

Introdução ao Sistema DSSAT

CEN0257- Modelagem de Sistemas Agrícolas e Ecológicos

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DSSAT
FOUNDATION

A História



- Modelos foram desenvolvidos a partir da década de 1960. Poderosa ferramenta em ciências biológicas.
- Difusão dos computadores de pequeno porte e baixo custo.
- Interesse na interação não linear entre os componentes

Crop Modeling: From Infancy to Maturity

Thomas R. Sinclair* and No'am G. Seligman

AGRONOMY JOURNAL, VOL. 88, SEPTEMBER-OCTOBER 1996

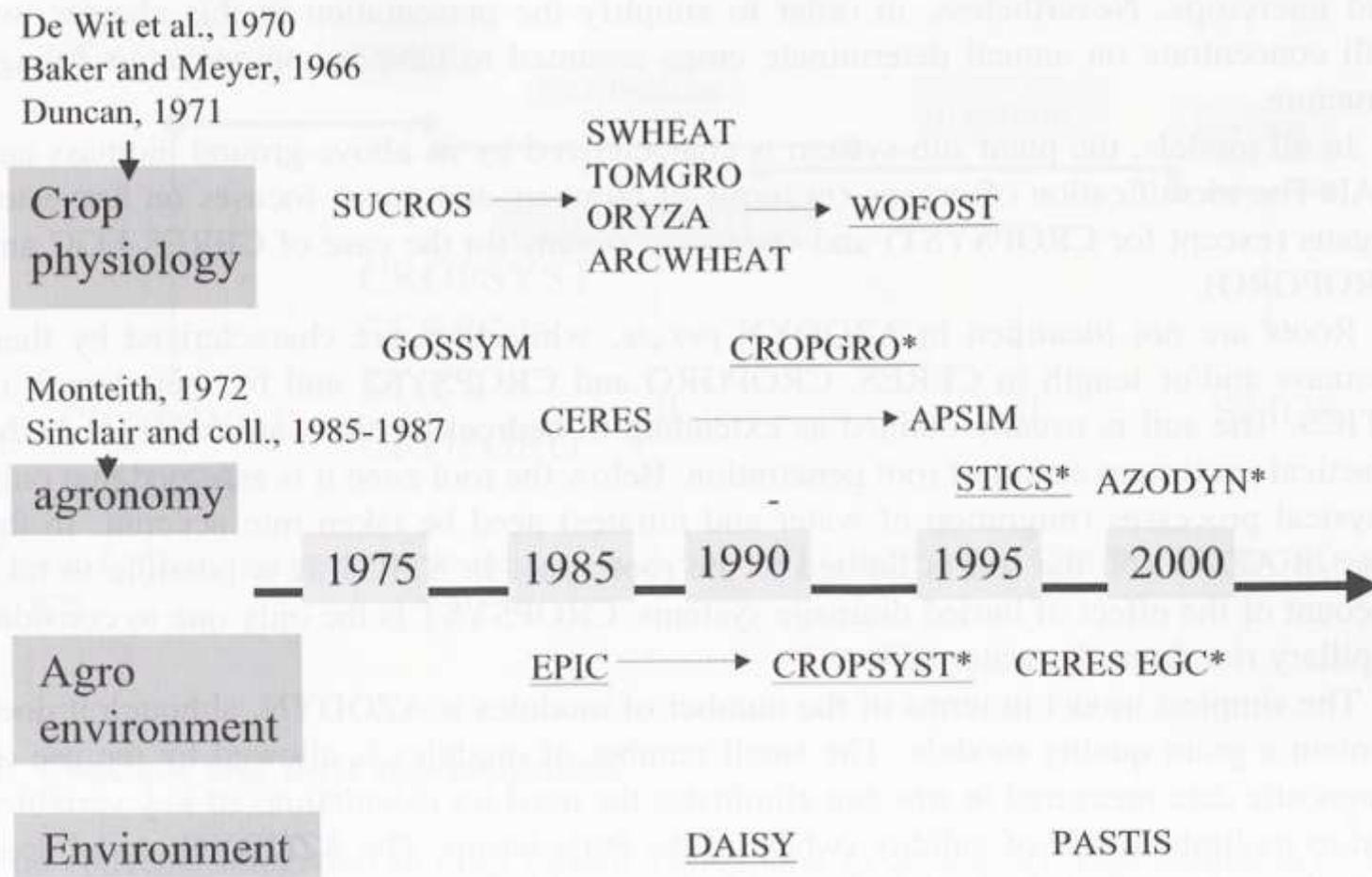


Figure 3. Chronology of crop modeling: underlined – generic models and * – models described in detail in this presentation.

