



DSSAT 2013

*International Training Program
Decision Support System for Agrotechnology Transfer*

**Assessing Crop Production, Nutrient Management, Climatic Risk and
Environmental Sustainability with Simulation Models**

May 20 - 25, 2013

The University of Georgia
College of Agricultural and Environmental Sciences
Griffin, Georgia, USA

DSSAT Foundation

The University of Florida
Washington State University
International Fertilizer Development Center
International Consortium for Agricultural Systems Applications



The University of Georgia



Introduction & Potential Production

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Monday			
May 20	0830	Registration Computer Setup	A. Cain D.M. Evans
	0900	Welcome	G. Hoogenboom G.F. Arkin
		Introduction of Participants and Faculty	G. Hoogenboom
	0930	Administrative Issues Computer Setup Issues	A. Cain D.M. Evans
		Goals, Course Outline, Schedule	G. Hoogenboom
	1000	Break	
	1030	History and Overview of DSSAT Example applications	J.W. Jones
		<i>Reading/Reference: Uehara and Tsuji Chapter in Kluwer book, pp. 1-7 Jones et al. Chapter in Kluwer book, pp. 157-178 Boote et al., Int J. Agr & Env Inf Sys 1(2010):41-54</i>	
	1115	Installation of DSSAT Version 4.6 Software Overview of DSSAT	G. Hoogenboom/C.H. Porter
		<i>Reading/Reference DSSAT V4 Volume 1 Readme and Install files</i>	
	1145	Exercises: Running Crop Models	G. Hoogenboom/C.H. Porter
	1200	Lunch, Naomi Chapman Woodroof Agricultural Pavilion	
	1300	Simulating Phenological Development	K. J. Boote
		<i>Reading/Reference Boote et al. chapter in Kluwer book, pp. 99-128</i>	
	1400	Introduction to Sensitivity Analysis Tool	C.H. Porter
	1415	Exercises: Sensitivity Analysis Tools	G. Hoogenboom/C.H. Porter
	1500	Break	



1530	Simulating Basic Growth Processes	K.J. Boote
<i>Reading/Reference</i>	<i>Jones et al., Eur. J. Agron. 18(2003):235-265</i> <i>Boote et al. chapter in Kluwer book, pp. 99-128</i> <i>Ritchie et al. chapter in Kluwer book, pp. 79-98</i>	
1630	Creating FileX: Potential Production	C.H. Porter/S. Asseng
<i>Reading/Reference</i>	<i>DSSAT V3.5 Volume 2-1, pp. 1-93</i> <i>DSSAT V3.5 Volume 1-4, pp. 111-143</i> <i>DSSAT V4.0 Volume 2, XBuild User's Guide</i>	
1700	Exercises: Simulating Potential Production	G. Hoogenboom/C.H. Porter
1800	Reception, Student Learning Center (SLC)	Art Cain
1930	Adjourn	



Weather & Genetic Coefficients

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Tuesday			
May 21	0830	Access to library facilities and other resources	R.W. Cannon
	0845	Feedback on exercises and software	G. Hoogenboom
	0900	Weather Data Inputs and Utilities	S. Asseng
<i>Reading/Reference</i>		<i>DSSAT v3.5 Volume 3-3</i>	
	0915	Exercises: Weather Data Files	G. Hoogenboom/C.H. Porter
	1015	Group Picture	A. Cain
	1030	Break	
	1100	Minimum Data Set Concept	G. Hoogenboom
<i>Reading/Reference</i>		<i>Hunt and Boote chapter in Kluwer book, pp. 9-40</i> <i>Hoogenboom et al., 2012, Chapter in Springer Book:9-18</i>	
	1115	Learning the DSSAT File System	G. Hoogenboom
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 2, Chapter 1</i>	
	1130	Concept of Genetic Coefficients Species vs. Ecotype vs. Cultivar Coefficients	K. J. Boote
<i>Reading/Reference</i>		<i>CERES-Maize Species & CERES-Rice Species Definitions</i> <i>CROPGRO Species &; CROPGRO Cultivar Definition files</i> <i>Boote et al. chapter in Kluwer book, pp. 99-128</i> <i>Ritchie et al. chapter in Kluwer book, pp. 79-98</i>	
	1200	Lunch, Naomi Chapman Woodroof Agricultural Pavilion	
	1300	Genetic Coefficients – CROPGRO & CERES	K.J. Boote/S. Asseng
	1345	Estimating Genetic Coefficients, Concepts	J.W. Jones
<i>Reading/Reference</i>		<i>Mavromatis et al., Crop Science 42(2002):76-89</i> <i>Pathak et al., Trans ASABE 50(2007):2295-2302</i>	
	1430	Exercises: Cultivar Sensitivity Analyses	C.H. Porter/S. Asseng
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 3-4, pp. 201-233</i> <i>Boote et al., Agric. Systems 70(2001):395-420.</i>	



