

# Burley Varieties

COOPERATIVE  
EXTENSION  
SERVICE



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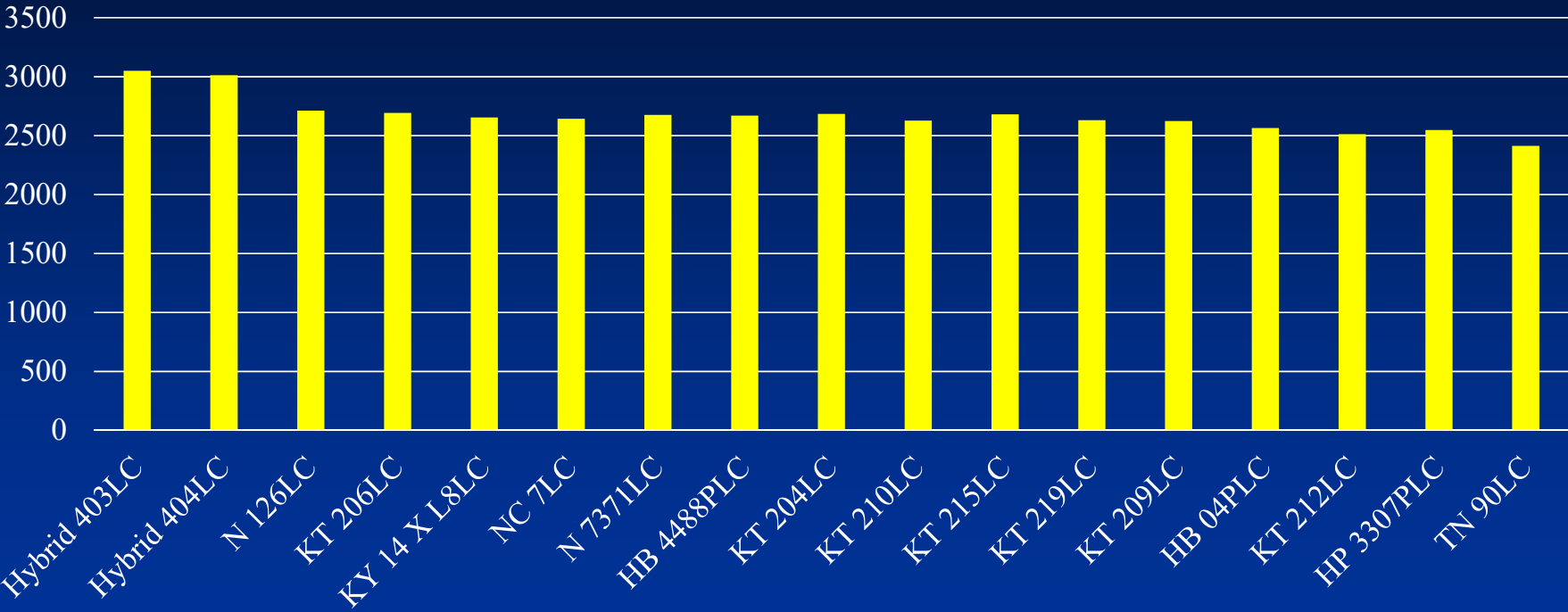
2021 KY/TN Tobacco Agent

Training

## Characteristics of KT-219LC

- Most recent burley variety release from KTTII
  - Early maturing (Couple of days later than 14 x L8)
  - High resistance to both races of black shank (Similar to KT 209)
  - Resistant to black root rot and tobacco mosaic virus
  - Susceptible to the virus complex
  - Relatively short with fewer leaves than most varieties
  - Moderate yield potential

