

This is the collection of screenshots associated with the exercises described in the file *APSIMForPlantationForestryInstructionsExercises.docx*. The screenshots are number by exercise part. However, screenshots are not available for every step of every exercise.

You might not exactly create the values and colours in graphs as shown, but the main aim is to build, run and graph simulations successfully, i.e. the simulations should run as planned and without error messages.

Contact Philip if something is unclear (+61 409 242 677, [Philip.Smethurst@csiro.au](mailto:Philip.Smethurst@csiro.au)) ) and if you have suggestions for improving these training instructions.

## 1b and 3b.

APSIM Initiative Product Registration

To download software you must complete the registration form below. All fields are mandatory.

Product to download: APSIM

Version: 7.10

First name:

Last name:

Organisation:

Country:

Email:

Licence type:

☐ The APSIM Initiative will develop and improve the software as well as the upcoming APSIM-related events including training workshops.

Yes I agree, begin download

back

Terms:

**Licence Terms**

These terms are to be used to facilitate access by third parties to the APSIM Software and APSIM Initiative IPR.

**NON-COMMERCIAL R&D LICENCE**

**AGRICULTURAL PRODUCTION SYSTEMS SIMULATOR (APSIM)**


Carefully read all the terms and conditions of this Agreement before installing. Installation of the software indicates your acceptance of these terms and conditions. If you do not agree to these terms and conditions cancel the installation process.

This Agreement is effective and commences on and from the date of installation of the software

**BETWEEN**

The State of Queensland through its Department of Agriculture and Fisheries (ABN 66 934 348 189) which has its head office at 41 George Street, Brisbane, QLD 4000 (DAF)

**1c.**



Usage

Contribute

Development

Model documentation

# Model documentation

## Documentation for version 2021.9.21.6799

Name	Documentation	Params/Inputs/Outputs	Detailed
AGPRyegrass (AgPasture)	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">Science documentation</a> <a href="#">Species parameters</a>
AGPWhiteClover (AgPasture)	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">Science documentation</a> <a href="#">Species parameters</a>
Agroforestry	<a href="#">PDF</a>	<a href="#">PDF</a>	
Barley	<a href="#">PDF</a>	<a href="#">PDF</a>	
Chicory	<a href="#">PDF</a>	<a href="#">PDF</a>	
Chickpea	<a href="#">PDF</a>	<a href="#">PDF</a>	
Eucalyptus	<a href="#">PDF</a>	<a href="#">PDF</a>	
FodderBeet	<a href="#">PDF</a>	<a href="#">PDF</a>	
Gliricidia	<a href="#">PDF</a>	<a href="#">PDF</a>	
Maize	<a href="#">PDF</a>	<a href="#">PDF</a>	
MicroClimate	<a href="#">PDF</a>	<a href="#">PDF</a>	<a href="#">Science Documentation</a>
Nutrient	<a href="#">PDF</a>	<a href="#">PDF</a>	
Oats	<a href="#">PDF</a>	<a href="#">PDF</a>	
OilPalm	<a href="#">PDF</a>	<a href="#">PDF</a>	
Peanut	<a href="#">PDF</a>	<a href="#">PDF</a>	
Pinus (Under Review)	<a href="#">PDF</a>	<a href="#">PDF</a>	
Plantain	<a href="#">PDF</a>	<a href="#">PDF</a>	
Potato	<a href="#">PDF</a>	<a href="#">PDF</a>	
RedClover	<a href="#">PDF</a>	<a href="#">PDF</a>	
SCRUM	<a href="#">PDF</a>	<a href="#">PDF</a>	
Slurp	<a href="#">PDF</a>	<a href="#">PDF</a>	
SoilArbitrator	<a href="#">PDF</a>	<a href="#">PDF</a>	
SoilWater	<a href="#">Validation</a>	<a href="#">PDF</a>	
Sorghum (under review)	<a href="#">PDF</a>	<a href="#">PDF</a>	
Soybean	<a href="#">PDF</a>	<a href="#">PDF</a>	
Sugarcane	<a href="#">Validation</a>	<a href="#">PDF</a>	
Stock	<a href="#">Validation</a>	<a href="#">Stock</a>	<a href="#">Supplement</a> <a href="#">GRAZPLAN animal biology model</a>
Wheat	<a href="#">PDF</a>	<a href="#">PDF</a>	
WhiteClover	<a href="#">PDF</a>	<a href="#">PDF</a>	

1d.

Videos – APSIM

apsim.info/support/videos/

[APSIM Next Generation: irrigating and fertilizing the crop](#)

[Crop growth in APSIM: understanding water and nitrogen stresses](#)

[Pasture growth and livestock grazing in APSIM](#)

[Crops and livestock in APSIM \(Crop Livestock Enterprise Model\)](#)

[Trees and crops in APSIM Next Generation \(Agroforestry\)](#)

[Understanding APSIM Next Generation weather \(meteorology\) data](#)

[APSIM Next Generation: model structure and genotype parameters](#)

[Nitrogen fertilizer, soil N, N loss and cycling in APSIM Next Generation](#)

[Climate change in APSIM Next Generation \(climate controller\)](#)

**APSIM Next Generation, with examples from Eucalyptus plantation forestry**

[Video 1/4 Brief tour of website, GUI, GitHub and Eucalyptus Rotation example](#)

[Video 2/4 Running the Eucalyptus Rotation example, and Eucalyptus model structure](#)

[Video 3/4 – Genotypes and other components of the Eucalyptus model](#)

[Video 4/4 – Soil, Weather, Experiments, Calibration](#)

**2014 – APSIM Science Week**

[How to debug an APSIM Classic simulation](#)

[Pests And Diseases In APSIM](#)

[How To Use The Factorial Capability](#)

[How To Use The APSIM Manager](#)

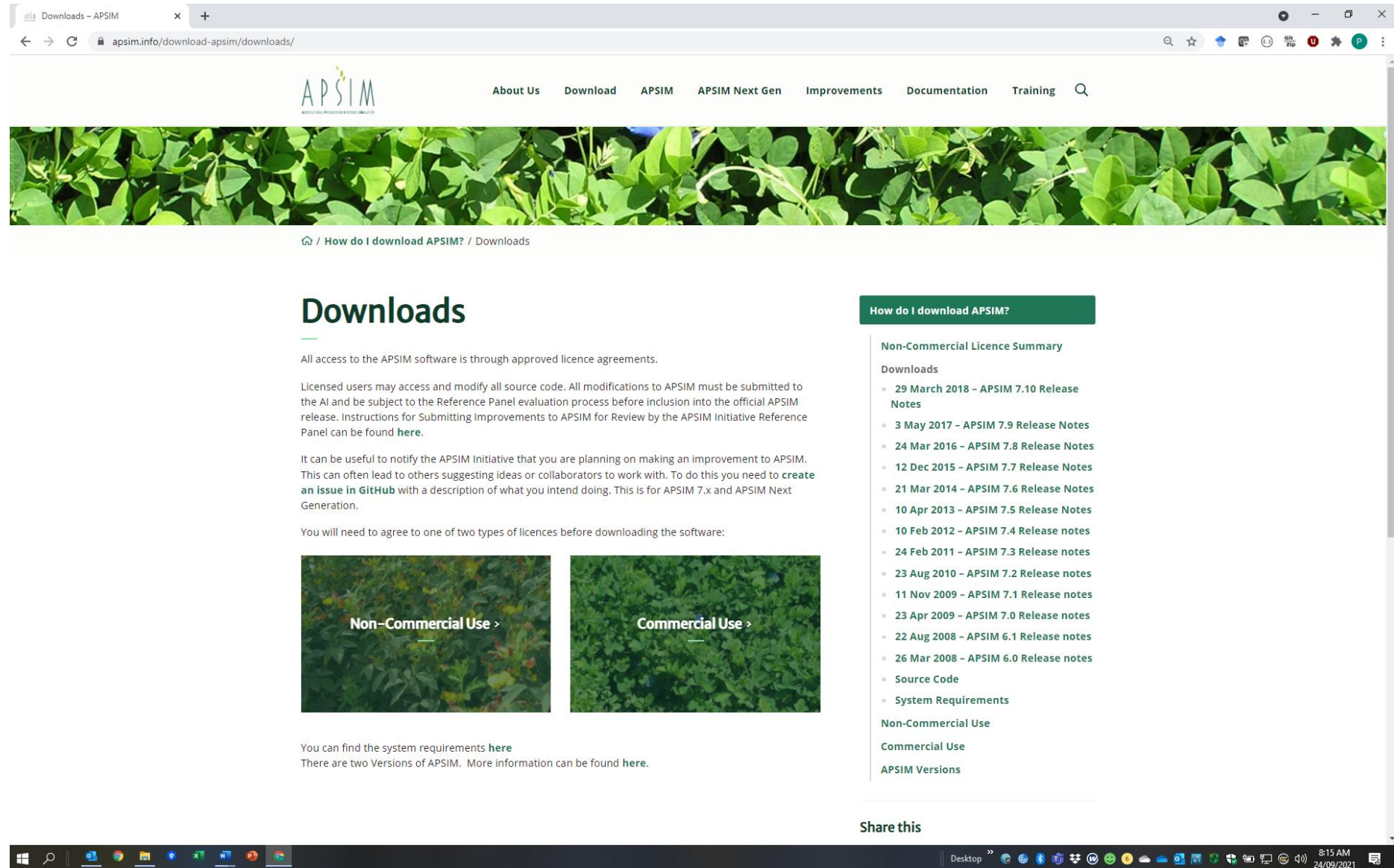
[How To Simulate Multiple Paddocks](#)