1500 **Break**

1530 **Tools for Estimating Cultivar Coefficients** C.H. Porter/S. Asseng

Reading/Reference

Hunt et al. Agron. J. 85(1993):1090-1094

Hoogenboom et al., Field Crops Research 90(2004):145-163

Anothai et al., Field Crops Research 108(2008):169-178

He et al., Agric. Systems 103(2010) :256-264

Jones et al. Advances in Ag. Systems Modeling 2(2011):365-393

1600 **Exercises: Cultivar Coefficient Calibration** C.H. Porter/S. Asseng

1730 **Adjourn**



Water Limited Production, Soils & Experimental Data

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Wednesday May 22	0830	Feedback on exercises and software	G. Hoogenboom
	0900	Simulating Water Limited Production Soil and Flood Water Balance in Rice	J.W. Jones
<i>Reading/Reference</i>		<i>Ritchie chapter in Kluwer book, pp. 41-54</i> <i>DSSAT V3.5 Volume 2-1, pp. 1-93</i> <i>DSSAT V3.5 Volume 1-4, pp. 111-143</i> <i>DSSAT V4.0 Volume 2, XBuild User's Guide</i>	
	1015	Break	
	1045	Soil Data Inputs and Utilities	S. Asseng
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 1-3, pp. 49-90</i> <i>DSSAT V4.0 Volume 2</i> <i>Gijsman et al., Eur. J. Agron. 18(2002):75-105</i> <i>Romero et al., Env. Mod & Software 35(2012):163-170</i>	
	1100	Exercises: Soil Data Files	C.H. Porter/ S. Asseng
	1200	Lunch, Naomi Chapman Woodroof Agricultural Pavilion	
	1300	Creating FileX: Water Balance On	C.H. Porter/G. Hoogenboom
	1330	Exercises: Water Limited Production	G. Hoogenboom/C.H. Porter
	1500	Break	
	1530	Experimental Data Collection - Model Evaluation	K. J. Boote
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 4-7 & 4-8, pp. 203-233</i> <i>Hoogenboom et al., 2012, Chapter in Springer Book:9-18</i>	
	1615	Experimental Data Files and Utilities	G. Hoogenboom
<i>Reading/Reference</i>		<i>Hunt et al., Agric. Systems 70(2001):477-492</i> <i>Bostick et al., Agron. J. 96(2004):853-856</i>	
	1630	Exercises: Experimental Data Files Exercises: Model Calibration	G. Hoogenboom/C.H. Porter K. J. Boote/G. Hoogenboom
	1730	Adjourn	



Nitrogen and Phosphorus Limited Production

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Thursday May 23	0830	Feedback on Exercises and Software	G. Hoogenboom
	0900	Simulating Nitrogen Limited Production Processes in the Soil	G. Hoogenboom
<i>Reading/Reference</i>		<i>Godwin and Singh chapter in Kluwer book, pp. 55-78 Gijsman et al., Agron. J. 94(2002):462-474</i>	
	1000	Simulating Nitrogen Limited Production Processes in the Plant	K.J. Boote
<i>Reading/Reference</i>		<i>Bowen et al. chapter in Kluwer book, pp. 189-204</i>	
	1030	Break	
	1100	Simulating Phosphorus Limited Production Processes in the Soil and Plant	C.H. Porter
<i>Reading/Reference</i>		<i>Dzotsi et al. Ecol Modelling 221(2010): 2839-284</i>	
	1145	Creating FileX: Water and N Balance On	C.H. Porter/G. Hoogenboom
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 2-1, pp. 1-93 DSSAT V3.5 Volume 1-4, pp. 111-143 DSSAT V4.0 Volume 2, XBuild User's Guide</i>	
	1200	Lunch, The Research and Education Garden	
	1330	Exercises: Nitrogen Limited Production	G. Hoogenboom/C.H. Porter
	1500	Break	
	1530	Importance of Soil Inputs in Computer Simulation	G. Hoogenboom
<i>Reading/Reference</i>		<i>Dardanelli et al., Trans. ASABE 46(2003):1265-1275 Gijsman et al., Computers and Electronics in Agric. 56(2007):85-100</i>	
	1600	Exercises: Phosphorus Limited Production	C.H. Porter/G. Hoogenboom
	1730	Adjourn	