# Yield of Burley Varieties (2017 to 2019)



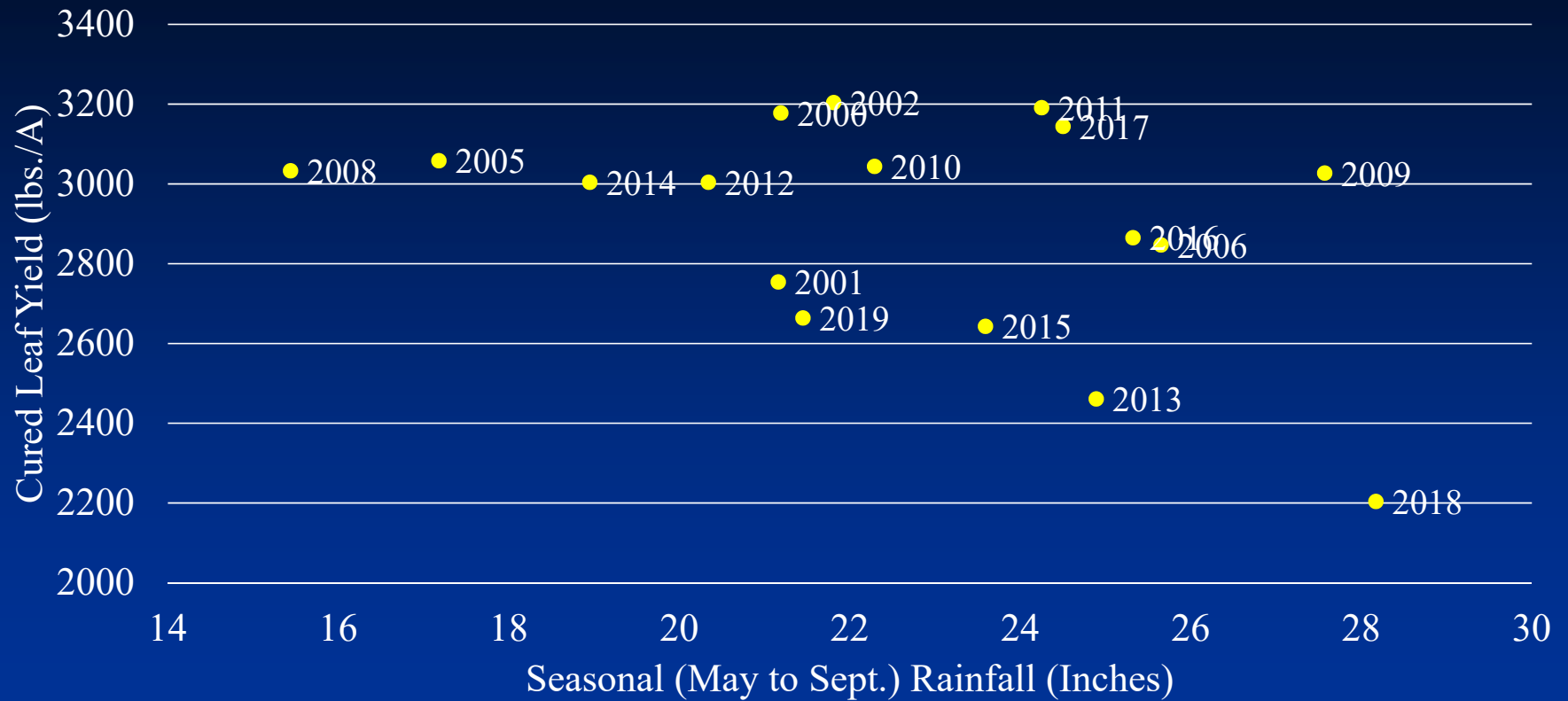
# “I cannot seem to get the yield that I used to get from tobacco”

- Varieties have changed?
- Changing weather patterns?
  - Overall trend toward higher rainfall totals
  - Increased frequency of heavy rainfall events
  - Increased spatial variability
- Other production practice changes?
  - Lower plant populations
  - Changes in tillage practices
  - Fewer growers – larger acreage