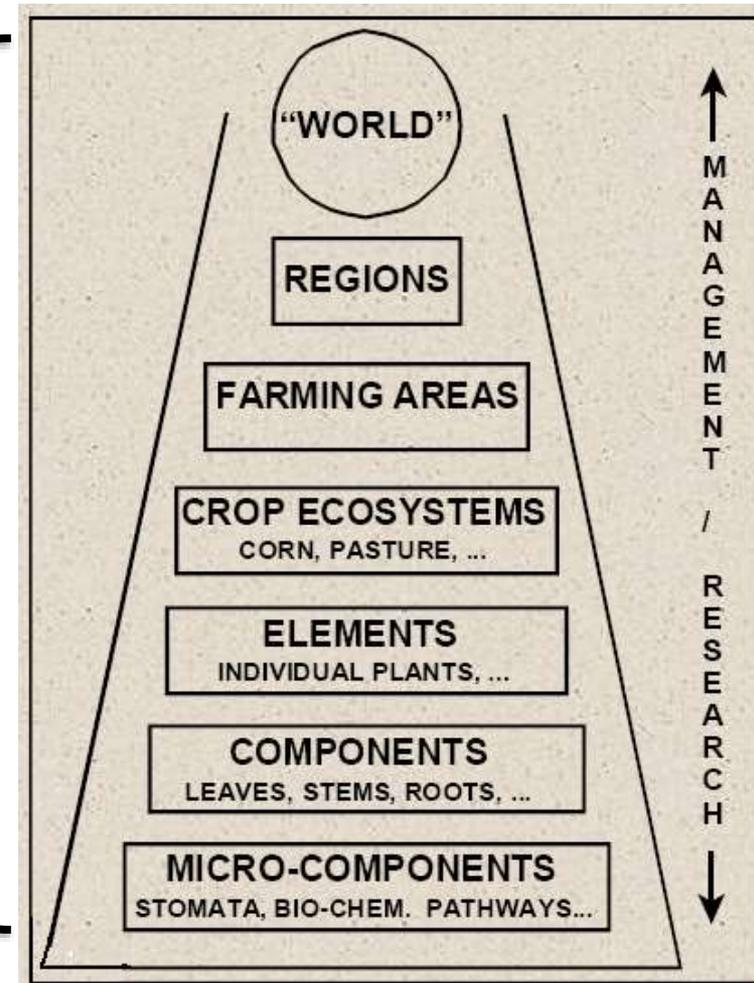
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Tipos de Modelos

– Modelos Mecanísticos

Sistemas vivos são compostos por subsistemas e componentes e cada deles interage entre simultaneamente de forma não-linear e caótica, por natureza. Por causa dessa complexidade, métodos clássicos (matemáticos-estatísticos) aplicados a sistemas vivos têm se mostrado inadequados (Jones & Lyuten, 1998).

