Development of an online TSWV and vector management decision aid for tobacco

Hannah J. Burrack[1], Clyde E. Sorenson[1], Amanda Beaudoin[1], Mark Brooks[2], Rebecca Cumbie[2], and George Kennedy[1]

[1]NC State Department of Entomology
[2]NC State Climate Office

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  - NC Tobacco Research Commission
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Outline

- Brief model overview
- 2009 predictions and applications
  - Expansion to SC
- Website functions
- 2010 beta testing and validation
- Future research needs
  - Fall biofix
  - Expansion to GA

Model overview

- Degree day model
  - Based entirely on weather data
    - Temperature & Precipitation
- Relies on historic & forecast data
- Most reliable within 14 days of transplant
  - Closer is better

Model overview

- Fixed fall biofix - November 1
- Rainfall effect varies depending upon timing (RI combines intensity & duration)

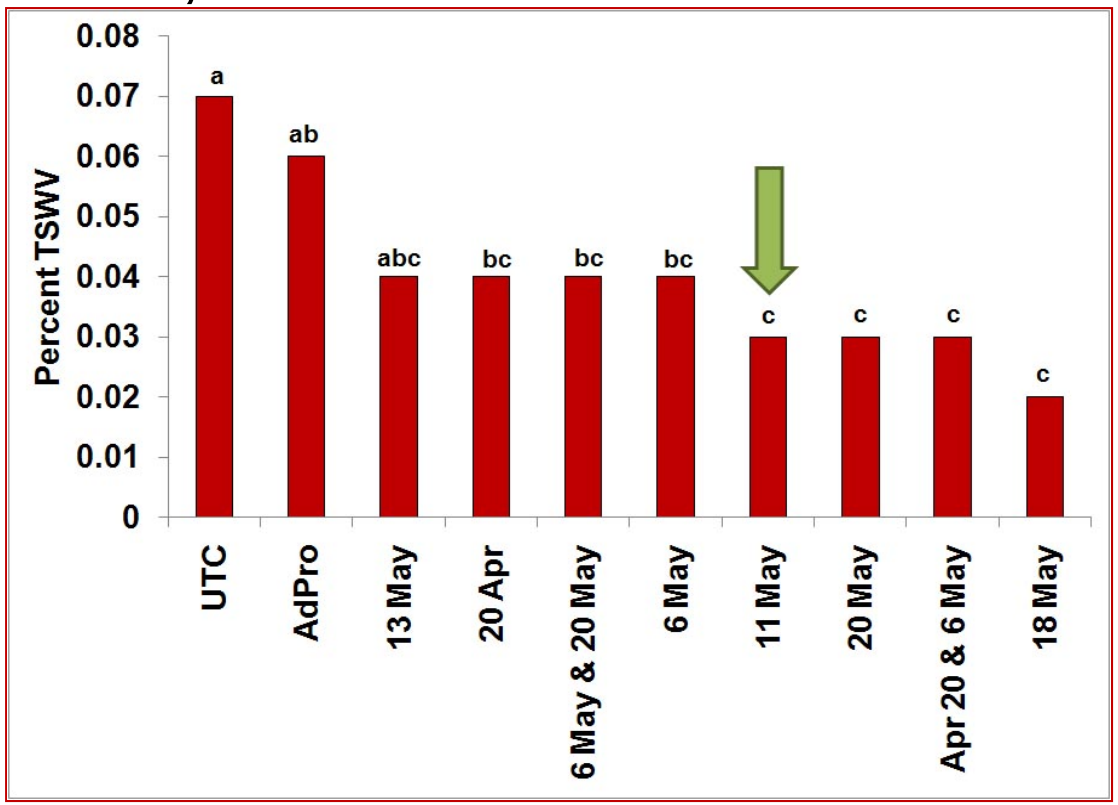
Prediction Interval	RI Period	RI Effect
1-15 April	16-31 March	-
16-30 April	16-31 March	-
1-15 May	16-31 March 16-31 April	- -
16-31 May	16-31 April 1-15 May 16-31 May	- + +

