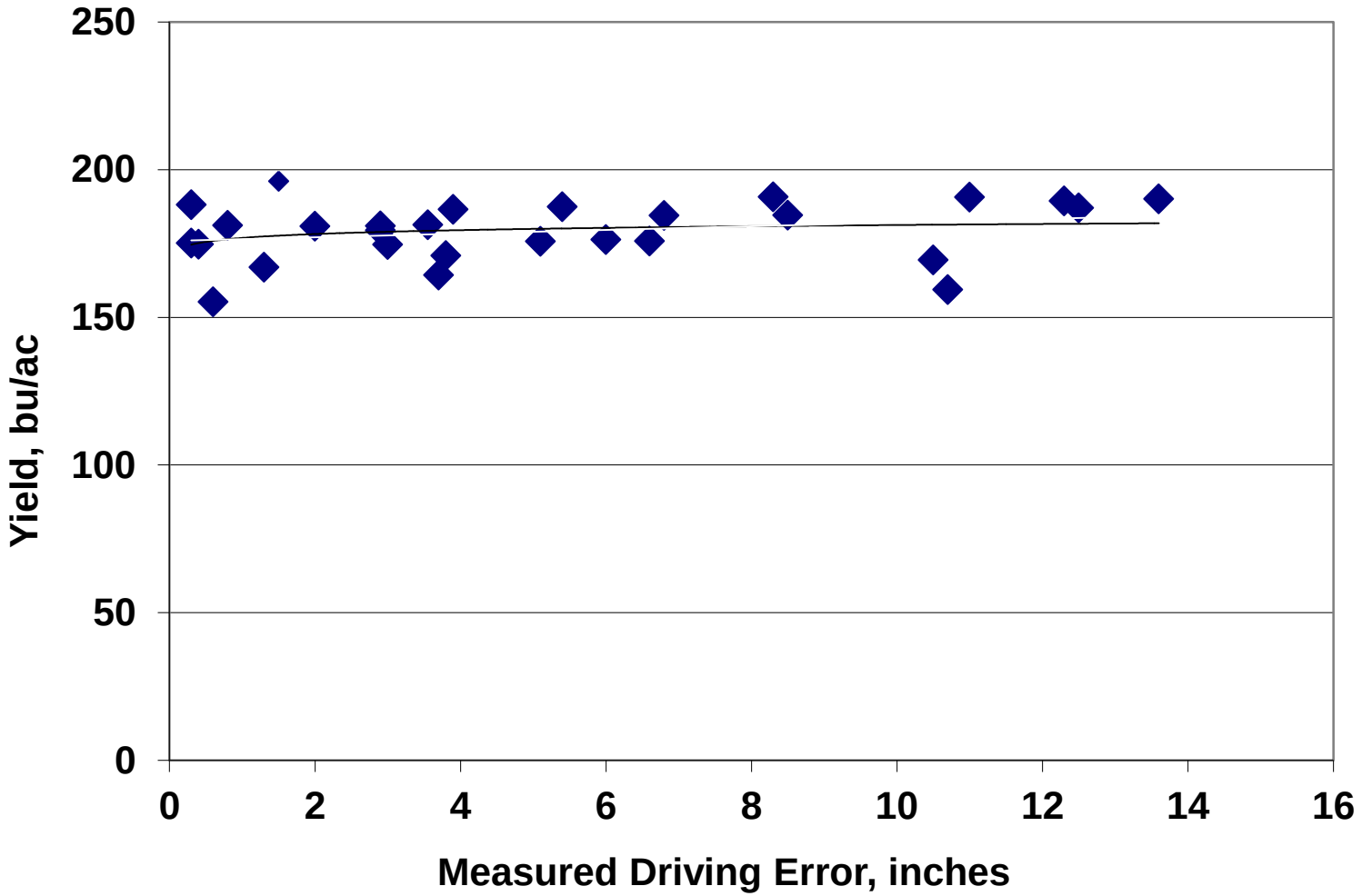
- Fall strips can be difficult to find without GPS guidance
- How accurate must GPS guidance be?
  - RTK will provide pass-to-pass accuracy of about 1 inch
  - Dual frequency systems provide accuracy of about 4 inches
  - Less expensive single frequency systems provide accuracies of 8-10 inches