Hierarquia e Escala de Análise dos Sistemas Biológicos e Agrícolas



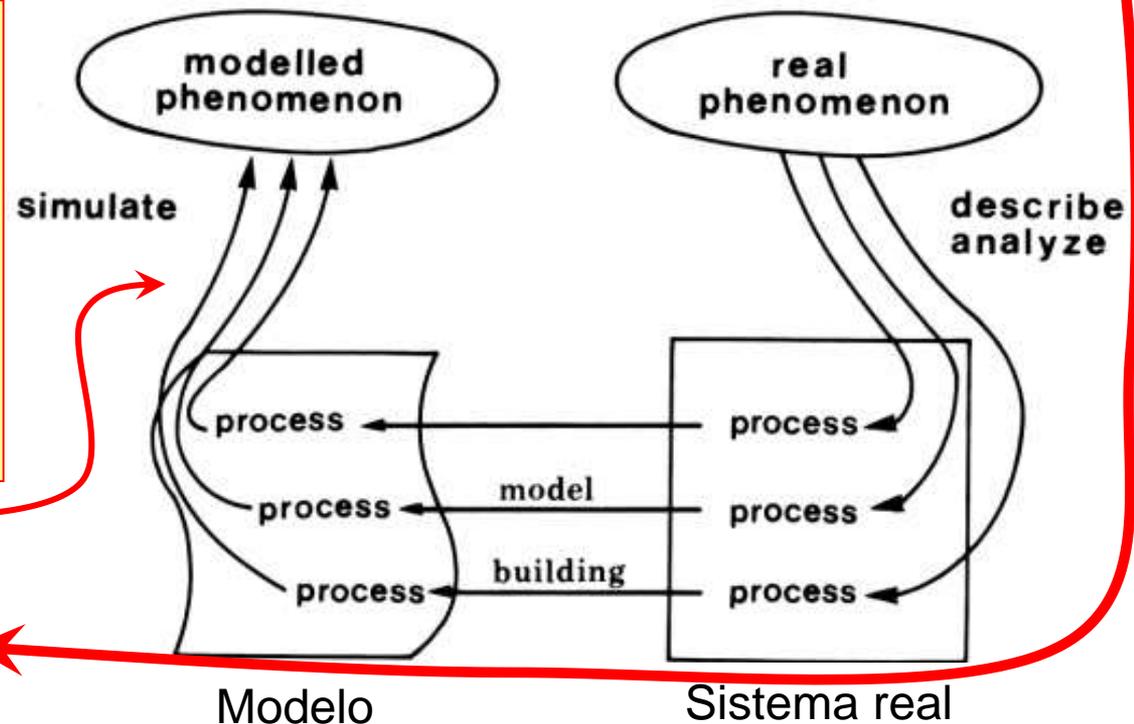
Tipos de Modelos

– Modelos Mecanísticos

- *Consiste numa descrição quantitativa dos mecanismos e processos que **causam** as respostas da planta ao ambiente.*

Para criar e desenvolver um modelo explanatório, seus mecanismos são analisados e seus processos quantificados separadamente. Por isso, normalmente, modelos mecânicos têm módulos específicos para fotossíntese, expansão da área foliar, desenvolvimento radicular, etc.

“PROCESS BASED CROP MODELS”