Model overview -- A look inside

- http://hatteras.meas.ncsu.edu/RebeccaC/thripsPrint.php?type=test

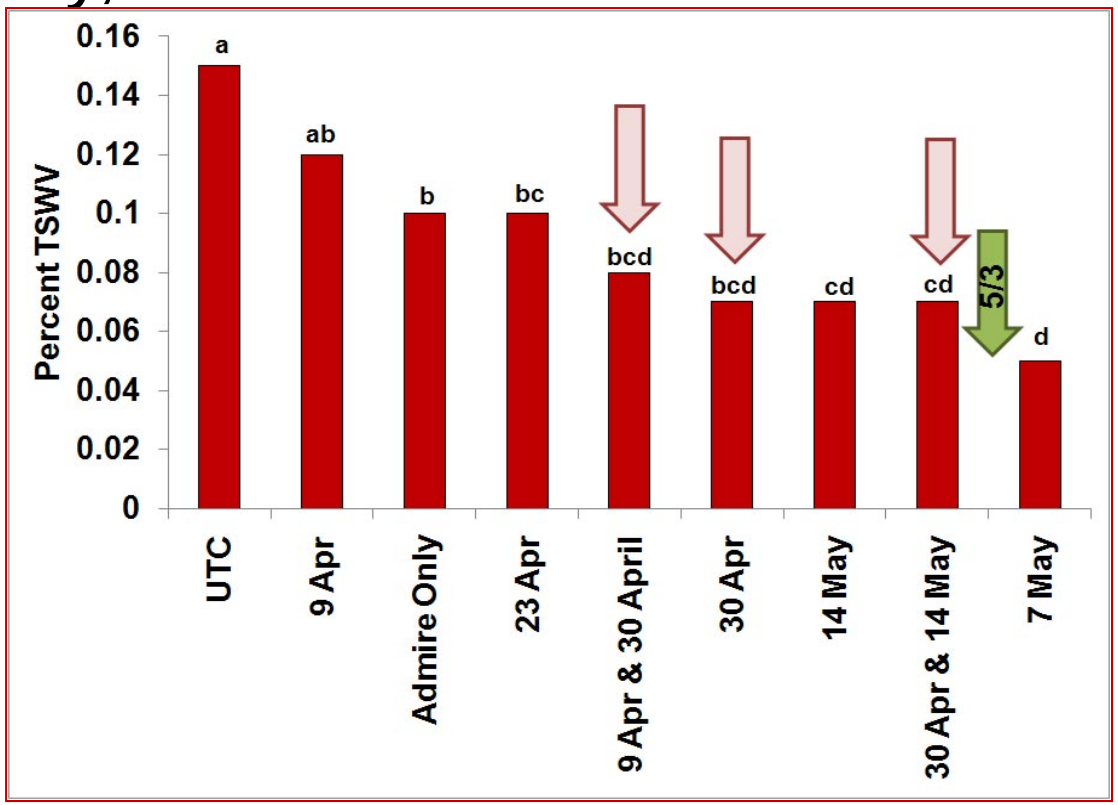
Model validation for 2009

- Validation expanded to SC
  - Woodard, SC



Model validation for 2009

- Validation expanded to SC
  - Baxley, SC



Website functions

- Historical search - can be used year round
- Current year search - can be used beginning April of current year
- Output:
- Dates of predicted thrips flight
- Relative magnitude of flights
- Recommendation text (current year only)
- http://hatteras.meas.ncsu.edu/RebeccaC/thripsPrint.php?type=calculation

Website functions

- Recommendations based on:
- Historic incidence
- Thrips flight timing

- **To be added**

  Virus risk assessment

  Tobacco type

  Treatment tools (anticipated reductions)

Highly customizable

- http://hatteras.meas.ncsu.edu/RebeccaC/thripsPrint.php?type=data

Website uses

- Example recommendations:
- Scenario 1: A grower in an area with high historical TSWV wants to know if a greenhouse treatment or a field treatment is most appropriate
- Transplant date: 4/24/2010
- Anticipated 3rd generation flight date: 5/19/2010