Non-irrigated Corn Yield Response to Driving Error



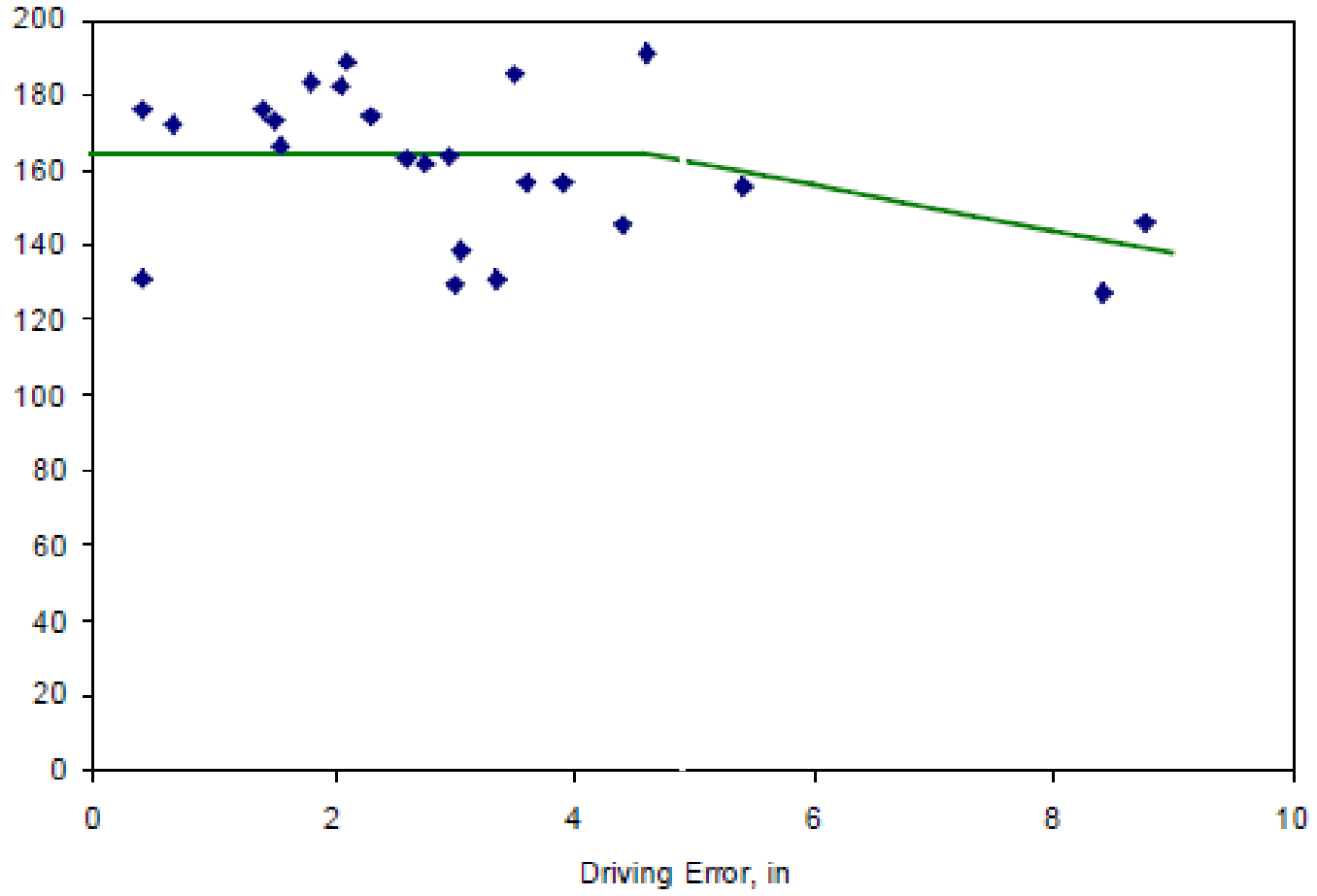
Convington, OK 2007

Irrigated Corn Yield Response to Driving Error



Goodwell, OK, 2008

Irrigated Corn Yield Response to Driving Error



Goodwell, OK, 2007

Driving Accuracy

- Seed placement within strip is not critical
  - Particularly if using a No-till Planter?
-
  -
    -
  -