Sistemas mais utilizados no Brasil

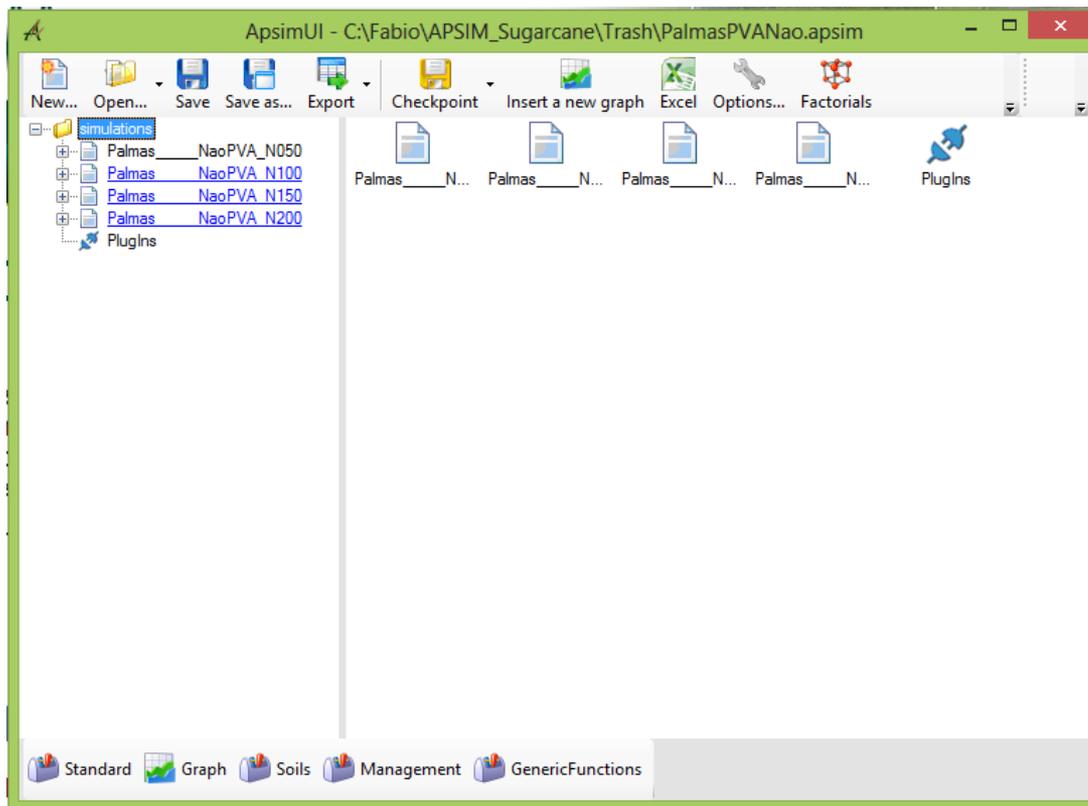
STICS



Sistemas mais utilizados no Brasil



APSIM



Sistemas mais utilizados no Brasil



SWAP

```
C:\Users\Fabio\Documents\setupSwap32\swap3236\executable\swap.exe
running swap ....
ERROR in FOPENG: File does not exist

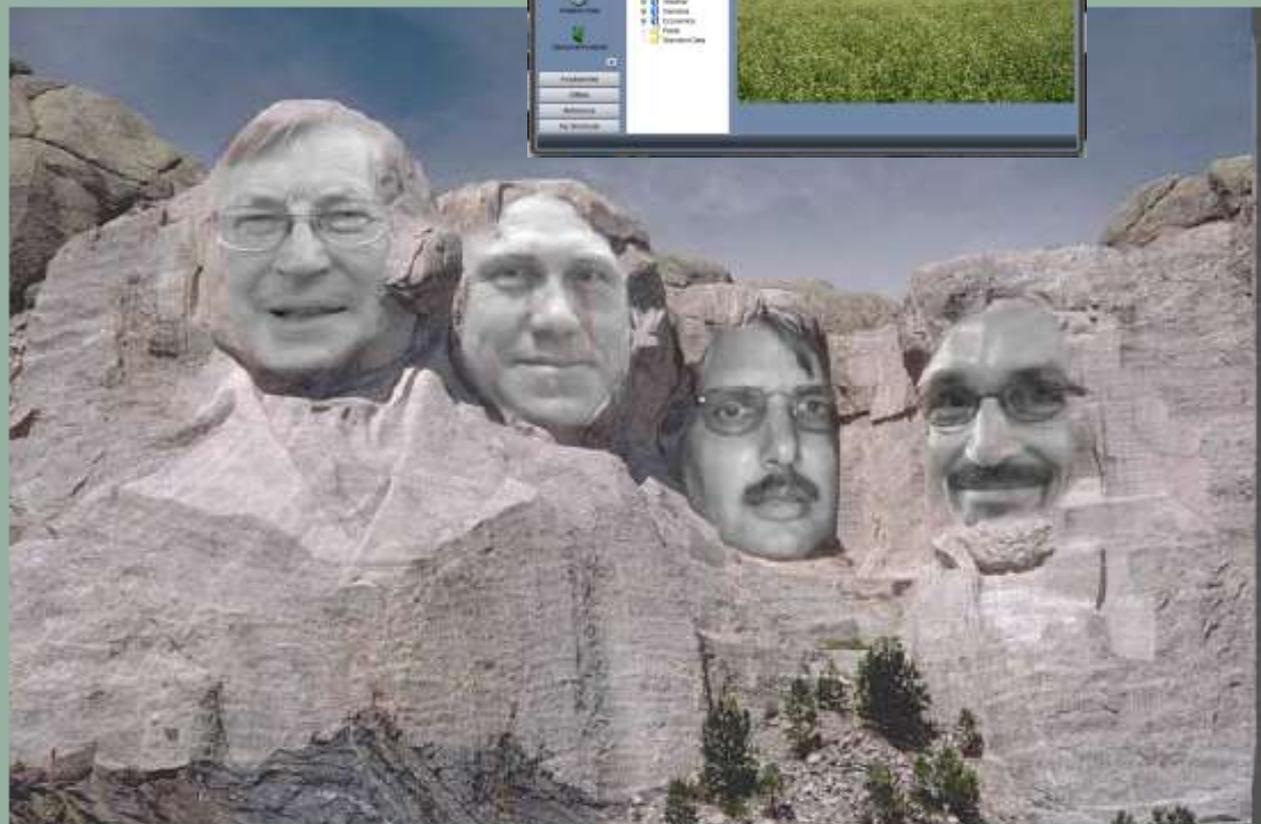
Arguments of the CALL to FOPENG leading to this error:
Unit          = 11
File name     = swap.swap
File status   = RDO
File type     = FS
Record length = 0
Delete privilege =
Fatal execution error, press <Enter>
```