**APSIM Related Videos**

[Video developed for Indian conditions \(South Asian Association for Regional Cooperation funded project\):](#)

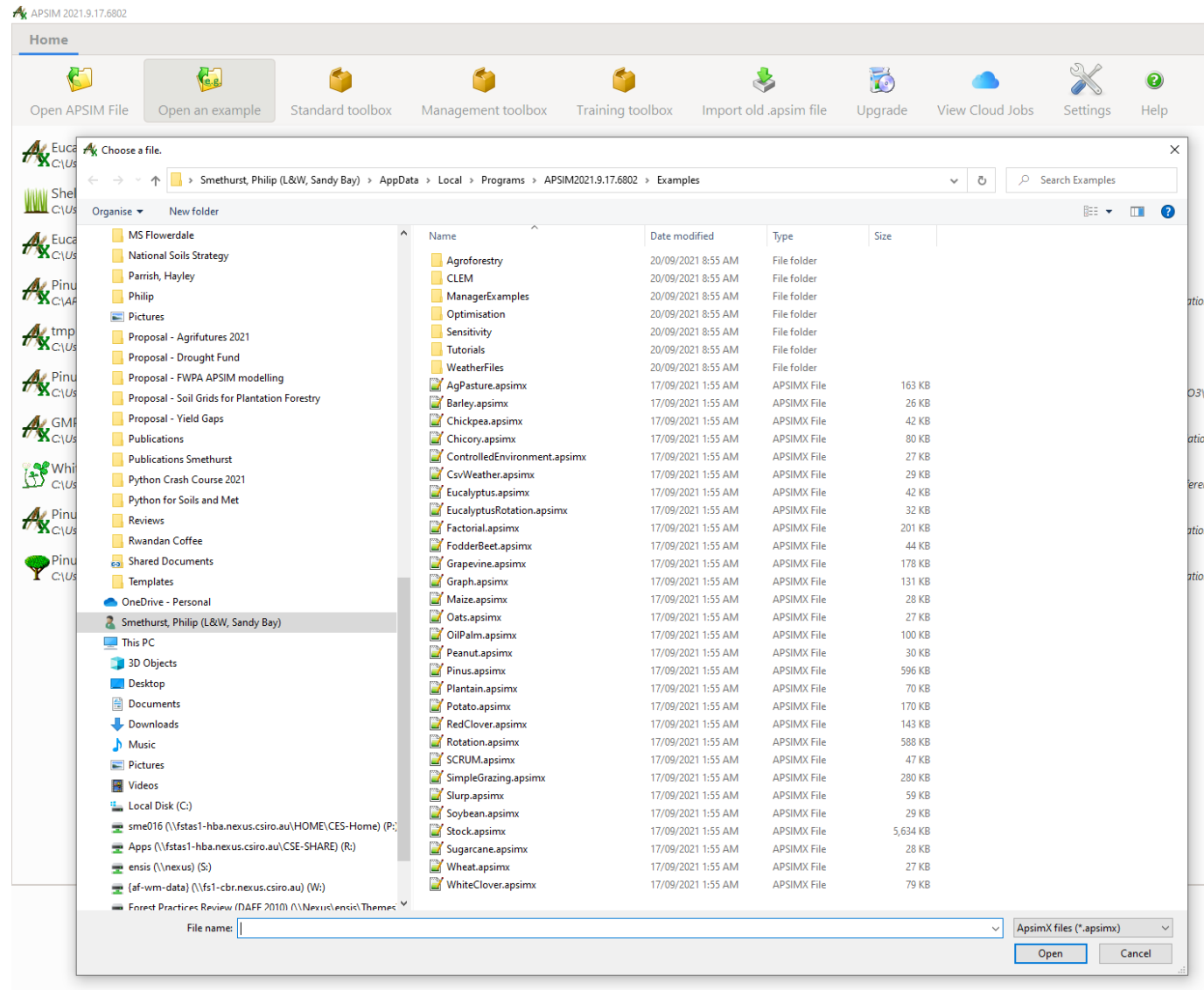
[Crop yield modelling under different climatic scenarios using APSIM](#)

**2.**



### 3. – see 1b above

#### 4a.



## 4a (continued)

APSIM 2021.9.17.6802

Home Standard toolbox Management toolbox

Save Save As Undo Redo Split screen Clear Status Help

**Management toolbox**

- Sow on a fixed date
- Sow using a variable rule
- Harvesting
- Fertilise on fixed dates
- Fertilise on fixed dates (advanced v
- Fertilise at sowing
- Fertilise on Zadok stage
- Fertilise topup
- Irrigate on fixed dates
- Automaticirrigation
- Automatic irrigation based on wate
- Reset on sowing
- Reset on date
- Tillage on a fixed date
- AddManure on a fixed date
- TreeManagement
- ClimateController
- LocationInfo

**Management toolbox**

Encapsulates a collection of simulations. It is responsible for creating this collection, changing the structure of the components within the simulations, renaming components, adding new ones, deleting components. The user interface talks to an instance of this class.

APSIM 2021.9.17.6802

Home Standard toolbox

Save Save As Undo Redo Split screen Clear Status Help

**Standard toolbox**

- Structural
- Standard models
- Crops
- Animals
- Graphs
- Data store and analysis models
- Tests

**Standard toolbox**

Encapsulates a collection of simulations. It is responsible for creating this collection, changing the structure of the components within the simulations, renaming components, adding new ones, deleting components. The user interface talks to an instance of this class.

## 4a (continued)

APSIM 2021.9.17.6802

Home Standard toolbox Management toolbox **Training toolbox**

Save Save As Undo Redo Split screen Clear Status Help

**Training**

- Soils
  - Heavy Clay
  - Sand
- Completed Simulations
  - Exercise 1
  - Exercise 2
  - Exercise 3
  - Exercise 4

**Training**

Encapsulates a collection of simulations. It is responsible for creating this collection, changing the structure of the components within the simulations, renaming components, adding new ones, deleting components. The user interface talks to an instance of this class.

APSIM 2021.9.17.6802

Home

Open APSIM File Open an example Standard toolbox Management toolbox Training toolbox Import old .apsimx Upgrade View Cloud Jobs Settings Help

EucalyptusRotationModified.apsimx  
C:\Users\sme016\OneDrive - CSIRO\APSIM Training\Sims

Shelterbelt agpasture cressysoildry 210906a.apsimx  
C:\Users\sme016\OneDrive - CSIRO\6. Smart Farming\Sims

EucalyptusSCRUM 210915a.apsimx  
C:\Users\sme016\OneDrive - CSIRO\APSIMx Temporary Work Area\PlantationWeeds

Pinus.apsimx  
C:\APSIMxSourceTree\Examples

tmp187.tmp.apsimx  
C:\Users\sme016\OneDrive - CSIRO\1. FWPA Next Gen Resource Assessment\APSIM Pinus\S

Pinus.apsimx  
C:\Users\sme016\OneDrive - CSIRO\1. FWPA Next Gen Resource Assessment\APSIM Pinus\S

GMP 200610b rerun210907a.apsimx  
C:\Users\sme016\OneDrive - CSIRO\4. ACIAR Evergreen Agriculture\PhD Swamila, Martha\S

WhiteClover.apsimx  
C:\Users\sme016\OneDrive - CSIRO\6. Smart Farming\Sims

PinusExample210707testingedits.apsimx  
C:\Users\sme016\OneDrive - CSIRO\1. FWPA Next Gen Resource Assessment\APSIM Pinus\S

PinusInAgroforestry.apsimx  
C:\Users\sme016\OneDrive - CSIRO\1. FWPA Next Gen Resource Assessment\APSIM Pinus\A

Shelterbelt agpasture cressysoildry 210921a.apsimx  
C:\Users\sme016\OneDrive - CSIRO\6. Smart Farming\Sims

EucalyptusSCRUM 210915b.apsimx  
C:\Users\sme016\OneDrive - CSIRO\APSIMx Temporary Work Area\PlantationWeeds

EucalyptusSCRUM 210914a.apsimx

**APSIM Upgrade Form**

You are currently using version 2021.9.17.6802. Newer versions are listed below.  
Select an upgrade below.