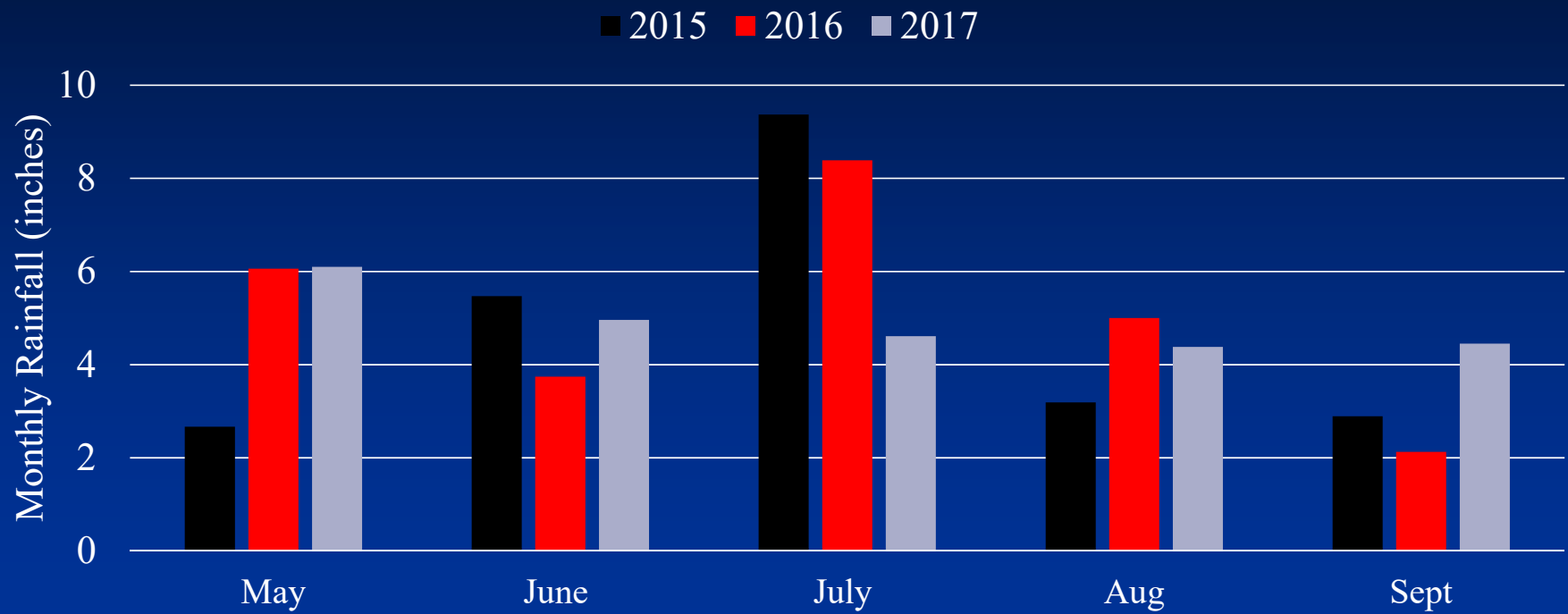
# *Many Factors Affect Yield*

- KTTII Yield Trials are Optimized
  - From 2000 – 2019, average yields across varieties = 2901 lbs/A
    - 2000-2010 – 3018 lbs/A
    - 2011-2019 – 2798 lbs./A
  - Small replicated plots with virtually 100% stand
    - Entire area typically less than 1Ac
    - We select uniform area
  - Soils well suited for tobacco production
    - Disease free
    - Very well-drained
  - Irrigated during periods of extreme moisture stress
  - Topped at 50% bloom and harvested four weeks after topping
  - Average plant spacing of 19” in 42” rows (7,834 plts/A)