Evaluating Risk and Sustainability

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Friday			
May 24	0830	Feedback on Exercises and Software	G. Hoogenboom
	0900	Uncertainty, Risk, BMPs, and Sustainability	G. Hoogenboom
<i>Reading/Reference</i>		<i>DSSATV3.5 Volume 3-1, pp. 1-66</i> <i>Thornton and Wilkens chapter in Kluwer book, pp. 329-345</i> <i>Bowen et al. chapter in Kluwer book, pp. 313-327</i> <i>Tojo Soler et al., Eur. J. Agronomy 27(2007):165-177</i>	
	1000	Break	
	1030	Creating FileX: Seasonal Analysis	C.H. Porter/G. Hoogenboom
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 2-1, pp. 1-93</i> <i>DSSAT V3.5 Volume 1-4, pp. 111-143</i>	
	1100	Exercises: Seasonal Analysis	G. Hoogenboom/C.H. Porter
	1200	Lunch, Naomi Chapman Woodroof Agricultural Pavilion	
	1330	Exercises: Continued Seasonal Analysis Work with your Personal Experimental Data	
	1500	Break	
	1530	Cropping Systems – Simulating Crop Rotations	G. Hoogenboom/C.H. Porter
<i>Reading/Reference</i>		<i>Tojo Soler et al., J. of Agric. Sci 149(2011):579-593</i>	
	1630	Creating FileX: Rotation/Sequence Analysis	C.H. Porter/G. Hoogenboom
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 2-1, pp. 1-93</i> <i>DSSAT V3.5 Volume 1-4, pp. 111-143</i>	
	1700	Exercises: Rotation/Sequence Analysis	G. Hoogenboom /C.H. Porter
<i>Reading/Reference</i>		<i>DSSAT V3.5 Volume 3-2, pp. 67-127</i>	
	1730	Adjourn	
	1900	Dinner @ Local Restaurant	A. Cain



Model Applications

<u>Day</u>	<u>Hour</u>	<u>Activity</u>	<u>Responsibility</u>
Saturday			
May 25	0830	Feedback on Exercises and Software	G. Hoogenboom
	0900	Yield Improvement and Yield Gap Analysis	K.J. Boote
<i>Reading/Reference</i>		<i>White chapter in Kluwer book, pp. 179-188</i> <i>Boote et al., Agric. Systems 70(2001):395-420</i> <i>Naab et al., Agron. J. 96(2004):1231-1242</i> <i>Singh et al., J. of Agron and Crop Sci 198(2012):399-413</i> <i>Singh et al., Mitig. Adapt. Strateg. Glob Change 18(2013)</i>	
	1000	Break	
	1030	Exercises: Continued Seasonal Analysis Crop Rotation Analysis Work with your Personal Experimental Data	
	1200	Lunch, Naomi Chapman Woodroof Agricultural Pavilion	
	1300	Climate Change and Climate Variability AgMIP Project	G. Hoogenboom K.J. Boote
<i>Reading/Reference</i>		<i>Rosenzweig and Iglesias chapter in Kluwer book, pp. 267-292</i> <i>Hammer et al., Agric. Systems 70(2001):515-553</i> <i>Hoogenboom, Agric. For. Met. 103(2000):137-157</i> <i>Hillel & Rosenzweig: Handbook of Climate Change and Agroecosystems</i> <i>White et al., Field Crops Research 124(2011):357-368</i>	
	1400	Exercises: Simulating Climate Change Impact	G. Hoogenboom/C.H. Porter
	1430	Decision Support Systems for Farmer Applications Demonstration: SECC: Yield and Climate Tools AgWeatherNet & Automated Environmental Monitoring Network	G. Hoogenboom
	1500	Group Discussion of Applications and Needs	K.J. Boote/V. Shelia G. Hoogenboom/C.H. Porter
	1530	Certificates	A. Cain K.J. Boote/C.H. Porter V. Shelia/G. Hoogenboom
	1600	Adjourn	