Version	Description
2021.09.21.6799	Current version of APSIM crashes on Mac

☐ Display Old Versions

First name \*: Philip

Last name \*: Smethurst

Email \*: Philip.Smethurst@csiro.au

Organisation:

Country \*: Australia

☒ Do you agree to the terms of the APSIM license below?

5a-e.

File | Home | Share | View | Sims

File Home Share View

Pin to Quick access Copy Paste Cut Copy path Paste shortcut Move to Copy to Delete Rename New item Easy access Properties Open Select all Select none Invert selection

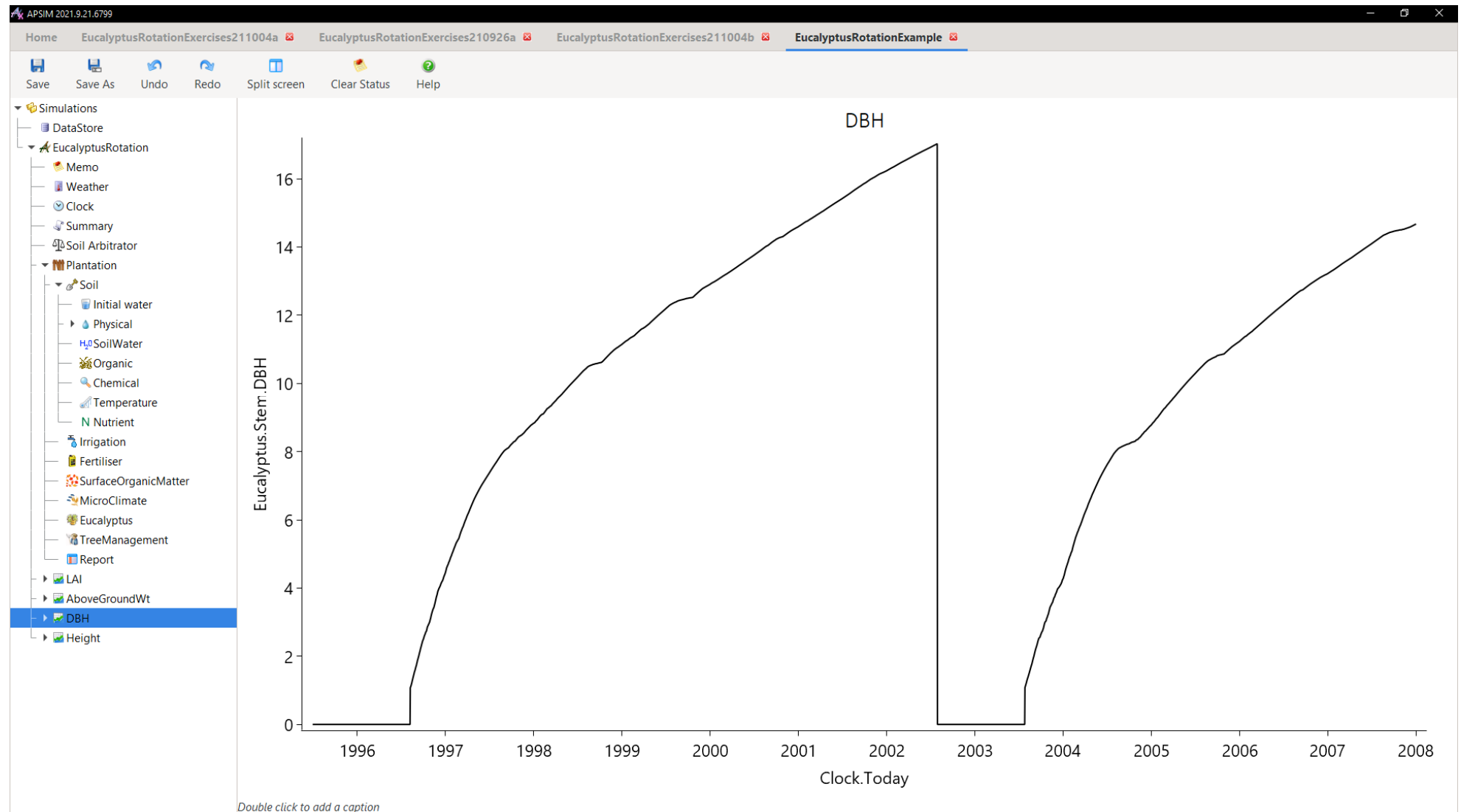
Clipboard Organise New Open Select

← → ↕ ↑ > OneDrive - CSIRO > APSIM Training > Sims

Name	Status	Date modified	Type	Size
EucalyptusRotationModified.apsimx	✓	23/09/2021 4:28 PM	APSIMX File	221 KB
EucalyptusRotationModified.apsimx.bak	✓	23/09/2021 4:27 PM	BAK File	221 KB
EucalyptusRotationModified.db	✓	23/09/2021 4:11 PM	Data Base File	5,232 KB
EucalyptusRotationModified.db-shm	✓	23/09/2021 3:03 PM	DB-SHM File	32 KB
EucalyptusRotationModified.db-wal	✓	23/09/2021 4:11 PM	DB-WAL File	4,374 KB
EucalyptusRotationModified-VINE-TS.db	✓	20/09/2021 8:59 PM	Data Base File	2,104 KB
ObservedDataForPlantationForestryTraining.xlsx	✓	23/09/2021 3:32 PM	Microsoft Excel Worksheet	10 KB
Warragul.met	✓	20/09/2021 5:42 PM	MET File	700 KB

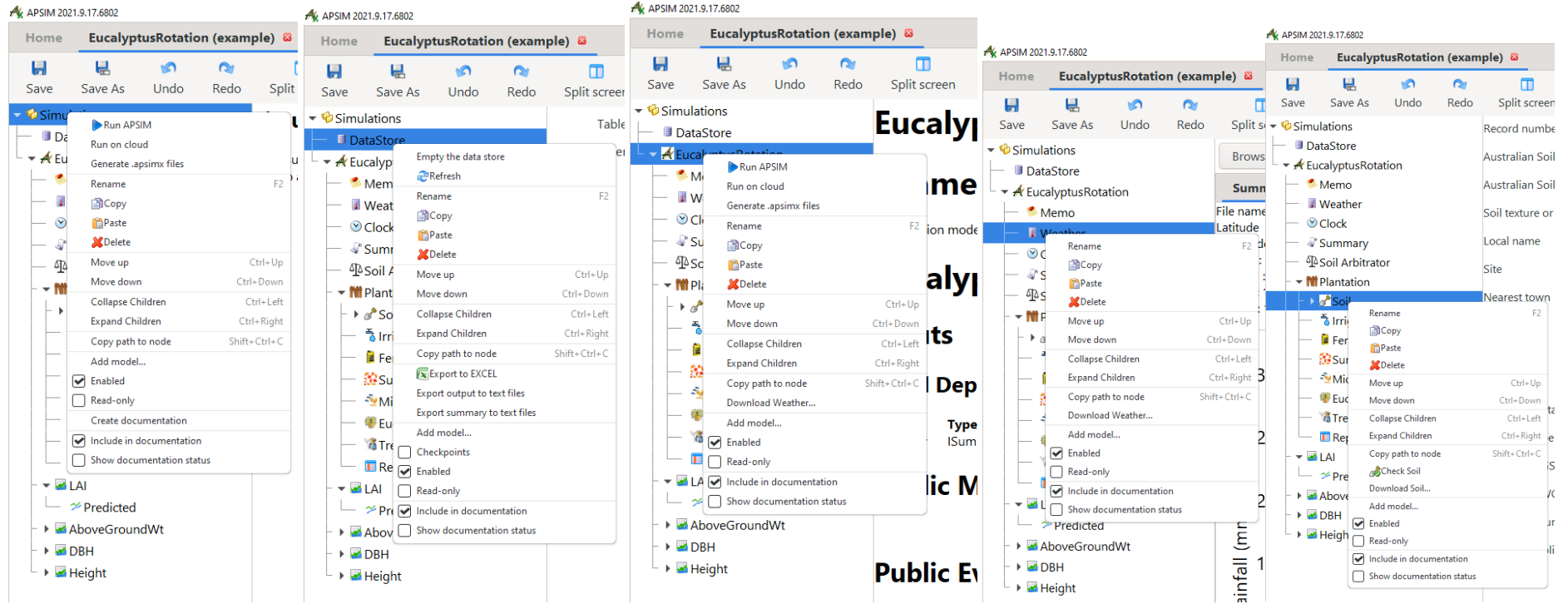


6a-e.