Driving Accuracy

- In moisture limited conditions planting in strip may reduce yield (water loss from tillage)
- May be problematic for double crop systems
  - Double cropping is where a second crop is planted directly after harvest of previous crop (Will cover on Monday)

Conservation Systems

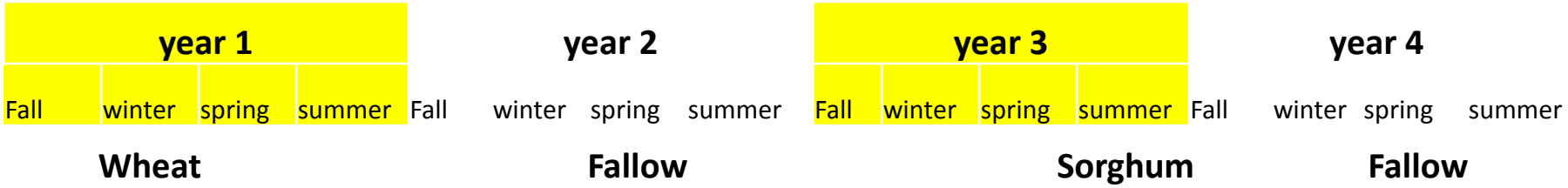
- Section 3.10 in Blanco referred to a number of different systems
  - No-till
    - No full width inversion tillage
  - Stubble mulch
    - Under cuts the soil and leaves most of the residue on the soil surface
  - Cover Crops
    - Planting crops during fallow periods
  - Strip Cropping
    - Alternating strips of different crops in the same field

Cropping Systems (Chapter 7)

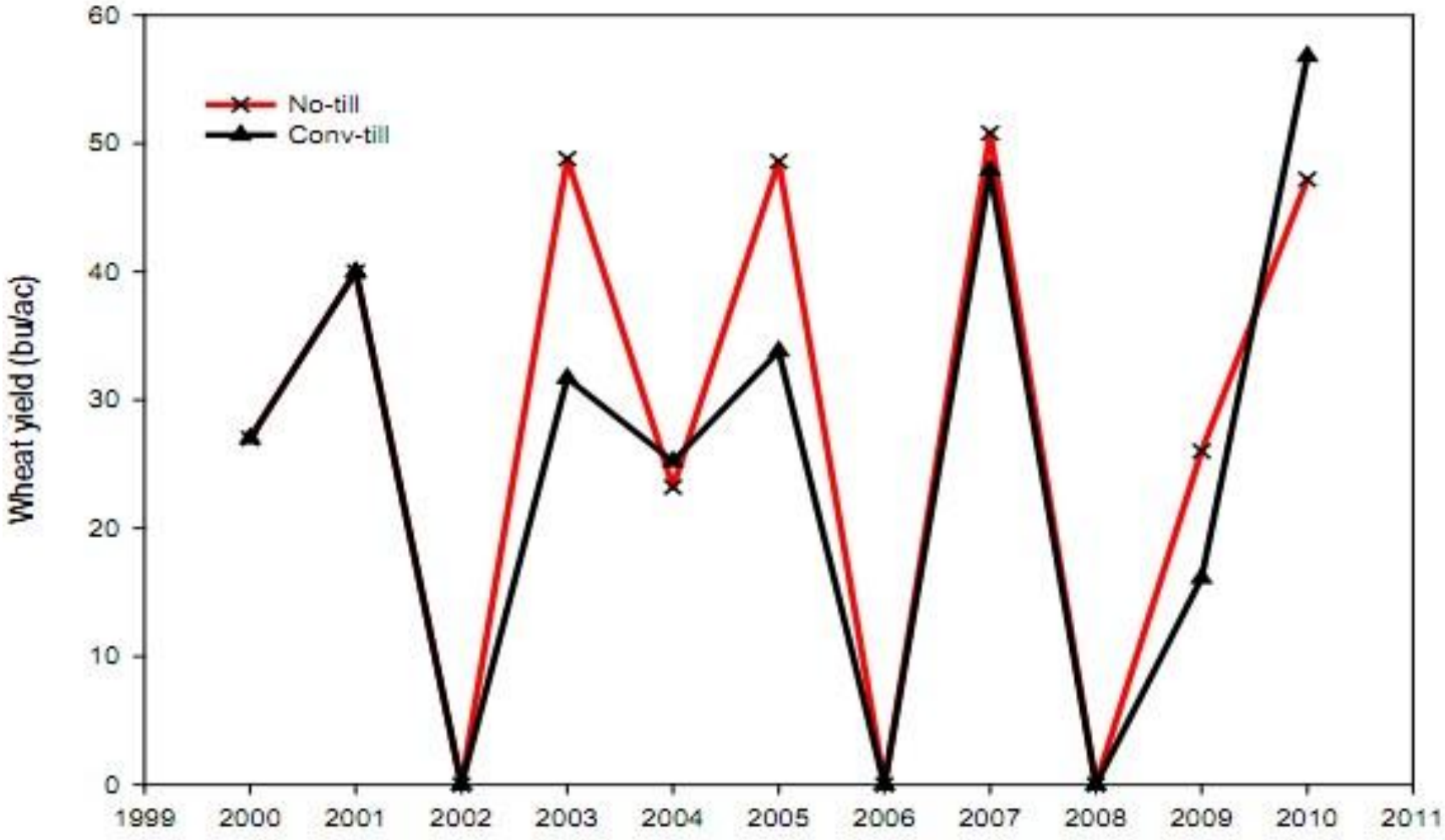
- Fallow systems
- Monocultures
- Crop rotations
- Cover crops
- Crop intensity
- Double cropping
- Relay cropping
- Intercropping
- Strip cropping
- Organic Farming