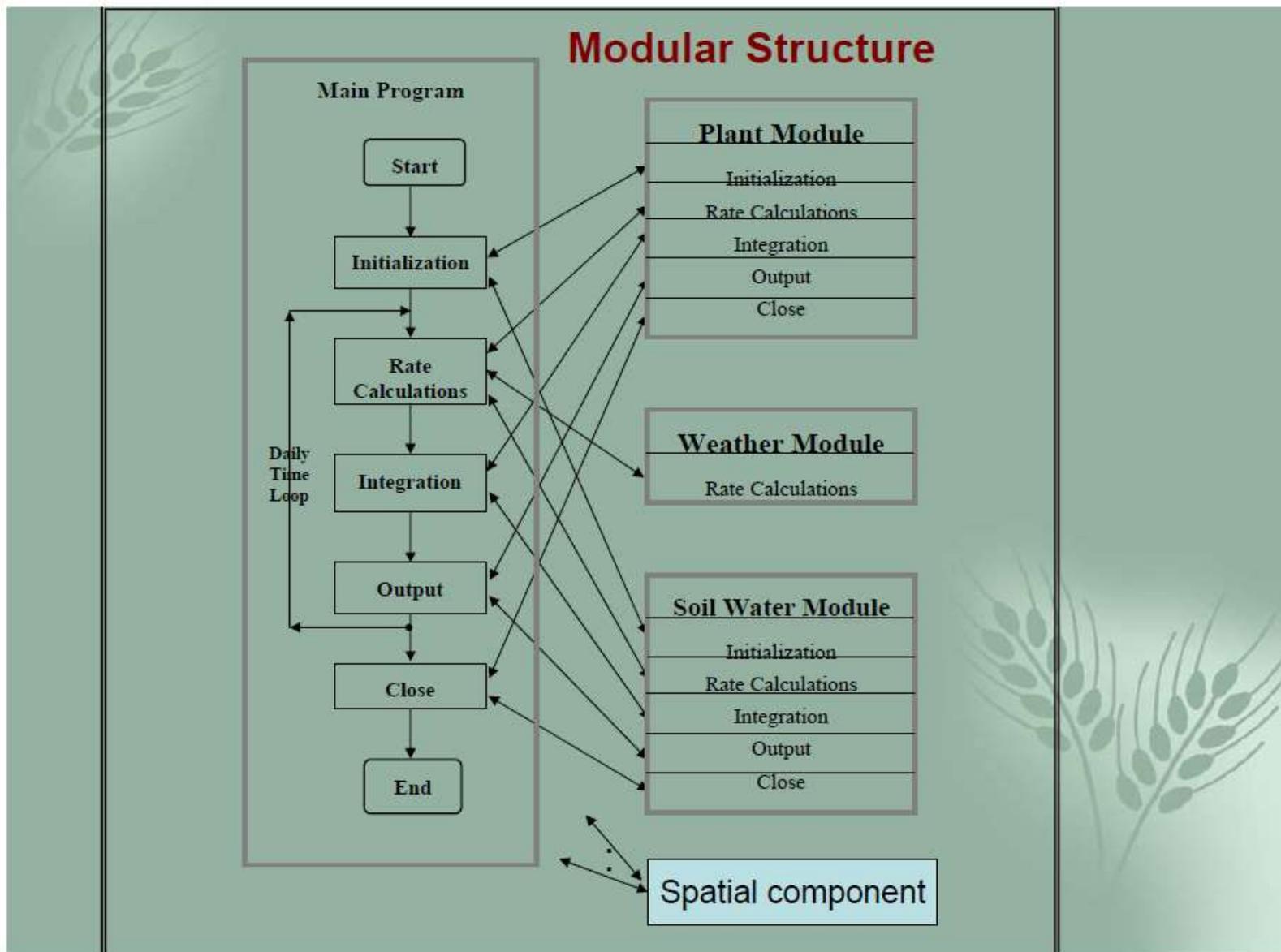
Sistemas mais utilizados no Brasil



DSSAT

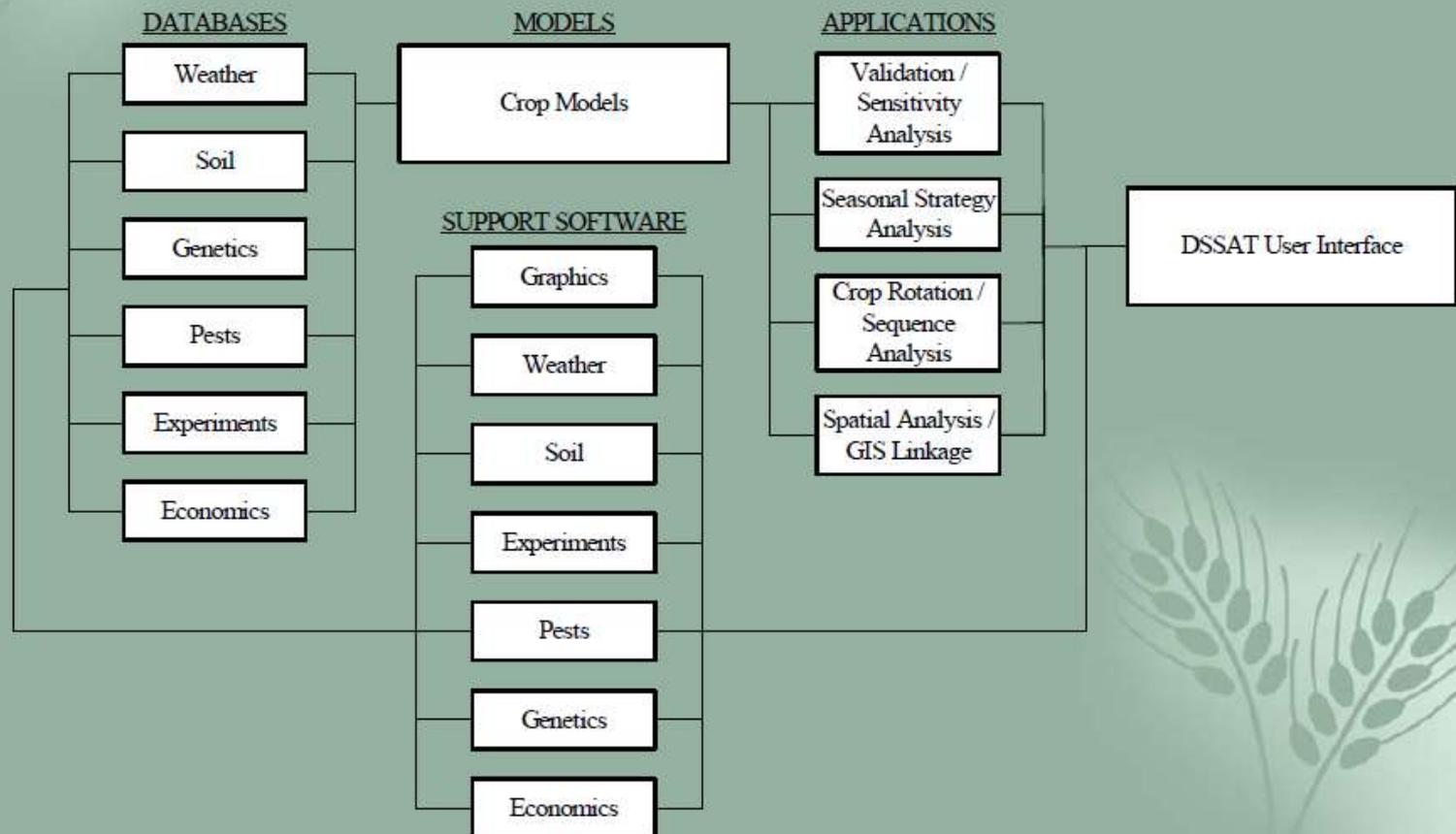


Estrutura do DSSAT



Componentes do DSSAT

Components of DSSAT v4.02



Ferramentas do DSSAT



DSSAT v4.5 - Data Management Tools -

- XBuild - Input Crop Management Information in Standard Format
- SBuild – Create and Edit Soil Profiles
- GBuild – Display Graphs of Simulated and Observed Data, Compute Statistics
- ATCreate – Create and Edit Observations from Experiments, Formatted Correctly
- WeatherMan - Assist Users in Cleaning, Formatting, Generating Weather Data
- ICSim – Introductory Tool to Demonstrate Potential Yield Concepts