"TreeManagement" compiled successfully

7a-b.



8c.

APSIM 2021.9.17.6802

Home EucalyptusRotationExercises210924a

Save Save As Undo Redo Split screen Clear Status Help

**Simulations**

- DataStore
  - EucalyptusRotation
    - Memo
    - Weather
    - Clock
    - Summary
    - Soil Arbitrator
    - Plantation
      - Soil
        - Initial water
        - Physical
          - EucalyptusSoil
          - SCRUMSoil
      - SoilWater
      - Organic
      - Chemical
      - Temperature
      - N Nutrient
      - Irrigation
      - Fertiliser
      - SurfaceOrganicMatter
      - MicroClimate
      - Eucalyptus
      - TreeManagement
      - Report
        - LAI
        - AboveGroundWt
        - DBH
        - Height

**Properties** **Data**

Reporting variables:

- 1 [Clock].Today
- 2 [TreeManagement].Script.TimeSincePlanting
- 3 [Eucalyptus].Age
- 4 [Eucalyptus].AboveGround.Wt
- 5 [Eucalyptus].BelowGround.Wt
- 6 [Eucalyptus].Total.Wt
- 7 [Eucalyptus].Stem.Wt
- 8 [Eucalyptus].FineRoot.Wt
- 9 [Eucalyptus].CoarseRoot.Wt
- 10 [Eucalyptus].Total.N
- 11 [Eucalyptus].Branch.Wt
- 12 [Eucalyptus].Leaf.Transpiration
- 13 [Eucalyptus].Leaf.CoverGreen
- 14 [Eucalyptus].Leaf.LAI
- 15 [Eucalyptus].Stem.DBH
- 16 [Eucalyptus].Stem.Ht
- 17 [Eucalyptus].RootShootRatio
- 18 [Pinus].Stem.Ht

**Error Information**

ERROR in file: C:\Users\sme016\OneDrive - CSIRO\APSIM Training\Sims\EucalyptusRotationExercises210924a.apsimx  
 Simulation name: EucalyptusRotation  
 Models.Core.SimulationException  
 --> System.Exception: Error in report Report: Invalid report variables found:  
 Pinus.Stem.Ht: Unable to find any model with name or type Pinus in scope of Report  
 at Models.Report.DoOutput()  
 at Models.Clock.OnDoCommence(Object sender, CommenceArgs e)  
 at Models.Core.Simulation.Run(CancellationTokenSource cancelToken)  
 --- End of inner exception stack trace ---  
 at Models.Core.Simulation.Run(CancellationTokenSource cancelToken)  
 at Models.Core.Run.SimulationDescription.Run(CancellationTokenSource cancelToken)  
 at APSIM.Shared.JobRunning.JobRunner.RunActualJob(IRunnable job, IJobManager jobManager)

Copy Close

Error in report Report: Invalid report variables found:  
 Pinus.Stem.Ht: Unable to find any model with name or type Pinus in scope of Report

More Information

Desktop 11:08 AM 24/09/2021

8e.

APSIM 2021.9.17.6802

Home EucalyptusRotationExercises210924a

Save Save As Undo Redo Split screen Clear Status Help

☒ Capture summary? 
 ☒ Capture warning messages? 
 ☒ Capture error messages?

Simulation: EucalyptusRotation

[Jump to simulation log](#)

### Simulation log:

#### 1995-08-01 Plantation.Eucalyptus

A crop of Eucalyptus (cultivar = grandisCoffsHarbour) was sown today at a population of 0.111111111111111 plants/m<sup>2</sup> with 1 buds per plant at a row spacing of 3000 and a depth of 100 mm

#### 1995-08-01 Plantation.Fertiliser

100 kg/ha of NO3N added at depth 0 layer 1

#### 1995-09-30 Plantation.Eucalyptus

Germination  
 LAI = 0.00 (m<sup>2</sup>/m<sup>2</sup>)  
 Above Ground Biomass = 0.00 (g/m<sup>2</sup>)

#### 1995-10-01 Plantation.Eucalyptus

Emergence  
 LAI = 0.00 (m<sup>2</sup>/m<sup>2</sup>)  
 Above Ground Biomass = 0.00 (g/m<sup>2</sup>)

#### 1996-09-30 Plantation.Eucalyptus

EndJuvenile  
 LAI = 1.15 (m<sup>2</sup>/m<sup>2</sup>)  
 Above Ground Biomass = 442.94 (g/m<sup>2</sup>)

#### 2001-09-29 Plantation.Eucalyptus

Maturity  
 LAI = 4.44 (m<sup>2</sup>/m<sup>2</sup>)  
 Above Ground Biomass = 10762.96 (g/m<sup>2</sup>)

Simulations complete [4.06 sec]



## 9. a-l

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises210924a

Save Save As Undo Redo Split screen Clear Status Help

Simulations

- DataStore
- EucalyptusRotation
  - Memo
  - Weather
  - Clock
  - Summary
  - Soil Arbitrator
  - Plantation
    - Soil
      - Initial water
      - Physical
        - EucalyptusSoil
        - SCRUMSoil
      - SoilWater
      - Organic
      - Chemical
      - Temperature
      - N Nutrient
    - Irrigation
    - Fertiliser
    - SurfaceOrganicMatter
    - MicroClimate
    - Eucalyptus
    - TreeManagement
    - Report
  - LAI
  - AboveGroundWt
  - DBH
  - Height

Browse... C:\Users\sme016\AppData\Local\Programs\APSIM2021.9.21.6799\Examples\WeatherFiles\Curvelo.met

Choose a weather file to open

File name: Latitude Longitude TAV AMP Start End For years Long term Yearly rainfall (mm)

Smethurst, Philip (L&W, Sandy Bay) > AppData > Local > Programs > APSIM2021.9.21.6799 > Examples > WeatherFiles

Name	Date modified	Type	Size
DOCS			
Documents			
DropBox			
DropBox 201215			
EM88			
EM89			
Fall Farm Simulations			
FWPA			
Gridded Data			
Lake School			
McGrath, John			
Monteiro, Ana Flavia Martins			
MS Flowerdale			
National Soils Strategy			
Parrish, Hayley			
Philip			
Pictures			
Proposal - Agrifutures 2021			
Proposal - Drought Fund			
Proposal - FWPA APSIM modelling			
Proposal - Soil Grids for Plantation Forestry			
Proposal - Yield Gaps			
Publications			
Publications Smethurst			
Python Crash Course 2021			
Python for Soils and Met			
Reviews			
Rwandan Coffee			
Shared Documents			
Templates			
OneDrive - Personal			
Smethurst, Philip (L&W, Sandy Bay)			
This PC			
3D Objects			

File name: APSIM Weather file (\*.met)

Open Cancel

Temperature (oC)

Dec

9:13 AM 25/09/2021

APSIM 2021.9.21.6799

Home **EucalyptusRotationExercises210924a**

Save Save As Undo Redo Split screen Clear Status Help

**Simulations**

- DataStore
- EucalyptusRotation
  - Memo
  - Weather
  - Clock
  - Summary
  - Soil Arbitrator
  - Plantation
    - Soil
      - Initial water
      - Physical
        - EucalyptusSoil
        - SCRUMSoil
      - SoilWater
      - Organic
      - Chemical
      - Temperature
      - Nutrient
    - Irrigation
    - Fertiliser
    - SurfaceOrganicMatter
    - MicroClimate
    - Eucalyptus
    - TreeManagement**
    - Report
  - LAI
  - AboveGroundWt
  - DBH
  - Height

**Parameters** Script

Spacing (m) between plants within rows

Spacing (m) between rows

Cultivar

Planting Date (dd-mm)

Harvest Age (years)

Amount of fertiliser N to be applied at planting (kg N/ha)