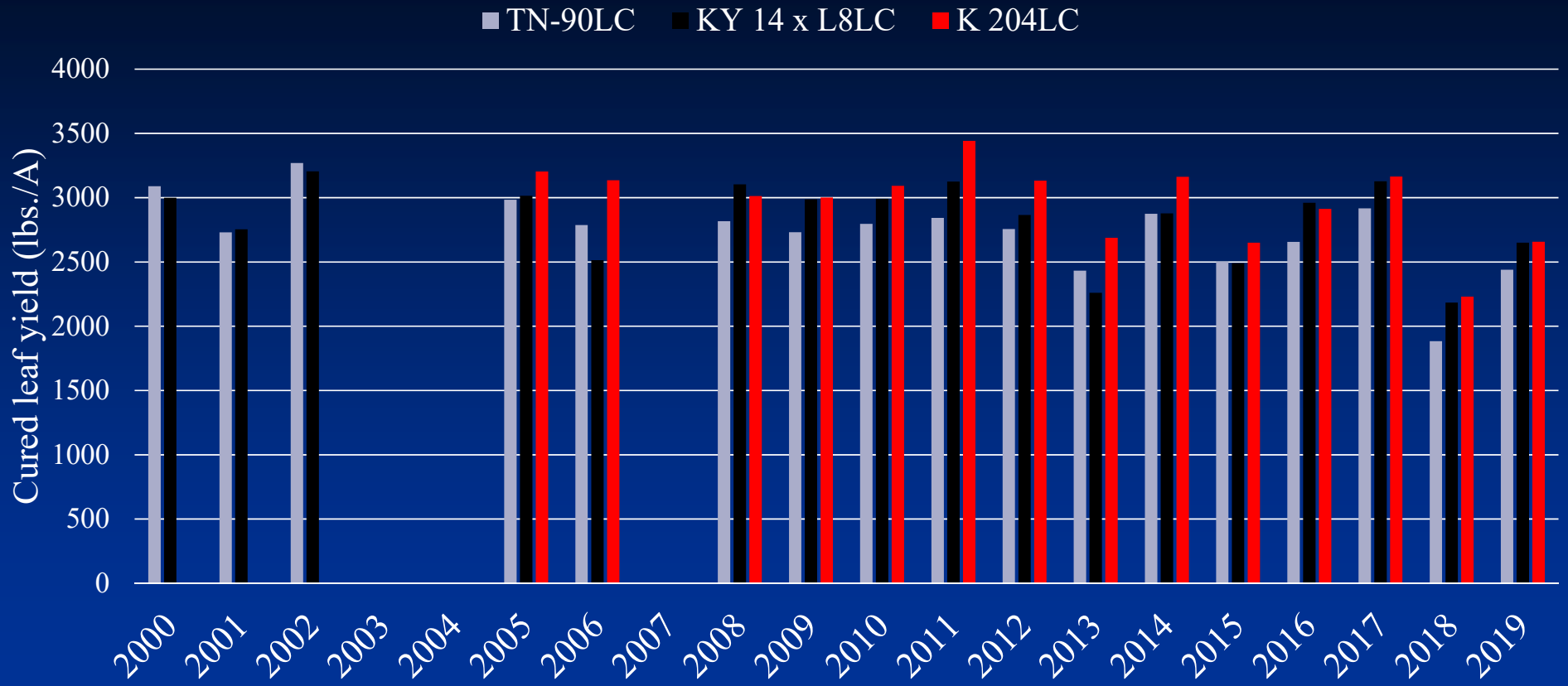
# Average Variety Trial Yields Over Time