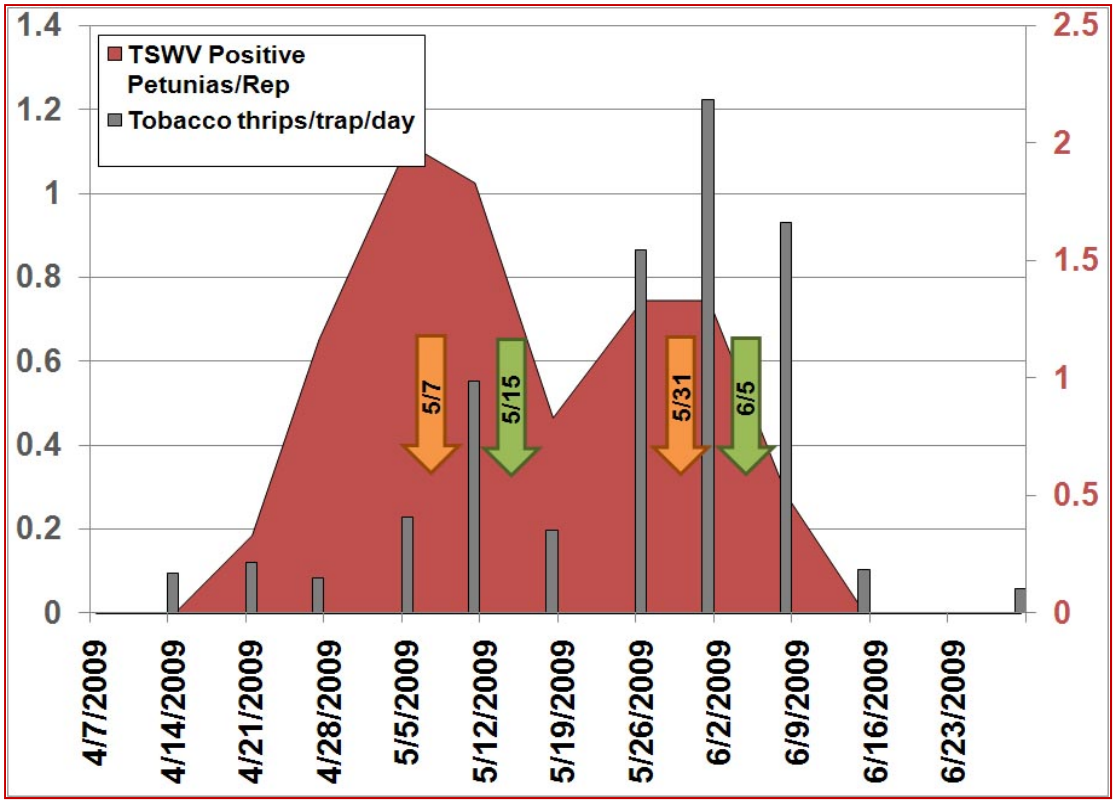
Website uses

- Example recommendations:
- Scenario 1:

  Because your anticipated transplant date is **25** days before the anticipated **3rd** generation tobacco thrips flight, it may be necessary to preventatively treat for TSWV. A tray treatment of imidacloprid in combination with a foliar application of Actigard in the field will result in the greatest virus reduction. This Actigard application should be made 3 to 5 days before the predicted thrips flight on **May 19**.