Brazil I ropicalClone

FSABlueGum

globulus

globulusShepparton

grandis

grandisC15

grandisC22

grandisCoffsHarbour

grandisXurophylla

grandisXurophyllaC3334

grandisXurophyllaC3336

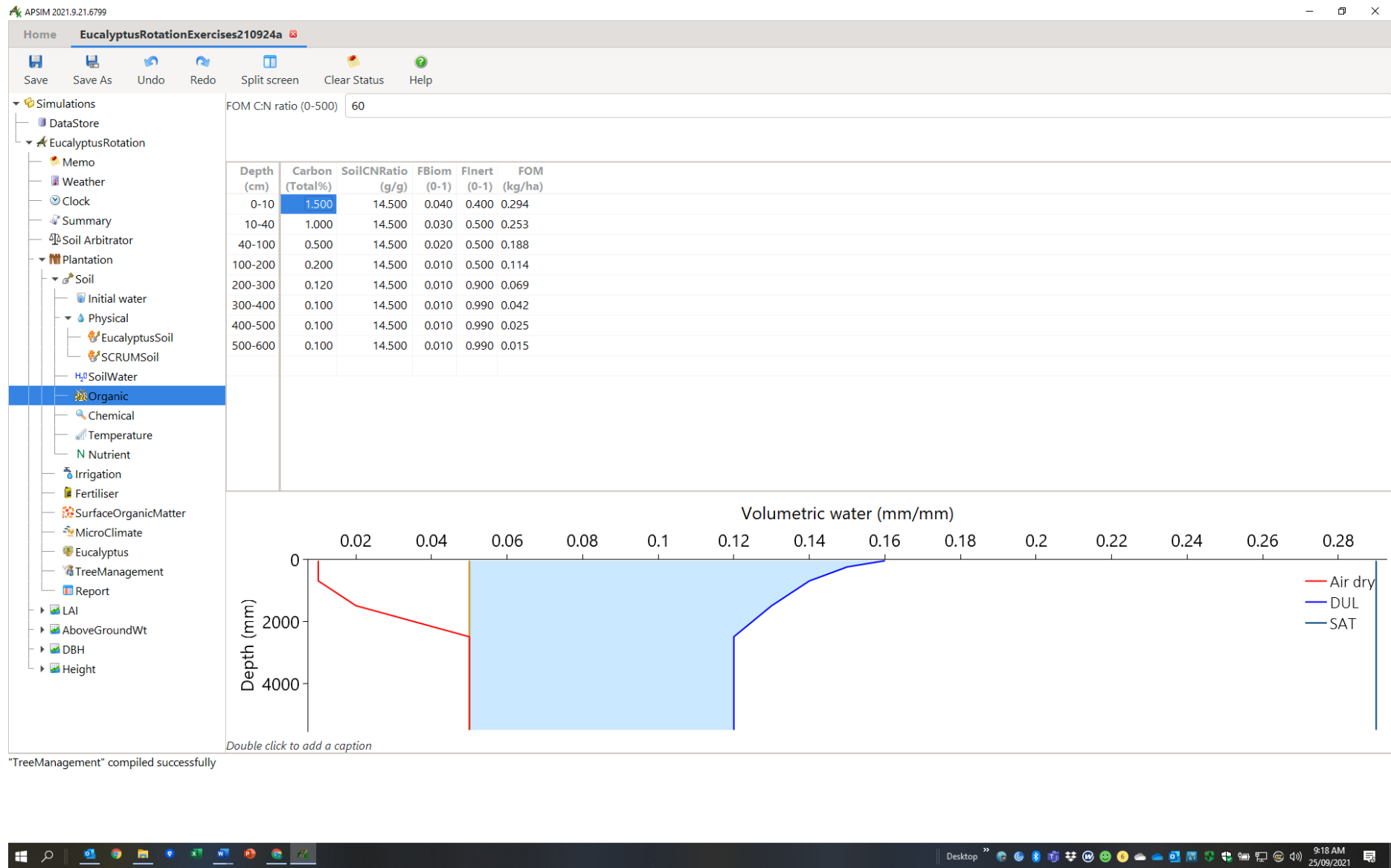
**nitens**

nitensLewisham

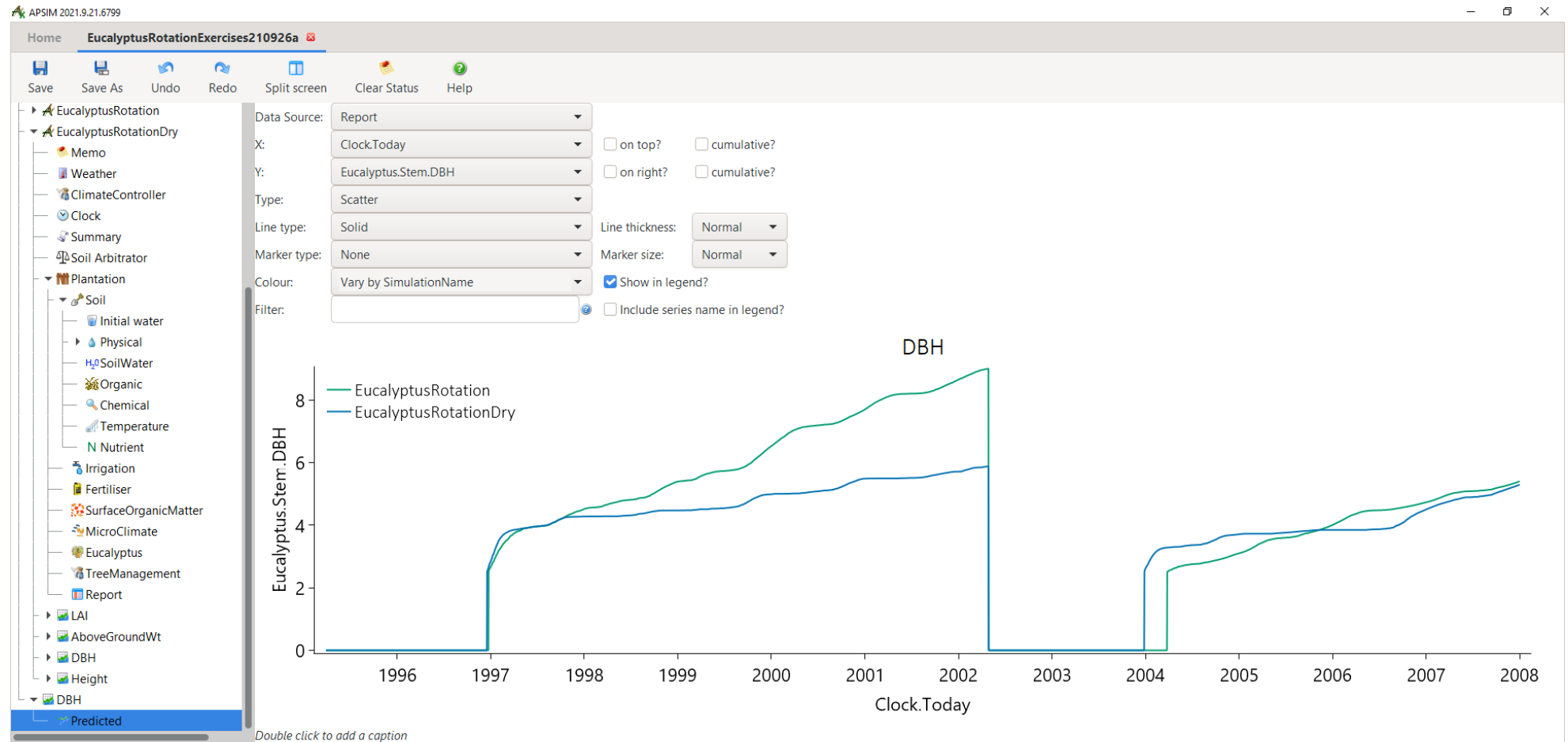
saligna

urophyllaXglobulus

WABlueGum



## 9. m-q





10e.