# Monthly Rainfall

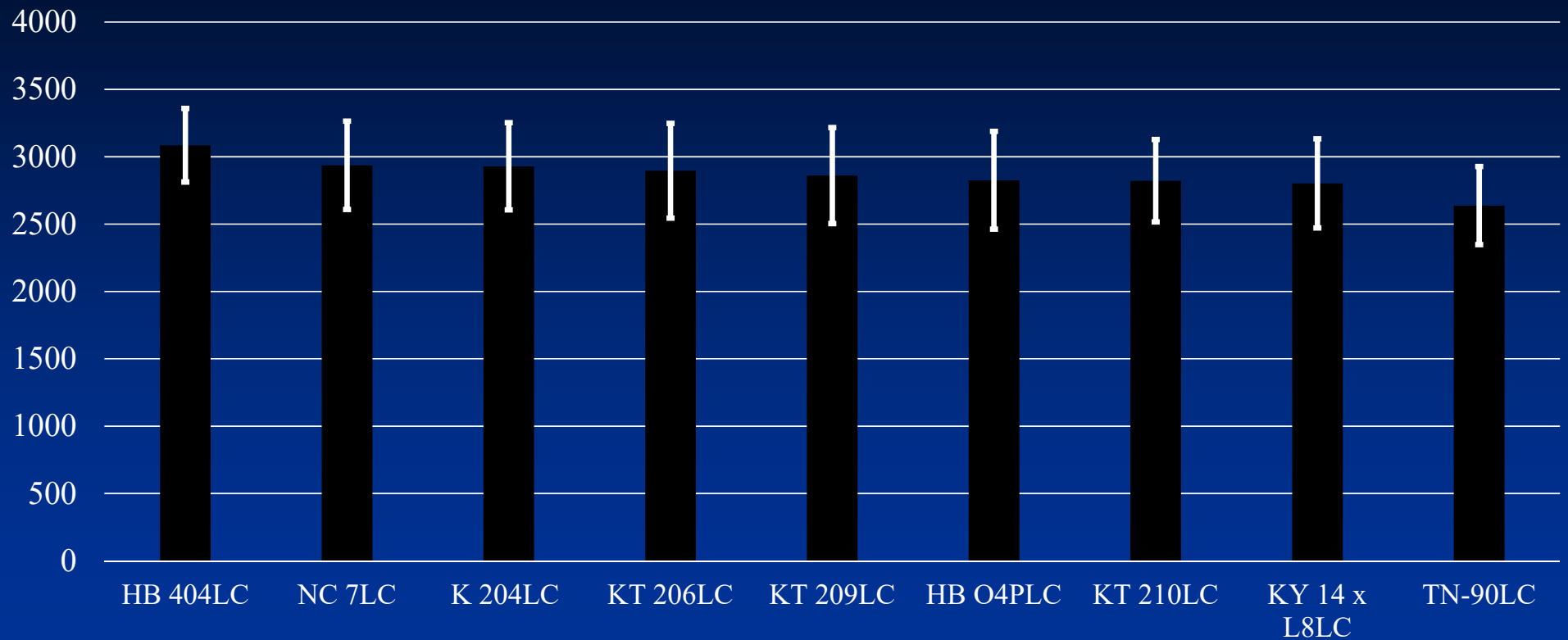


# Yield of selected varieties over time





# Average yield and variability past 12 years



# Principles of Variety Selection

- Consider disease potential
  - Disease history of field
  - Stage of rotation
  - Are you planning to use chemical controls
- Local yield history
- Local quality history
- Maturity date
- Handling characteristics

For more information on burley and dark tobacco varieties:

<http://www2.ca.uky.edu/agcomm/pubs/ID/ID160/ID160.pdf>

# Hidden Soil Compaction Impacts on Tobacco Production

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UNIVERSITY OF  
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2021 Tobacco GAP Training

# “I cannot seem to get the yield that I used to get from tobacco”

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# Could “hidden” soil compaction be partially responsible for lower yield potential??

- Wetter springtime conditions
  - Soils stays wet longer
  - Fewer suitable days for field work