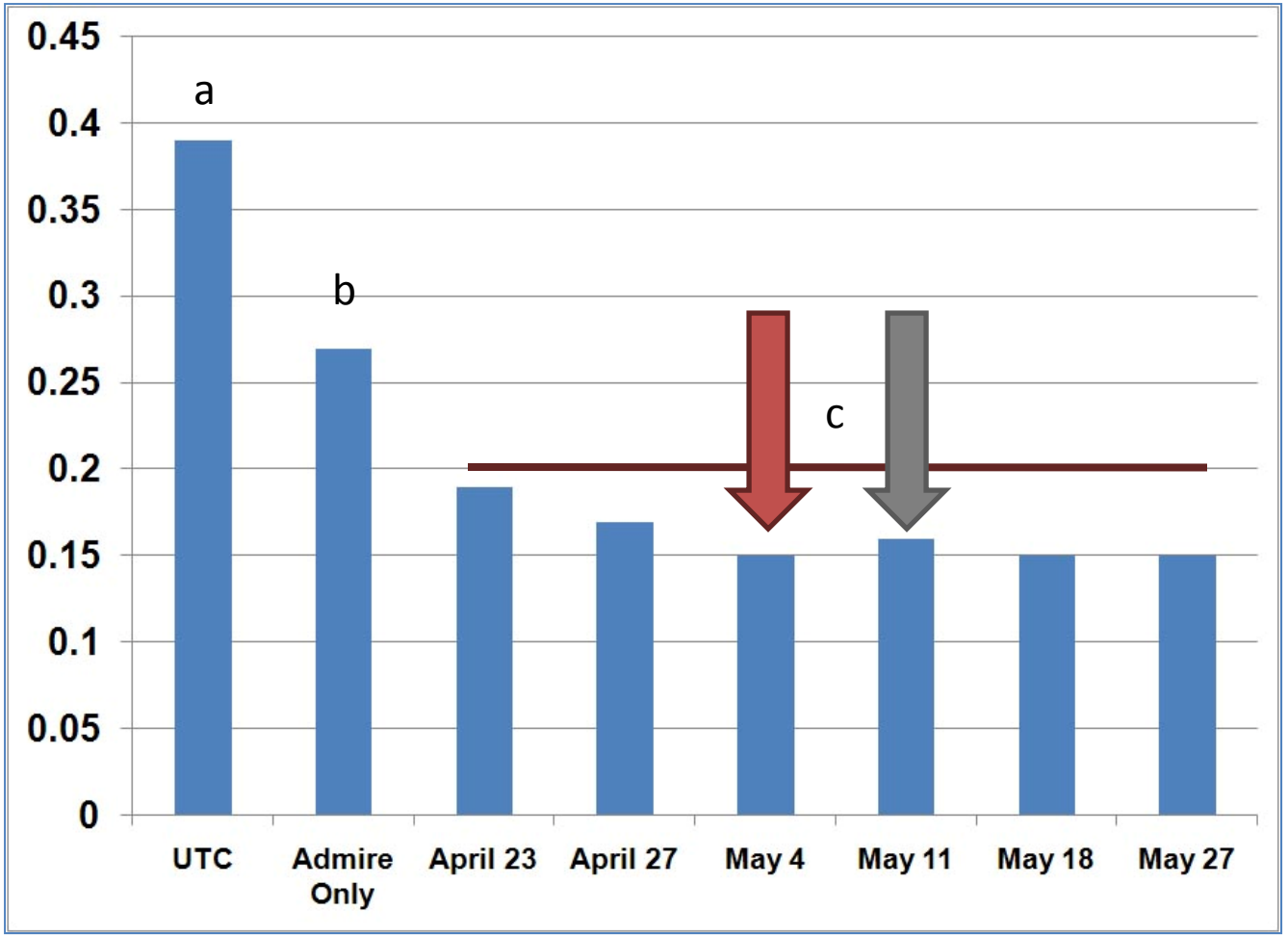
Future Research – Dynamic Biofix

- In order for the model to be applicable to climatically different areas, a dynamic fall biofix is needed



Craven County, NC

Future Research – Dynamic Biofix



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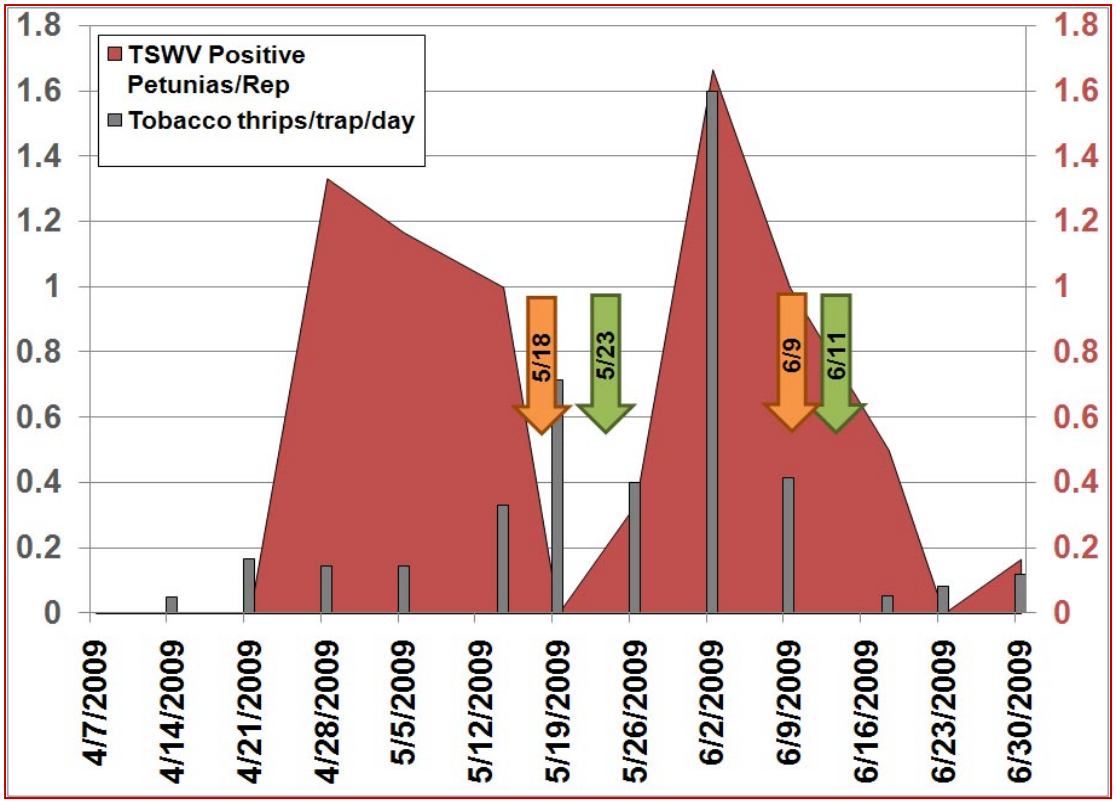