APSIM 2021.10.11.6842

Home EucalyptusRotationExercises211005a

Save Save As Undo Redo Split screen Clear Status Help

LincolnDry

- Memo
- Clock
- Weather
- ClimateController
- Summary
- Soil Arbitrator
- Plantation
  - Soil
  - Irrigation
  - Fertiliser
  - SurfaceOrganicMatter
  - MicroClimate
  - Eucalyptus
  - TreeManagement
  - Report

1. Enter latitude and longitude OR a country and place name.  
 2. Click 'search for soils'.  
 3. Select soils you want to add to your simulation.  
 3. Click 'Add selected soils to simulation'

More information: [APSOIL](#) [ISRIC](#)

Latitude: -43.624 Longitude: 172.466

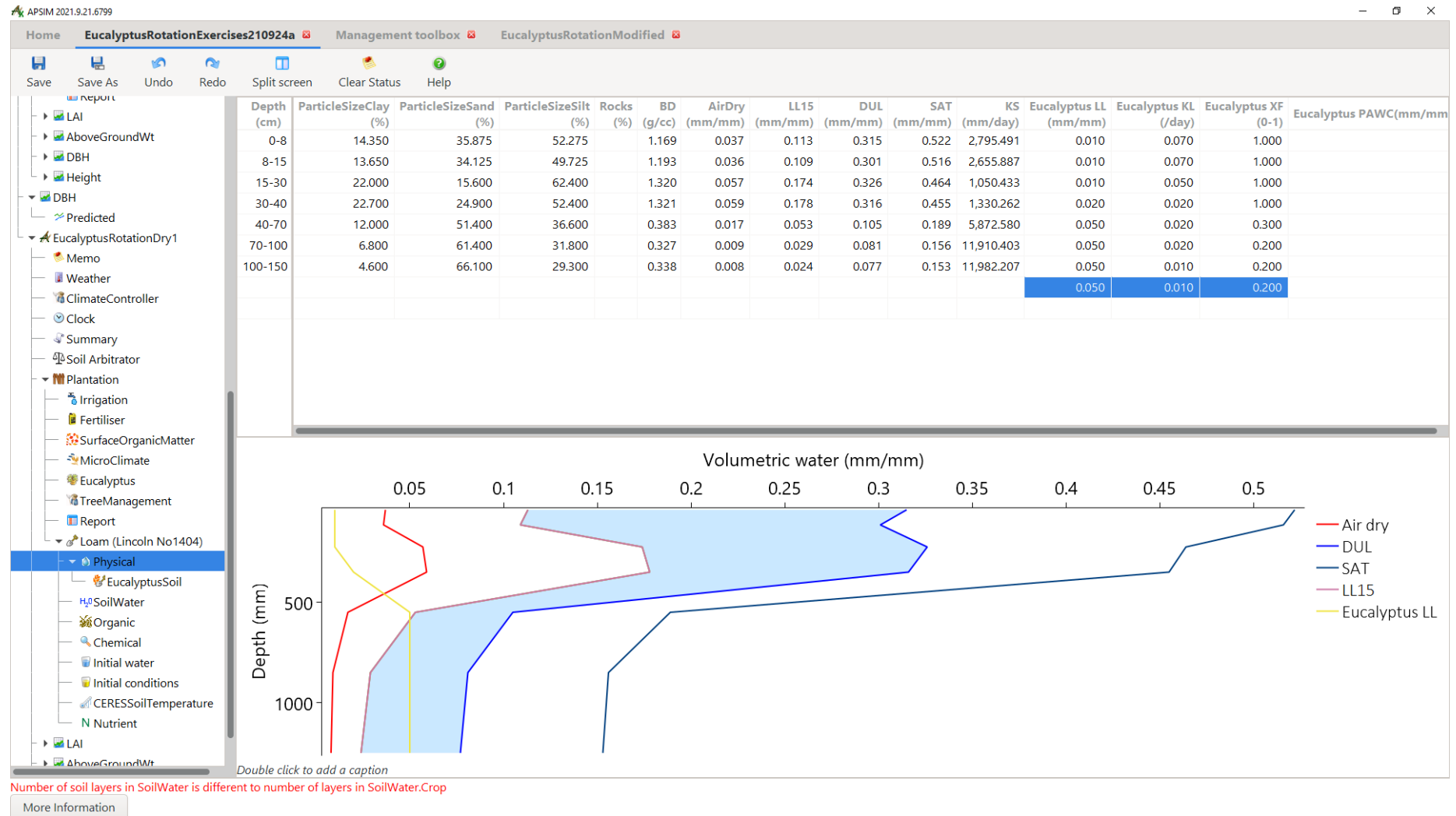
Country:  Place name: 236 Boundary Road, Lincoln 7676, New Zealand

Search radius for APSOIL (km): 100

Search for soils Add selected soil(s) to simulation

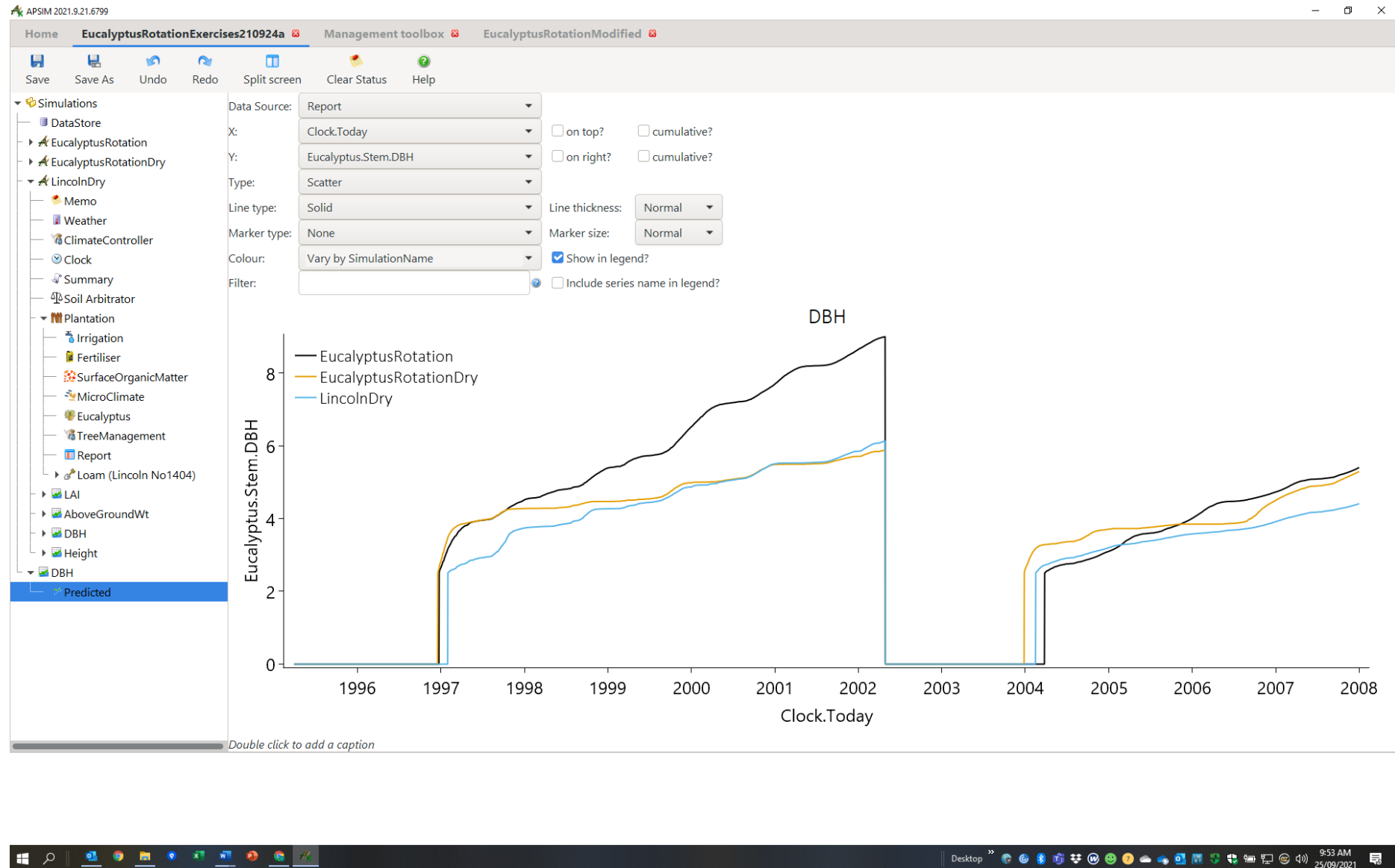
Name	Data source	Soil type	Distance (km)	PAWC for profile	PAWC to 300mm	PAWC to 600mm	PAWC to 1500mm
Silt loam (Lincoln DSIR Farm No1317)	APSOIL	Silt loam	0.2	306.1	55.1	115.8	306.1
Silt loam (Lincoln No1403)	APSOIL	Silt loam	0.6	124.8	53.3	77.5	124.8
Loam (Lincoln No1404)	APSOIL	Loam	0.6	123.9	52.4	76.6	123.9
Silt clay loam (Lincoln No1414)	APSOIL	Silt clay loam	1.7	226.4	49.8	85.1	226.4

10i.