    - Pressure to get acres planted
    - Bigger tractors and equipment than historically used in tobacco
- Reduced rotation
  - Reduced organic matter in soils
  - Increased erosion potential
  - Increased compactibility of soils

## Working the same ground repeatedly damages soil structure

–2 years sod – 1 year  
conventional tillage tobacco  
–(3<sup>rd</sup> cycle)



–9 years continuous  
conventional tillage tobacco



# Two types of soil compaction commonly seen in tobacco fields

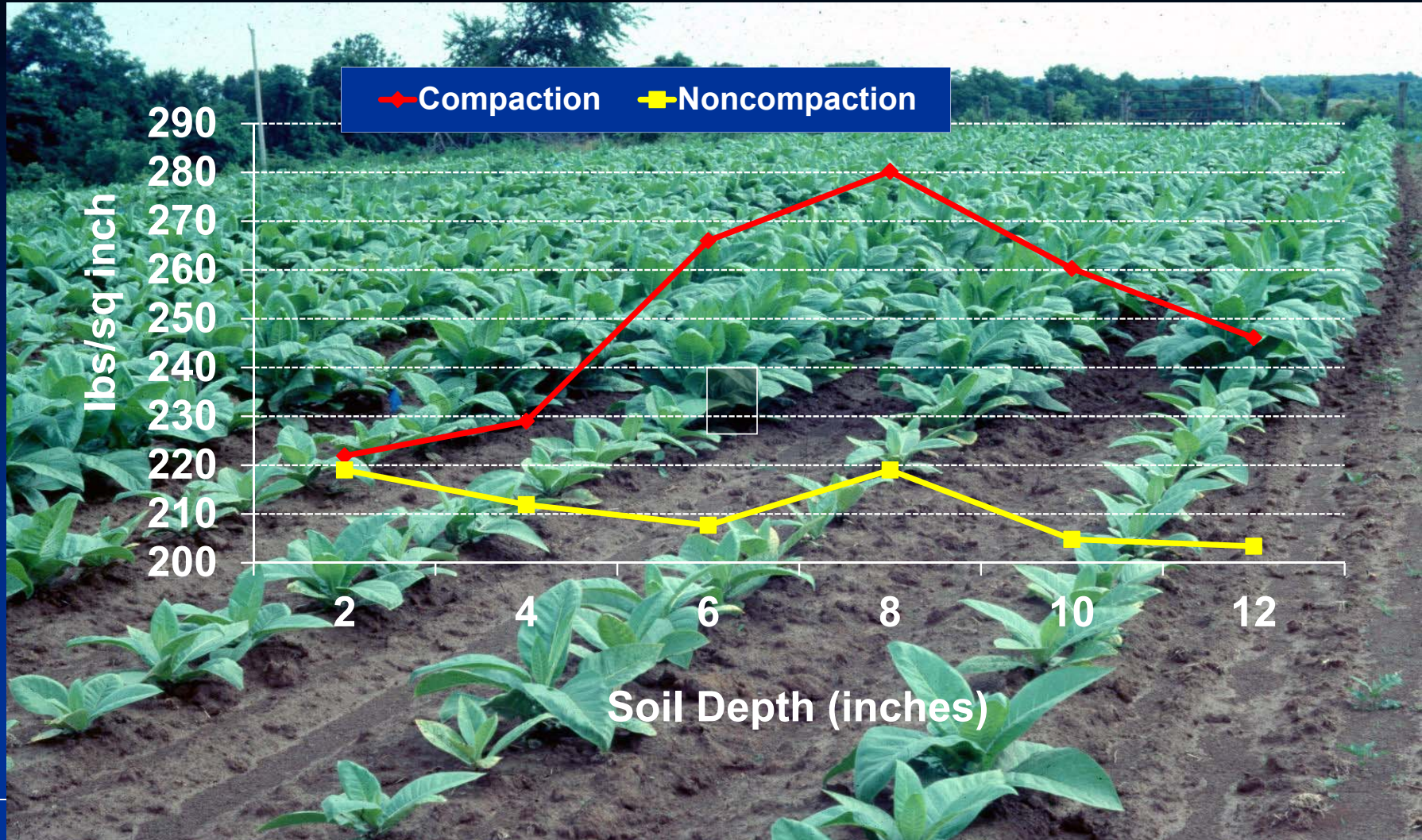
- General Compaction
  - Occurs prior to planting
  - Often the result of secondary tillage (disking) when soil conditions are still too moist
  - Often a narrow band of slightly to moderately compacted soil 3 to 4 inches below the surface
  - Varies in severity across the landscape
- Sidewall Compaction
  - Occurs at planting
  - Result of transplanting in moist soil
  - Typically observed in the lower  $\frac{1}{2}$  to  $\frac{1}{3}$  of the planter shoe depth
  - Roots restricted to original planting trench