Fallow Systems

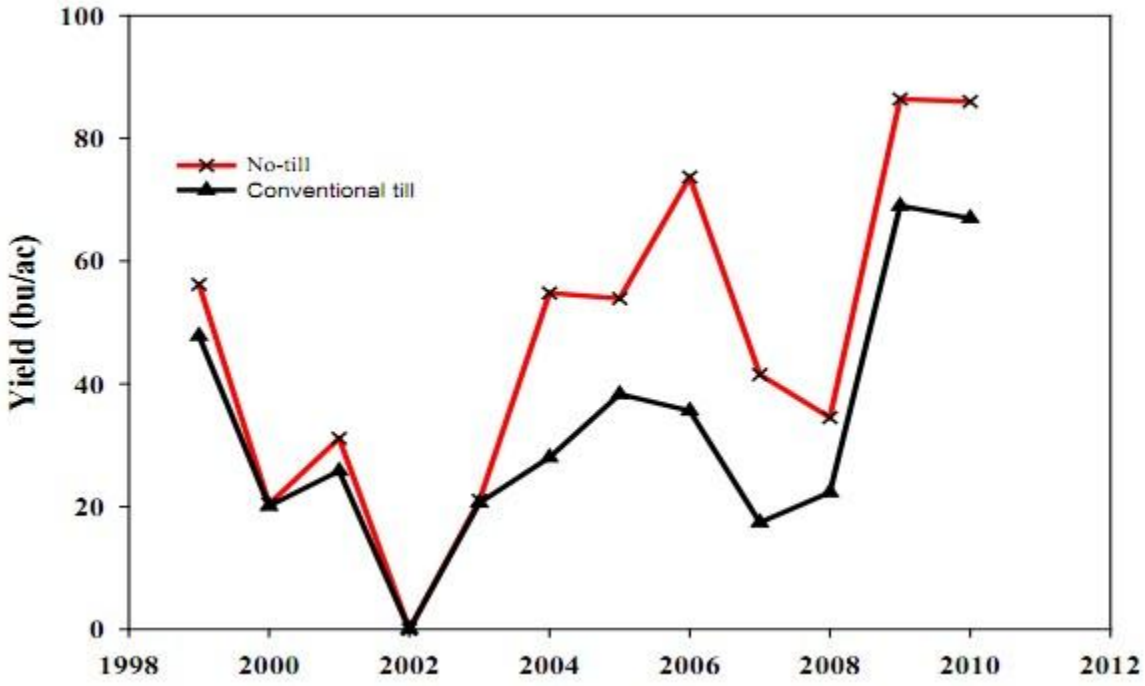
- System where field is left un-cropped for at least 1 growing season
- Most common reason to use this system is to accumulate soil moisture
- When tillage is used to control weeds this system can be highly erodible
- No-till management is highly successful in this system.
- Wheat-Fallow-Sorghum is a very common rotation Panhandle