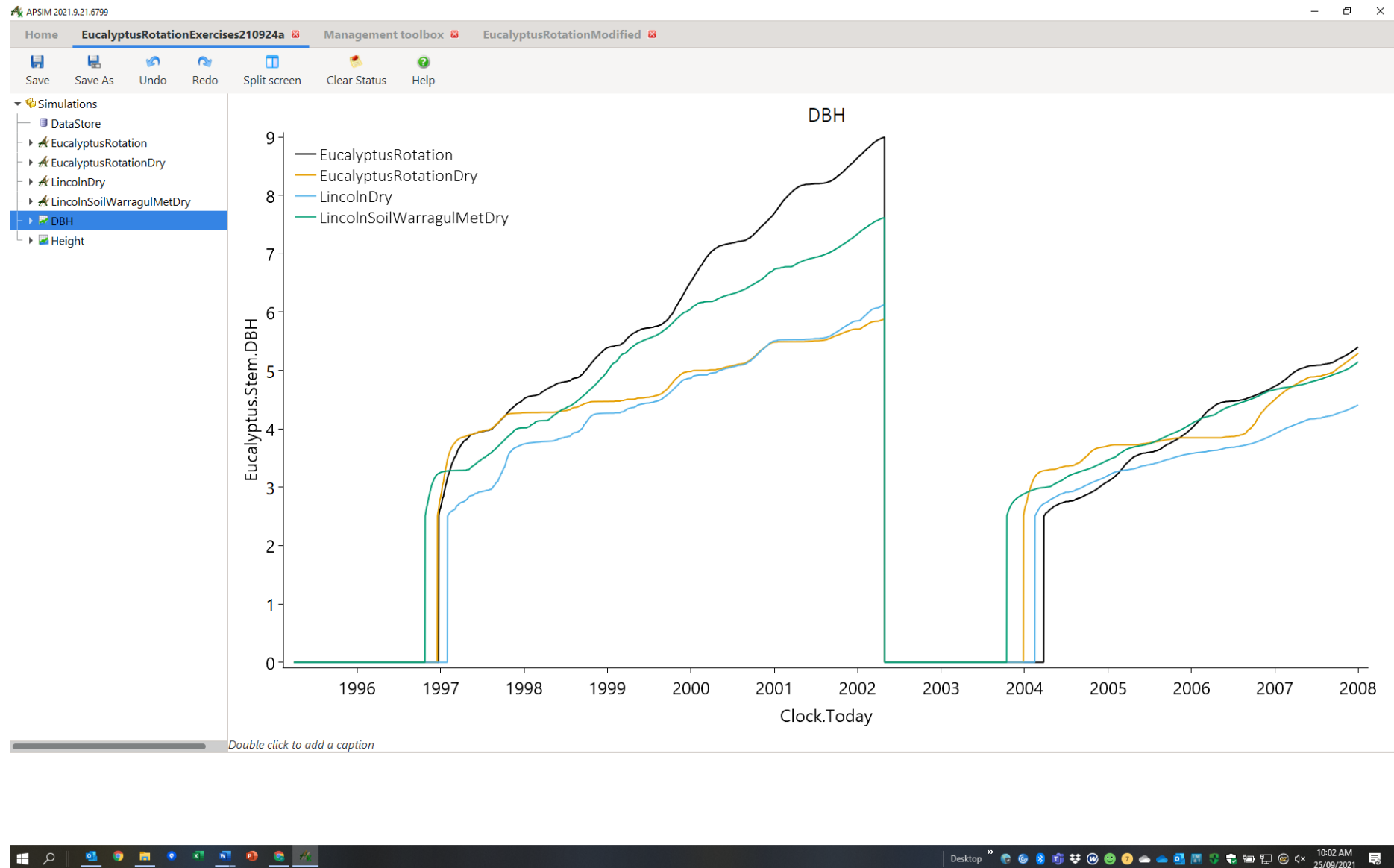


ocks	BD	AirDry	LL15	DUL	SAT	KS	Eucalyptus LL	Eucalyptus KL	Eucalyptus XF	Eucalyptus PAWC
(%)	(g/cc)	(mm/mm)	(mm/mm)	(mm/mm)	(mm/mm)	(mm/day)	(mm/mm)	(/day)	(0-1)	525.00 (mm/mm)
	1.500	0.010	0.050	0.160	0.290		0.010	0.070	1.000	0.150
	1.600	0.010	0.050	0.150	0.290		0.010	0.070	1.000	0.140
	1.680	0.010	0.050	0.140	0.290		0.010	0.050	1.000	0.130
	1.750	0.020	0.050	0.130	0.290		0.020	0.020	1.000	0.110
	1.700	0.050	0.050	0.120	0.290		0.050	0.020	0.300	0.070
	1.700	0.050	0.050	0.120	0.290		0.050	0.020	0.200	0.070
	1.700	0.050	0.050	0.120	0.290		0.050	0.010	0.200	0.070
	1.700	0.050	0.050	0.120	0.290		0.050	0.010	0.200	0.070

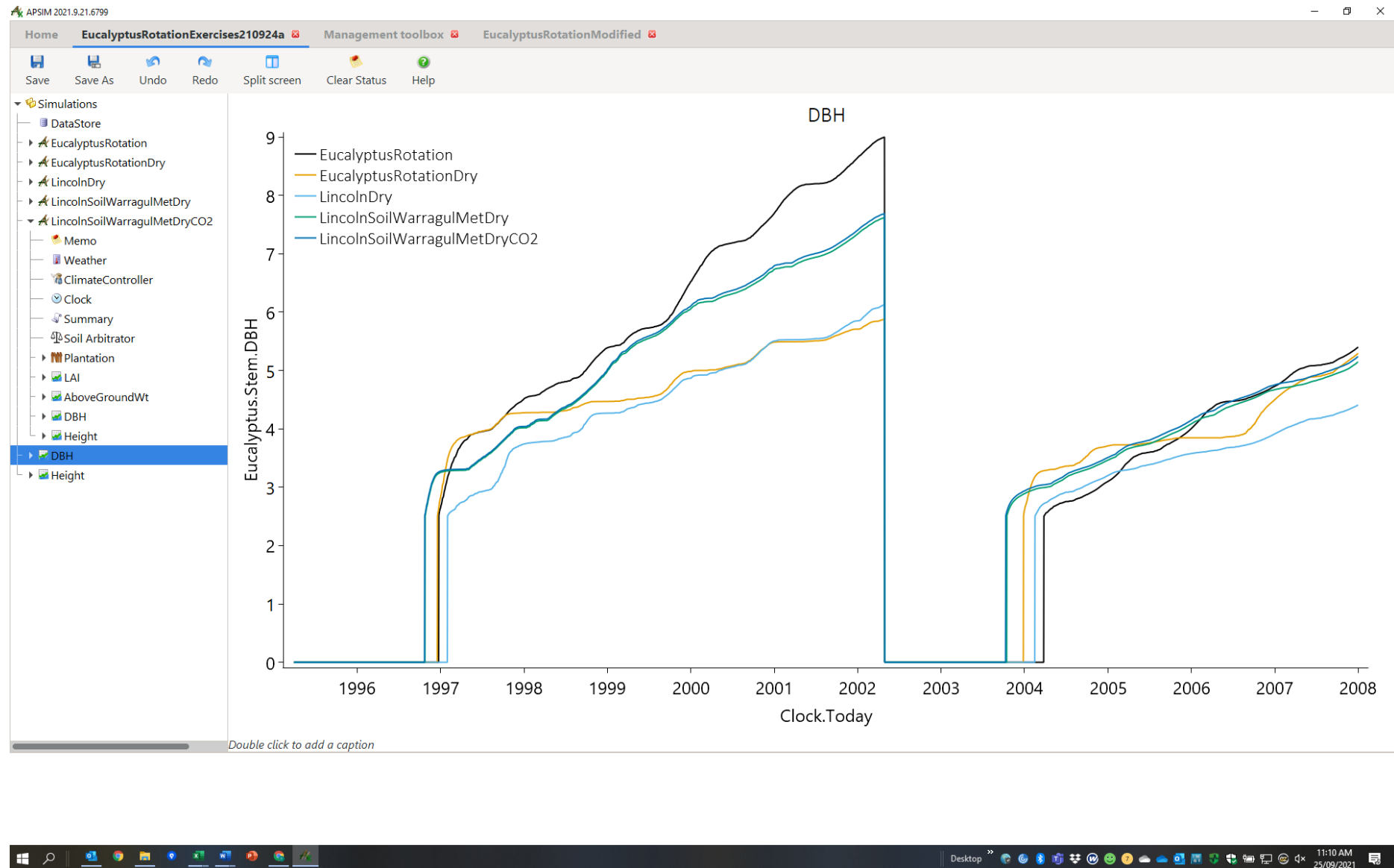
10n.



