How Did the Drought of ‘16 Affect Pests in Field Crops?

Mike Stanyard
Cornell Cooperative Extension
NWNY Team
Drought Stress

- Promotes outbreaks of plant-eating fungi and insects
  - Elevates plant nutrient levels
  - Lowers plant defenses
  - More suitable physical environment
Insects/Mites

- Favor hotter drier weather
  - Mild winter = Overwintering success
- Speed up their life cycle
  - Appear earlier than normal
  - Increased populations
- Possible extra generation?
- Stressed plant = thicker “milkshake”
Insects/Mites

- Need water to survive
- Really bad to be a slug*
- Prolonged drought can be bad for bugs
- Unsuitable food source
- Sucking insects decrease
  - Aphids
Common Armyworm
Economic Thresholds
Not well established in NY

- Seedling corn: 10-25% plants damaged
- Whorl stage corn: 3 larvae/plant
- Dependent on size of larvae
- Are larvae parasitized?
https://vimeo.com/173653111
Corn Rootworms
Spraying for CRW Beetles?

- Prevent silk clipping
- Hasn’t shown to be economical in NY
- Threshold:
  - Silk clipped under $\frac{1}{2}$ inch
  - 15 beetles/plant
  - 5/beetles/plant – drought stress
- Watch the later planted fields!
Handy Bt Trait Table

The most up-to-date version of this table is posted at:
http://labs.russell.wisc.edu/cullenlab/extension/extension-publications/

Chris DiFonzo, Michigan State University, East Lansing, MI
and
Eileen Cullen, University of Wisconsin, Madison, WI

More corn hybrids contain multiple transgenic traits, and cost of this seed is steadily rising - $300 and more per bag is not uncommon. Meanwhile, refuge requirements are changing for multi-trait corn. Some refuges remain 20% and “structured”, planted in a block or series of rows. Others are reduced to 5% or 10%, in a block or “in the bag” mixed with the Bt seed itself.

Different products from different seed companies now have different refuges

Purchasing the right transgenic hybrid for the right pest, and planting it with the correct refuge in the proper location, is critical to profitability and insect resistance management. But this process is increasingly confusing. The table on the second page of this bulletin summarizes, to the best of our ability, the currently available Bt traits and their spectrum of control. The table also gives refuge percentages and locations. We make every attempt to provide the correct information for each Bt option and update the table promptly as changes occur.

However, it is still important for you to take the following steps:
* Understand the terminology used by your seed company
* Understand the biology of each trait, the expected level of control, and refuge requirements.
* Confirm that the seed ordered in late fall is the seed shipped the following spring.
* Keep good planting records.
* For herbicide applications, Ask Twice-Spray Once, especially if you hire a custom applicator.
* Save a representative sample of bag tags = the first thing to check if something goes wrong.
* Most important, if you see unexpected insect damage or poor performance of a trait during the field season, contact your seed dealer or county extension educator promptly so that the field can be visited while the problem is still visible and plant and insect samples can be taken.

Insect targets:
- BCW: black cutworm
- CEW: corn earworm
- CRW: corn rootworm
- ECB: European corn borer
- FAW: fall armyworm
- SB: stalk borer
- WBC: western bean cutworm

Herbicide traits:
- GT: glyphosate tolerant
- LL: LibertyLink or glufosinate tolerant
- RR2: Roundup Ready 2 (glyphosate tolerant)

Abbreviations used on page 2:
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Japanese Beetle
Thresholds:
- 3 beetles/plant
- Silk ½” or less
- First couple days of pollination
- Drought Stress
- Combined with CRW
- Usually on field edges
Spider Mites
“Stippling”
Loss of chlorophyll
Spider Mite Management

- Chlorpyrifos and Dimethoate – OP’s
- Bifenthrin – Fanfare, Sniper
- Combination products: Tundra Supreme
- Agri-Mek SC - abamectin
- Mite eggs are very difficult to kill
- May need to respray 7-10 days later
Pea Aphids

Josh Harvey, WNY  CMA
Where were the Soybean Aphids?

M. Stanyard, CCE, NWNY Team
Diseases During Drought

- Fungal root rots
- Phytophthora
- Charcoal Rot
- Rusts
- Stalk rots
Diseases that Decreased

- Leaf diseases
  - Different if humid, dews
  - NCLB and GLS came in late on corn
- White mold
- Fusarium head scab - VOM
Diseases in Dry Weather?
Phytophthora Root Rot

M. Hunter, CCE, NNY Team
Charcoal Rot

<table>
<thead>
<tr>
<th>County</th>
<th>Year(s)</th>
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</thead>
<tbody>
<tr>
<td>Cayuga</td>
<td>2012</td>
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</tbody>
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J. Cummings, Cornell
August 1, Ontario County
Charcoal Rot

- Soilborne disease
- Hot, dry conditions
- Long lived in soil
- 500 hosts
- Fungicides ineffective
- Rotation – small grains

Source: Martin Draper, USDA
Stripe Rust in Wheat

M. Stanyard, CCE, NWNY Team
Crown Rust in Oats
Stalk Rots
Potash Deficiency
Weed Issues
Waterhemp

M. Stanyard, CCE, NWNY Team
Marestail Problems Expand
Where’s My Beans???
Marestail

- Many more glyphosate failures
- ALS resprays failed
- More ALS resistance than expected
- Management
  - Fall spraying
  - Clean up in corn rotation
  - Liberty Link soybeans
  - Enlist soybeans
  - Xtend