Long-Term Wheat Yields in Goodwell, OK in (Wheat-Fallow-Sorghum rotation)



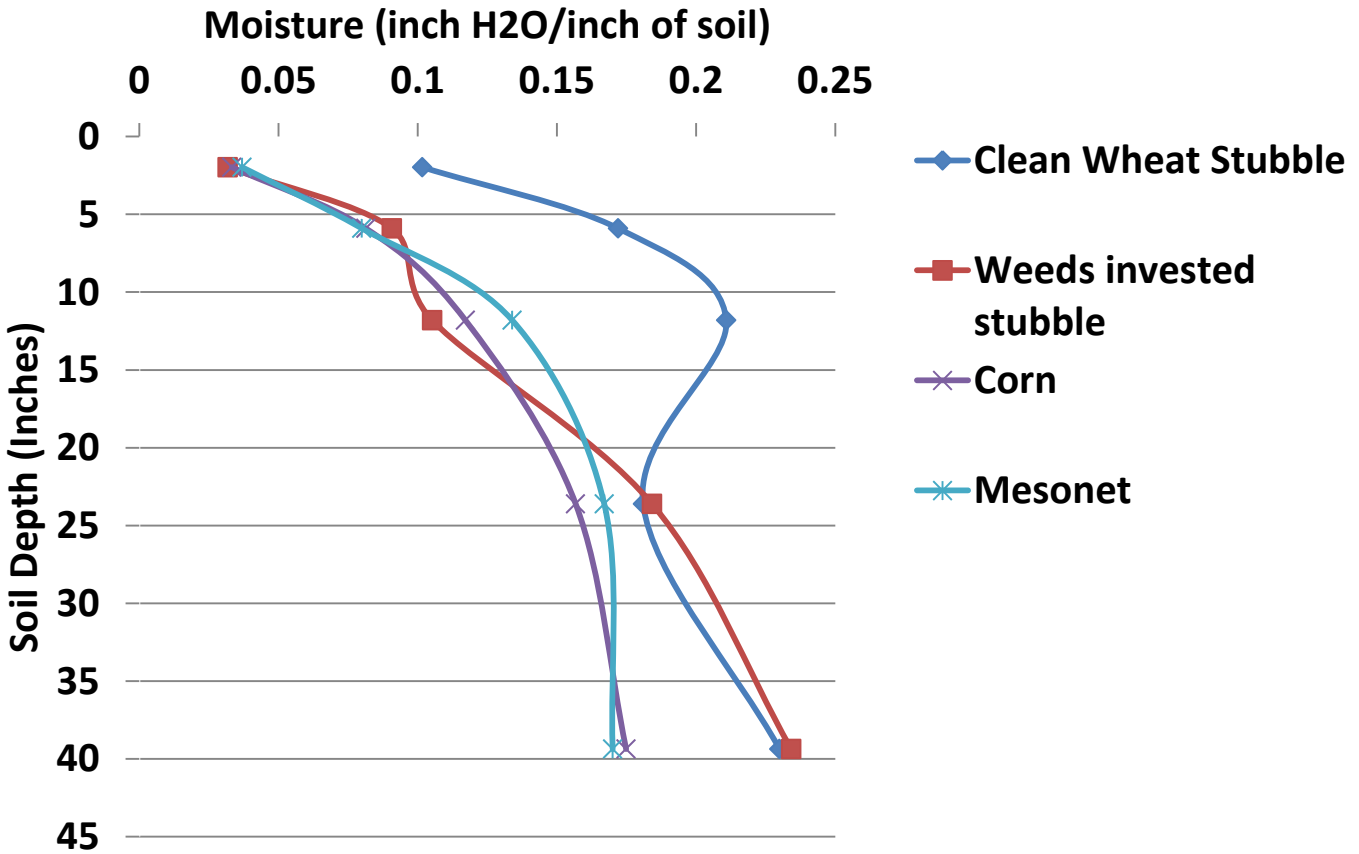
Long-Term Sorghum Yields in Goodwell OK in (Wheat-Fallow-Sorghum rotation)