# Example of General Compaction created with a disk



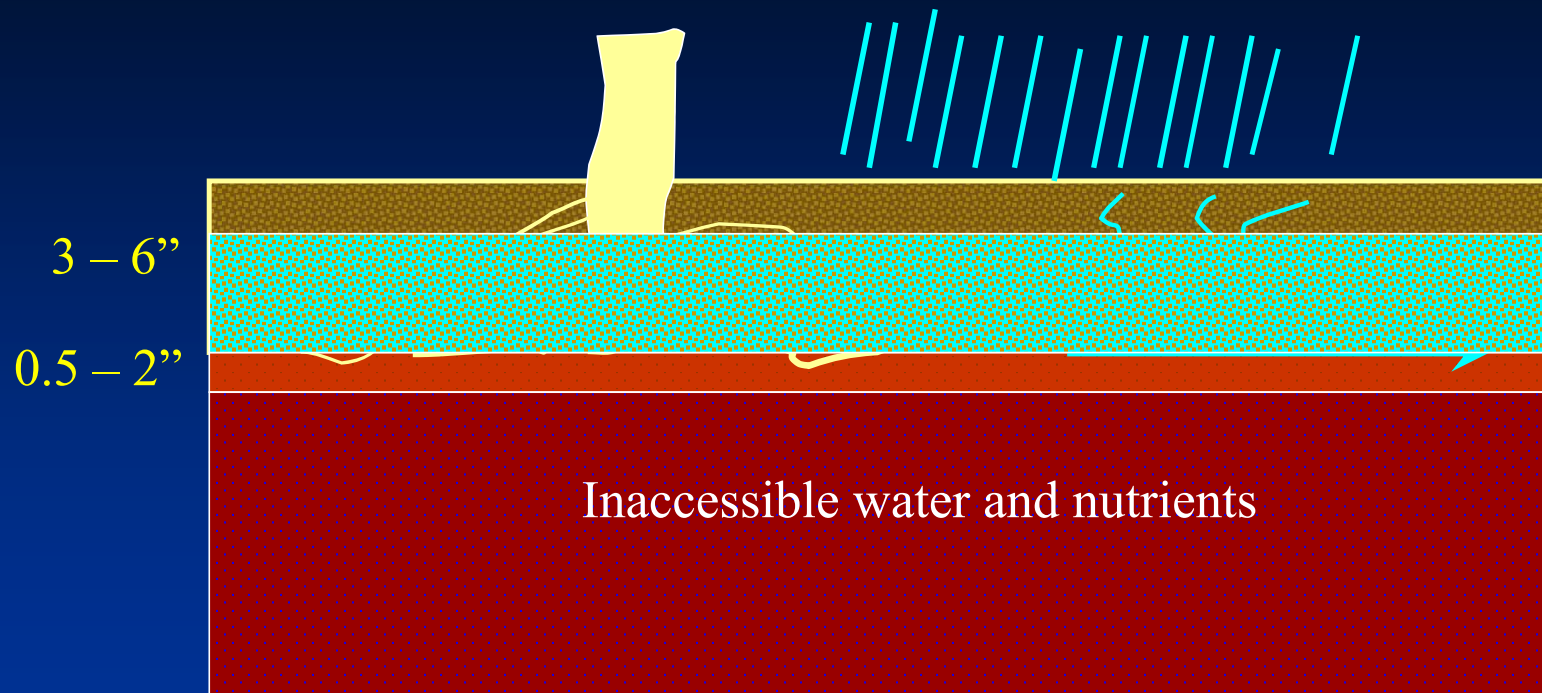




# Example of general compaction (Roots don't lie)



# Compaction caused by tillage



## Examples of Sidewall Compaction



# Sidewall Compaction

- Roots tend to grow along the row
- Less root growth into the area between rows
- Limits access to nutrients and water



# Management of tillage induced compaction

- Best to avoid compaction
  - Don't work tacky ground
  - Be aware of soil moisture conditions 3 to 4 inches deep
  - Use less compactive secondary tillage tools
    - Field cultivator
    - Soil finisher (with tines not disks)
- Rotate with deep rooted sod crops



# Management of tillage induced compaction

- Fall tillage (subsoiling)
  - Not effective if problem occurs during spring soil preparation
  - Characterize compacted layer (depth and thickness)
  - Till to bottom of compacted layer
  - Dry soil tends to shatter better
- In-row tillage at transplanting
  - Small tillage shank mounted on transplanter
  - Just to depth of compaction

# From Murdock et.al. 1986

## Studies on In-The-Row Subsoiling of Tobacco

The traditional cultural methods of preparing tobacco land for transplanting in many cases leads to excessive trafficking of the field. This can increase the density of the soil and result in compacted layers. Since wet soils are lubricated and can be easily molded they are more susceptible to compaction. Farmers often feel forced to prepare the soil when it is "too wet" because tobacco plants have grown too large and must be transplanted. Consequently, it is not unusual for tobacco fields to be at least partially prepared when the soil is too wet.

All of these factors can increase the compaction of the soil. Even if a field has no compaction prior to soil preparation, it is possible to establish severe compaction layers during soil preparation.

In order to determine the effect of soil compaction and in-the-row subsoiling during transplanting in tobacco production, a series of experiments were carried out.

### METHODS AND MATERIALS

A variable depth subsoiling shank made from a 3/4 X 3 inch steel bar and a 1 inch wide shoe was mounted on a one-row tobacco setter. The shank was aligned directly in the row and preceded the transplanting operation. The depth of the shank was adjusted to locate the shoe of the subsoiler 1 to 2 inches below the compacted layer.

## In-row subsoiling for tobacco

Yield (lbs./A)

Tobacco Type	Soil type	Compaction	Conventional	Subsoiled
Burley	Loring	Moderate	2626	3333
Dark	Vicksburg	Moderate	1924	2448
Dark	Grenada	Moderate	1473	1691
Burley	Loring	Severe	2463	3450
Burley	Grenada	Slight	2755	2799
Burley	Tilsit	Slight-Mod	2012	2158
Burley	Loring	Moderate	2365	2679
	Avg.		2200 A	2605 B

Murdock et al. 1986

# In-row subsoiler on transplanter



# Summary

- Even mild soil compaction can reduce leaf yield
  - Reduced root growth
  - Increased susceptibility to water logging
- The best way to assess the impact of compaction is by looking at roots
- Prevention is the best “cure” for soil compaction
- In-the-row tillage at transplanting can lessen the impact of tillage induced compaction