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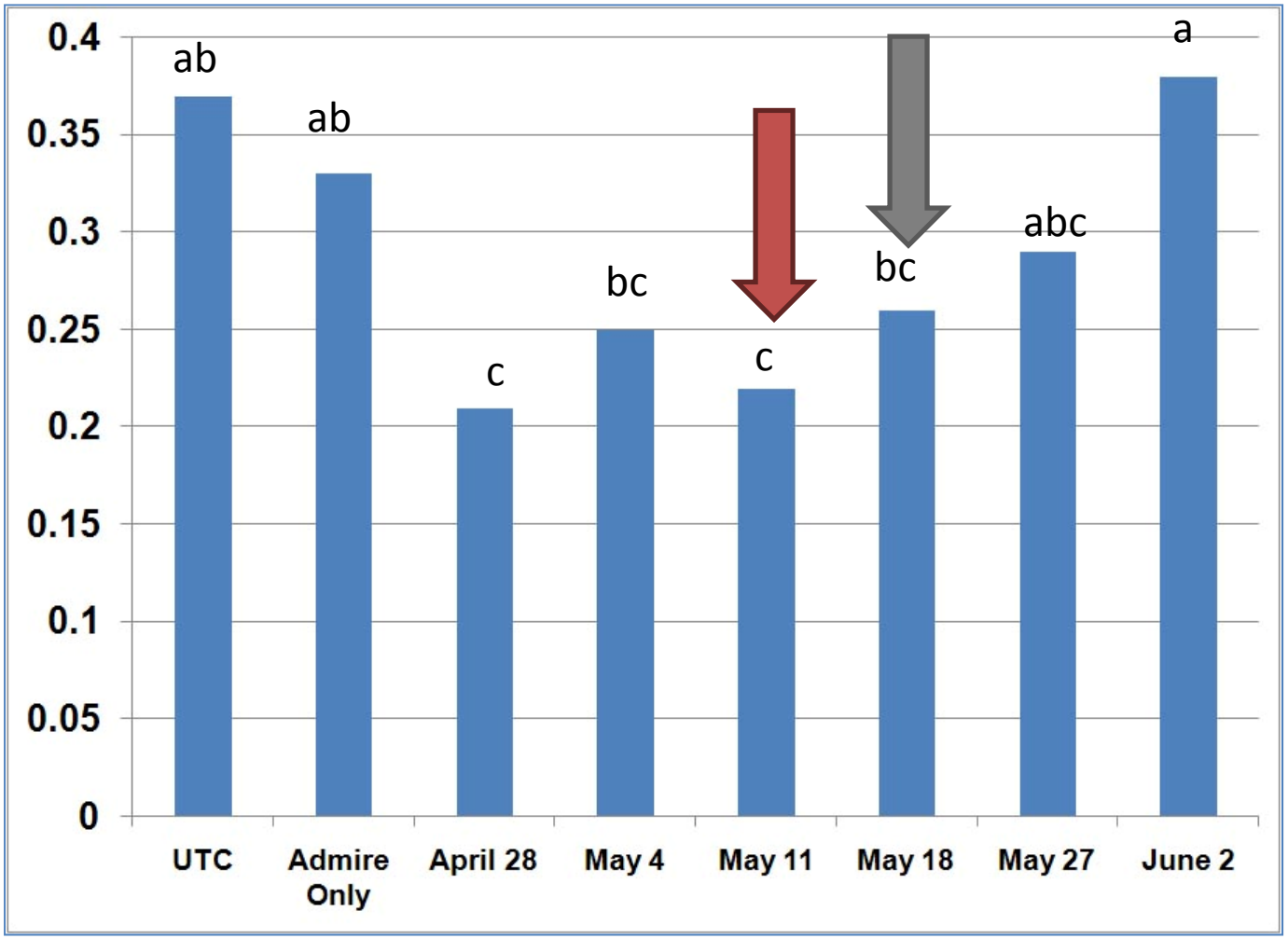
Future Research – Dynamic Biofix



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Summary

- Website design and function (essentially) complete
- Agent and grower beta testing to commence in 2010
- Validation and expansion to other SE tobacco states with significant TSWV
- Model refinement

  Fall biofix, additional crops