Summer Fallow

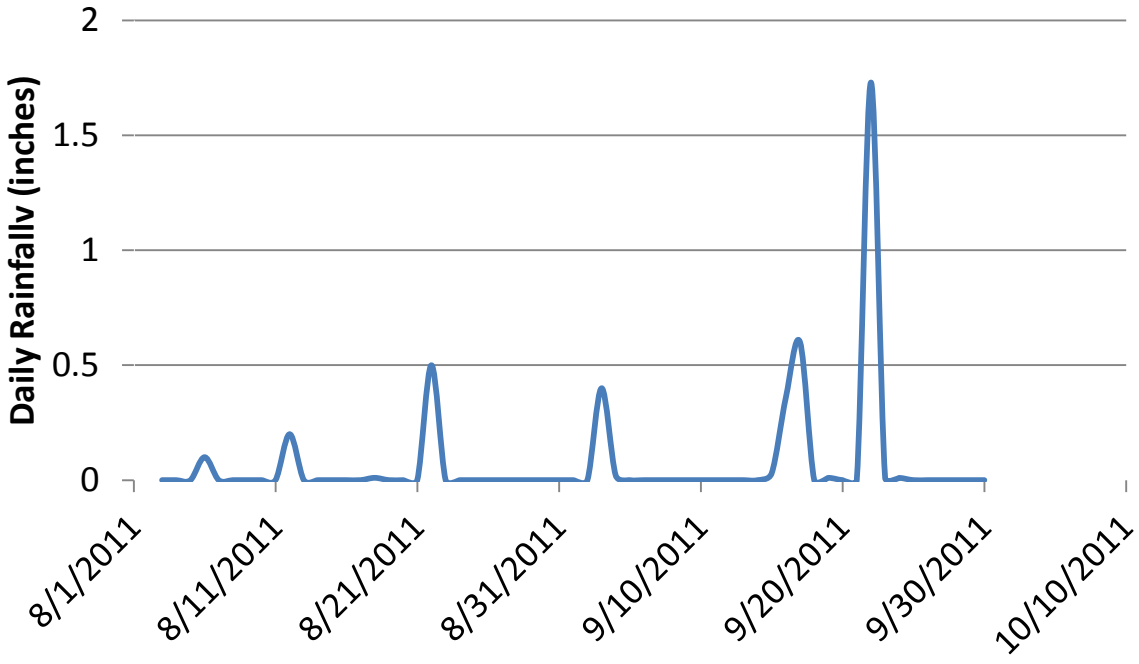
- Most common fallow system in OK
- Continuous wheat production
- Wheat-summer fallow-Canola rotation
- This system is used to store/capture moisture during summer fallow period
- Effectiveness is dependent on weed management and the distribution of rainfall

Soil Moisture Profiles (August 3, 2011)