Ferramentas do DSSAT



DSSAT v4.5 - Analysis Tools -

- Sensitivity Analysis - Vary Soil, Weather, Management, or Variety Characteristics for Insight
- Seasonal Analysis - Multiple Year Simulations to Evaluate Uncertainty in Biophysical and Economic Responses
- Rotation/Sequence Analysis – Long-term simulations to analyze changes in productivity and soil conditions associated with cropping systems
- Spatial Analysis - Define Spatially Variable Soil, Weather, Management Characteristics Across a Field or Region for Analysis

Interface do DSSAT



DSSAT Version 4.5.0.0

File Data Model Documentation Help

New

Tools

Selector

- Crops
 - Cereals
 - Legumes
 - Root Crops
 - Oil Crops
 - Vegetables
 - Fiber
 - Forages
 - SugarcaneEnergy
 - Napier Grass
 - Sugarcane
 - Switch Grass
 - Fruit Crops
 - Various
- Applications
 - Seasonal
 - Sequence
 - Spatial
- Data
 - Soil
 - Weather
 - Genetics
 - Economics
 - Pests
 - Standard Data

Experiments

#	Experiment	Description	Modified	
<input type="checkbox"/>	1	AG010701.SCX	JUAZERO AGROVALE	15:09:48, Fri, 23 Sep 2011
<input type="checkbox"/>	2	AGR7245.SCX	AGMIP RB72454 CANEGRO FOR ISSCT 2012 -	10:57:24, Wed, 4 Apr 2012
<input type="checkbox"/>	3	CSAT0601.SCX	EBAT0601SC VALIDACAO - APARECIDA DO TABOADO...	14:55:24, Mon, 22 Mar 2010
<input type="checkbox"/>	4	CSC00701.SCX	EXPERIMENTO USINA CORURUPE - EMBRAPA CPATC - CA	11:43:44, Wed, 5 Oct 2011
<input type="checkbox"/>	5	CSP0401.SCX	EBP0401SC EXPERIMENT DATASET 1 - PIRACICABA - S...	13:23:40, Wed, 24 Mar 2010
<input type="checkbox"/>	6	CSUN0701.SCX	EBUN0701SC EXPERIMENTO COMVAP - CASUPRO	18:40:50, Mon, 22 Mar 2010
<input type="checkbox"/>	7	EB750701.SCX	PARAMETRIZACAO RB7515	19:54:44, Thu, 3 Nov 2011
<input type="checkbox"/>	8	EB750702.SCX	PARAMETRIZACAO RB7515	17:30:02, Wed, 29 Jan 2014
<input type="checkbox"/>	9	EB750703.SCX	PARAMETRIZACAO RB7515 - Teste Chupibase	6:30:58, Tue, 2 Jul 2013
<input type="checkbox"/>	10	EB751503.SCX	PARAMETRIZACAO RB7515 ICC0376	23:15:22, Tue, 10 Sep 2013
<input type="checkbox"/>	11	EB832847.SCX	XPERIMENT DATASET FOR RB83 2847 - PIRACICABA	18:46:14, Fri, 7 Oct 2011
<input type="checkbox"/>	12	EBAT0601.SCX	VALIDACAO - APARECIDA DO TABOADO-MS	11:16:42, Wed, 5 Oct 2011
<input type="checkbox"/>	13	EBCL0401.SCX	EXPERIMENT COLINA - SP	11:45:08, Wed, 5 Oct 2011
<input type="checkbox"/>	14	EBC00701.SCX	EXPERIMENTO USINA CORURUPE - EMBRAPA CPATC - C...	17:09:08, Thu, 26 Jul 2012
<input type="checkbox"/>	15	EBJA0201.SCX	EXPERIMENTO BRX DE 7 VARIEDADES - CANEGRO	20:13:10, Thu, 4 Feb 2010

Treatments

Preview

Accessories

Utilities

Reference

My Shortcuts

Usando o DSSAT



- Localize o experimento UFGA7801.scx na pasta /Legumes/Soybean do DSSAT
- Simule o experimento e descreva os resultados.

Apresentação das ferramentas



- Soil
- Weather
- Genetics
- xBuild



Obrigado!

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