Field Challenges Around Kentucky 2012 DROUGHT

Around Kentucky

Last update: June 28, 2012

CORN

Irrigating after Corn Seeding

Irrigation occurring soon after corn seeding: Hopkins County, KY, April 17, 2012. Photo: Bill Meacham, Pioneer.

Anhydrous Burn on Corn

This corn in Ballard County, Kentucky was suffering from dry weather and anhydrous burn. Photo: 5/17/2012, Tom Miller.

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Corn Drought Stress

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P Deficiency?

May 21, 2012. This corn is displaying symptoms (purple on leaf margins and on the veins) similar to P deficiency. Herbicide was applied in this field that may have slowed growth for a while and a compaction layer about 2 inches deep was impeding growth. Corn roots are breaking through the compaction layer and should be just fine. Also, some hybrids will display this when there is no deficiency at all.

K Deficiency and Compaction

Fleming County, June 8, 2012. Corn showing symptoms of K deficiency. Sidewall compaction in most areas and sub-soil compaction at about 3 to 4 inches are restricting root growth.

K Deficiency and Compaction

Fleming County, June 8, 2012. Compaction at about 2 inches deep is very visible in this root ball. The layering of the soil at the 2-inch line indicates the compaction.

K Deficiency and Compaction

Fleming County, June 8, 2012. Imprints from an aerator indicate that the field was worked too wet. Compaction was a problem at about 2 inches deep.

Variable Corn

Ballard County, June 12, 2012. Corn in the lower areas of the field is taller and about four leaves ahead of corn on the eroded slopes. Photo: Tom Miller

K Deficiency

June 12, 2012. Ballard County. Corn is displaying corn K deficiency. Lack of water is the reason for the symptoms. There is plenty of K2O in the soil. Water is needed to get it to the roots. Photo: Tom Miller.

Paraquat Drift

Ballard County, June 12, 2012. Corn leaves are speckled from drift of paraquat. The damage is superficial and no yield losses are expected. Photo: Tom Miller.

N Deficient Corn

The corn is displaying some nitrogen deficiency. There appears to be two problems: 1) slight compaction at about 2 inches deep, and 2) late control of wheat re-growth. All wheat is dead, now, and one more rain should improve this corn greatly. June 14, 2012. Pulaski County. Photo: Chad Lee

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Corn Odd Areas

June 15, 2012. Corn appears to be K deficient. Root growth appears normal. Fertility levels are adequate. No good answer yet. Photo: Richard Whitis

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Herbicide Damage

June 13, 2012. Chaparral damage on corn from spray tank contamination. Photo: Adam Probst.

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Drought Corn & Irrigated Corn

Daviess County: Non-irrigated corn (left) and irrigated corn (right) from the same field. Both photos were taken from the same point, one looking left and the other looking right. June 25, 2012. Photo; Chad Lee

Drought Corn

Henderson County. This soil does not hold water very well and most of the field is irrigated. Farmers in this area have already watered as much as they normally do all season. We have about 30 days of seed fill to complete. Corn here is at blister (R2). June 25, 2012. Photo: Chad Lee

Drought Corn & Irrigated Corn

Henderson County. Both ears are from the same hybrid, same field. The bottom ear was not irrigated and the top ear was irrigated. Corn is at the milk stage (R3). June 25, 2012. Photo: Chad Lee.

Drought Corn

Larue County: This corn is at R1 and on a Nolin soil with no restrictions for several feet. Two passes of vertical tillage this spring removed soil moisture from the upper two inches of soil. June 26, 2012. Photo: Chad Lee

Drought Corn and Populations

Hardin County. This corn is part of a population study. The higher populations are showing the greatest drought stress. June 26, 2012. Photo: Chad Lee

Dew in the Morning

Fayette County. About the only water this corn has seen the last few weeks has come in the form of dew. June 27, 2012. Photo: Chad Lee

Pineapple Corn

June 27, 2012. Caldwell County. Photo: Lloyd Murdock.

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Drought Soybeans

June 27, 2012. Leaves are turning upside down. The lighter bottom of the leaf reflects more light in an attempt to mitigate heat. Caldwell County. Photo: Lloyd Murdock

Trapped Tassel

June 27, 2012. Corn tassels are trapped in the whorl and shedding pollen. This corn is irrigated, so water stress is not as bad here. But, the heat still causes stress such as trapped tassels. Fayette County. Photo: Chad Lee

Trapped Tassels

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Long Silks

June 27, 2012. Silks stop growing once pollen has nicked the silk and travels to the ovule. The longer silks indicate pollination has not occurred yet. Fayette County. Photo: Chad Lee

Fired Leaves

July 6, 2012. The lower leaves are firing up. This could be a lack of N or a lack of water… in this climate a lack of N because of a lack of water. Oldham County. Traci Missun.

Fired Leaves

July 6, 2012. Nitrogen deficiency. This could be a lack of N because of a lack of water. Oldham County. Traci Missun.

Signs of Pollination and Seed Fill

July 8, 2012. Corn ears with various levels of pollination and kernel development. There appears to be some kernel abortion on near the tips of these ears. On other ears, there was no pollination at all on the tips. Graves County. Photo: David Harrison

Sugar Demand of the Crop

Crop	Glucose Needed to produce one Bushel
	lbs of Glucose
Corn	77.9
Soybean	119.3

- **50** bushels of soybeans requires about 5,965 lbs of glucose
- **200** bushels of corn requires about 15,580 lbs of glucose

Some people are promoting the application of sugar to a field to help overcome drought conditions. Here are some calculations to help make that decision.

Connor, Loomis and Cassman. 2011. Crop Ecology: Productivity and Management in Agricultural Systems. Cambridge University Press. New York. (p. 297-299)

The sugar will help the soil microbes

- Bacteria: there may be 2,000 lbs of bacteria in each acre of soil. †
- Fungi: mychorrhizal fungi help bring nutrients (P, N, and some micronutrients) to the plant. †
- One foliar product recommends 16 to 24 ounces of sugar. Is that enough sugar to feed all the bacteria and fungi?

†Ingham, E.R. Soil Biology. The Soil Biology Primer. http://soils.usda.gov/sqi/concepts/soil_biology/bacteria.html

The cost of sugar

- $6.00/acre
  - Foliar product (34% sugar) is marketing 16 fl oz of product (5.44 oz of sugar) for $6/acre.
- $11.26/acre
  - Karo corn syrup (10% sugar) at 54.4 fl oz (5.44 oz of sugar) is about $11.26/acre. (based on $26.50/gallon)
- $0.12/acre
  - Corn sugar, HFCS is 76% sugar. 6 fl oz/A of corn sugar (or 12 fl oz of 38% sugar) = $0.12/A

Calculations for bulk Corn Sugar

- Bulk Price:
  - Corn Sugar (HFCS) in bulk (24% water + 55% fructose + 42% glucose) costs up to $700 / Metric Ton
  - 1 metric ton = 1,000 kg ≈ 1,000 L ≈ 33,814 fl oz
  - So, $700 Metric Ton ≈ $0.02 / fl oz of corn sugar
- Per Acre Rate:
  - Corn sugar is 76% sugar. If cut in half with water, the solution is 38% sugar
  - 6 fl oz/A of corn sugar (or 12 fl oz of 38% sugar) = $0.12/A