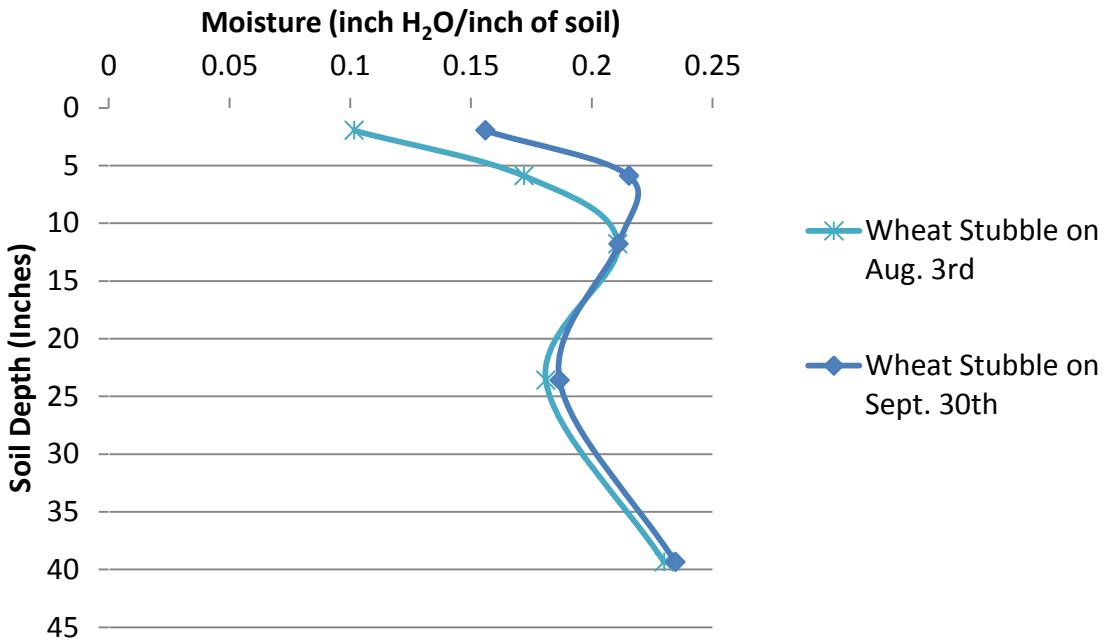
Daily Rainfall Since Aug. 3rd

- How did rainfall influences soil moisture
- We had 4 inches since Aug. 3rd.
- How much was left in the ground?



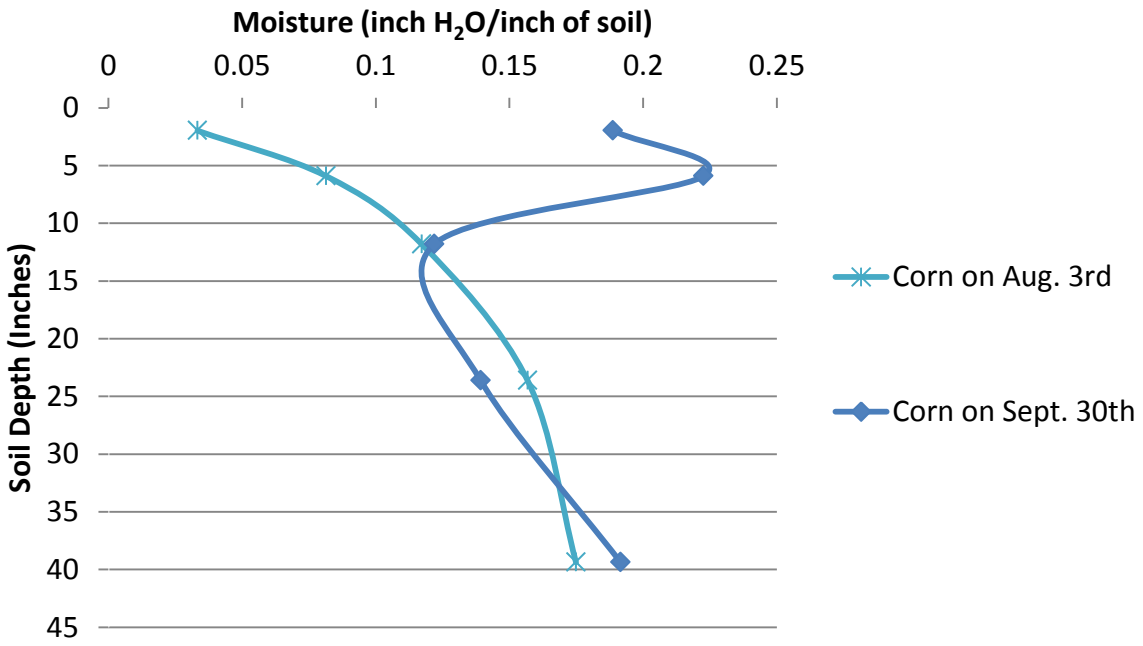
Soil Moisture Condition in Fallowed Wheat

- Moisture condition were moderately improved.
- Evaporation reduce moisture after 1.7 inch rain on Sept. 22nd
- Gained:
  - 0.3 inches



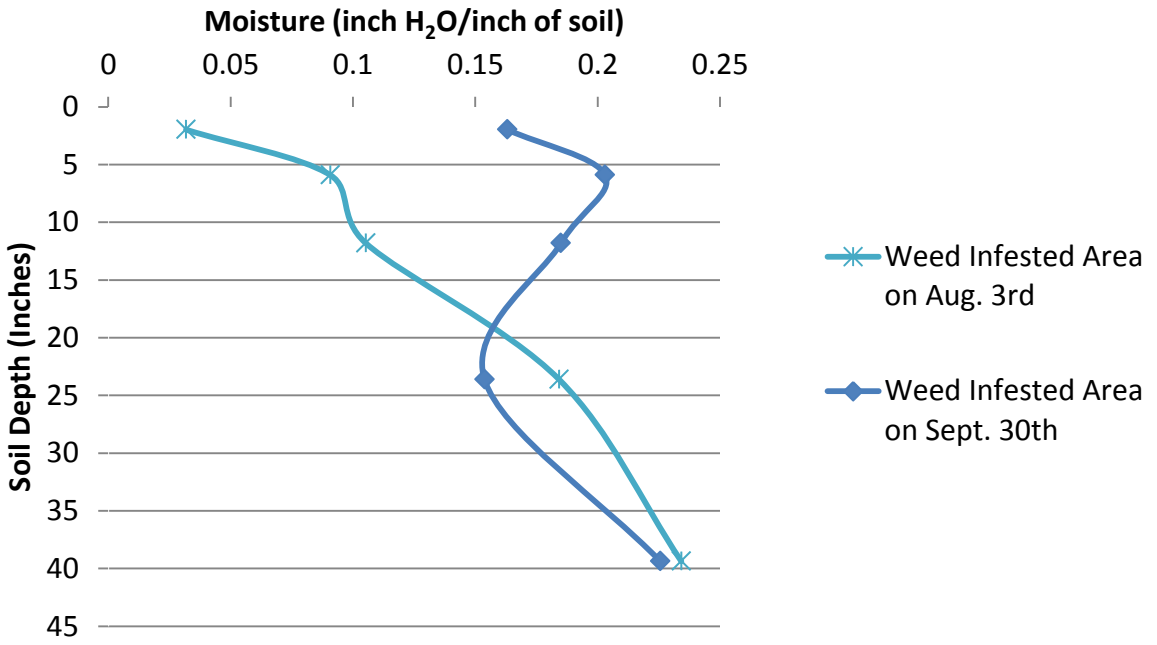
Soil Moisture Condition in Corn

- Moisture condition were moderately improved in the surface.
- Evaporation is apparent
- Transfer of water to subsoil was limited
- Gained:
  - 0.8 inches



Soil Moisture Condition in Weed Infested Area

- Moisture condition were moderately improved in the surface.
- Evaporation is apparent
- Transfer of water to subsoil was limited
- Gained:
  - 1.0 inches



Value of Stored Soil Moisture in summer fallow?

- Moisture stored during summer fallow period is only valuable if Fall/late summer rains are not sufficient to recharge profile
  - However, they are often sufficient in most of the State
- Summer fallow does provide **some** insurance against dry conditions for next crop
  - Becomes more important as we move West
  - Still need fall/late summer rain to establish crop

Multiple Cropping

- System where a single species is grown multiple times or different crops are grown simultaneously in the same field
- Results in smaller and/or shorter fallow periods
  - reduces erosion potential
- Provides longer harvest window for small farmers

Multiple Cropping

- Reduces labor requirements for planting and harvest time.
- Reduces risk to single crop failure
- This theory can be practices in large diverse farms in the U.S.
  - Diversity is spread out over 1000's of acres instead of one field

Double Cropping

- Consists of planting crops following harvest of the first on the same land during the same year
- This is a form of cropping intensification
- A Double crop following wheat is the most common in Oklahoma
  - Soybeans, sunflower, sorghum, etc.
- Will take advantage of rainfall during wheat harvest
- Generally prevents planting winter crop the following fall

Relay Cropping

- Interseeding a second crop into the first crop before harvesting.
- It allows production of a second crop in situations when planting must be done prior to harvest of the current crop
- Most common form of relay cropping in U.S. is planting winter crops for cover after a late season summer crop
- Can also be common in horticultural cropping systems and organic systems.

Cereal Rye planted into Standing Cotton

Strip Cropping

- Advantages:
  - Can provide control of wind and water erosion

http://allamakeeswcd.org/wp-content/uploads/2010/04/contour-farming.jpg

Alternating winter and summer crops reduces the length of the unprotected soil surface
Standing crop can catch sediments moving downhill, especially if perennial crops are used

Strip Cropping

- Advantages:
  - Can provide control of wind and water erosion

Provides protection for emerging crop from wind abrasion

Strip Cropping

- Challenges:
  - Strip widths must accommodate equipment
  - Can provide challenges for weed control
  - Can result in adverse boarder affects
    - Heat and Wind damage