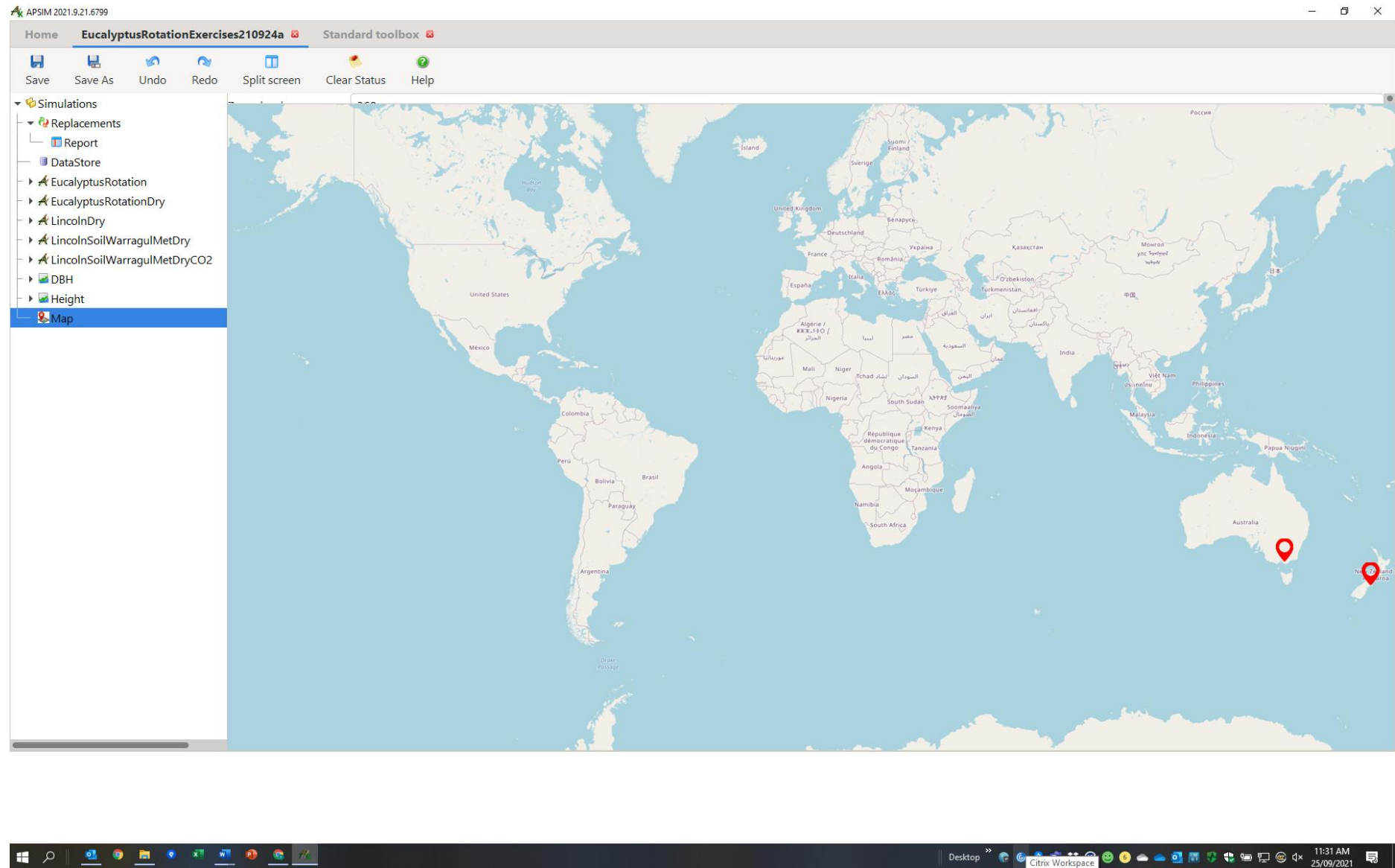
11f.



12d.



13d.



14n.

APSIM 2021.10.18.6868

The screenshot shows the APSIM software interface. The title bar indicates the project is 'EucalyptusRotationExercises211018a'. The top menu bar includes 'Home', 'Save', 'Save As', 'Undo', 'Redo', 'Split screen', 'Clear Status', and 'Help'. The left sidebar displays a tree view of the project structure, with 'ReportAnnual' selected under the 'Replacements' folder. The right pane shows the 'Properties' tab, which lists the following reporting variables:

- 12 [Eucalyptus].Leaf.Transpiration
- 13 [Eucalyptus].Leaf.CoverGreen
- 14 [Eucalyptus].Leaf.LAI
- 15 [Eucalyptus].Stem.DBH
- 16 [Eucalyptus].Stem.Ht
- 17 [Eucalyptus].RootShootRatio
- 18 [Eucalyptus].Leaf.Fn
- 19 [Eucalyptus].Leaf.Fw
- 20

The reporting frequency is set to 1 [Clock].EndOfYear. The 'Group by' field is empty.

"ClimateController" compiled successfully



14p.

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises210924a Standard toolbox

Save Save As Undo Redo Split screen Clear Status Help

Replacements

- Report
- ClimateController
- ReportAnnual

DataStore

Map

- EucalyptusRotation
- EucalyptusRotationDry
- LincolnDry
- LincolnSoilWarragulMetDry
- LincolnSoilWarragulMetDryCO2

Memo

Weather

ClimateController

Clock

Summary

Soil Arbitrator

Plantation

- Irrigation
- Fertiliser
- SurfaceOrganicMatter
- MicroClimate
- Eucalyptus
- TreeManagement
- Report
- Loam (Lincoln No1404)
- ReportAnnual

LAI

AboveGroundWt

DBH

Height

DBH

Height

Properties Data

Table: ReportAnnual Checkpoint: Current

Column filter: Row filter:

SimulationName	Clock.Today	Zone	TreeManagement.Script.TimeSincePlanting	Eucalyptus.Age	Eucalyptus.AboveGround.Wt g/m^2	Eucalyptus.BelowGround.Wt g/m^2
LincolnSoilWarragulMetDryCO2	1995-12-31	Plantation	0.671	0.666	29.160	21.516
LincolnSoilWarragulMetDryCO2	1996-12-31	Plantation	1.674	1.668	1865.240	1074.626
LincolnSoilWarragulMetDryCO2	1997-12-31	Plantation	2.674	2.668	2730.483	1485.734
LincolnSoilWarragulMetDryCO2	1998-12-31	Plantation	3.674	3.668	3513.049	1808.160
LincolnSoilWarragulMetDryCO2	1999-12-31	Plantation	4.674	4.668	4303.236	2086.789
LincolnSoilWarragulMetDryCO2	2000-12-31	Plantation	5.677	5.671	5098.383	2324.250
LincolnSoilWarragulMetDryCO2	2001-12-31	Plantation	6.677	6.671	5970.843	2545.417
LincolnSoilWarragulMetDryCO2	2002-12-31	Plantation	0.671	0.666	43.911	32.365
LincolnSoilWarragulMetDryCO2	2003-12-31	Plantation	1.671	1.666	2018.977	1152.542
LincolnSoilWarragulMetDryCO2	2004-12-31	Plantation	2.674	2.668	2518.830	1389.425
LincolnSoilWarragulMetDryCO2	2005-12-31	Plantation	3.674	3.668	2957.054	1580.334
LincolnSoilWarragulMetDryCO2	2006-12-31	Plantation	4.674	4.668	3423.939	1768.370
LincolnSoilWarragulMetDryCO2	2007-12-31	Plantation	5.674	5.668	3920.286	1950.189

Number of rows: 13

Post-simulation tools complete [.01 sec]

Double-click to open WorkPace Console

Desktop 11:43 AM 25/09/2021

15h.

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises210926a Factorial (example) Management toolbox

Save Save As Undo Redo Split screen Clear Status Help

**Simulations**

- Replacements
  - Report
  - ClimateController
  - ReportAnnual
- DataStore
- Map
- EucalyptusRotation
- EucalyptusRotationDry
- LincolnDry
- LincolnSoilWarragulMetDry
- LincolnSoilWarragulMetDryCO2
- DBH
- Height
- Fn
- Fw
- ManagerExpt
  - Factors
    - NRate**
  - LincolnSoilWarragulMetDryCO2
    - Memo
    - Weather
    - ClimateController
    - Clock
    - Summary
    - Soil Arbitrator
      - Plantation

A factor specification can be one of:

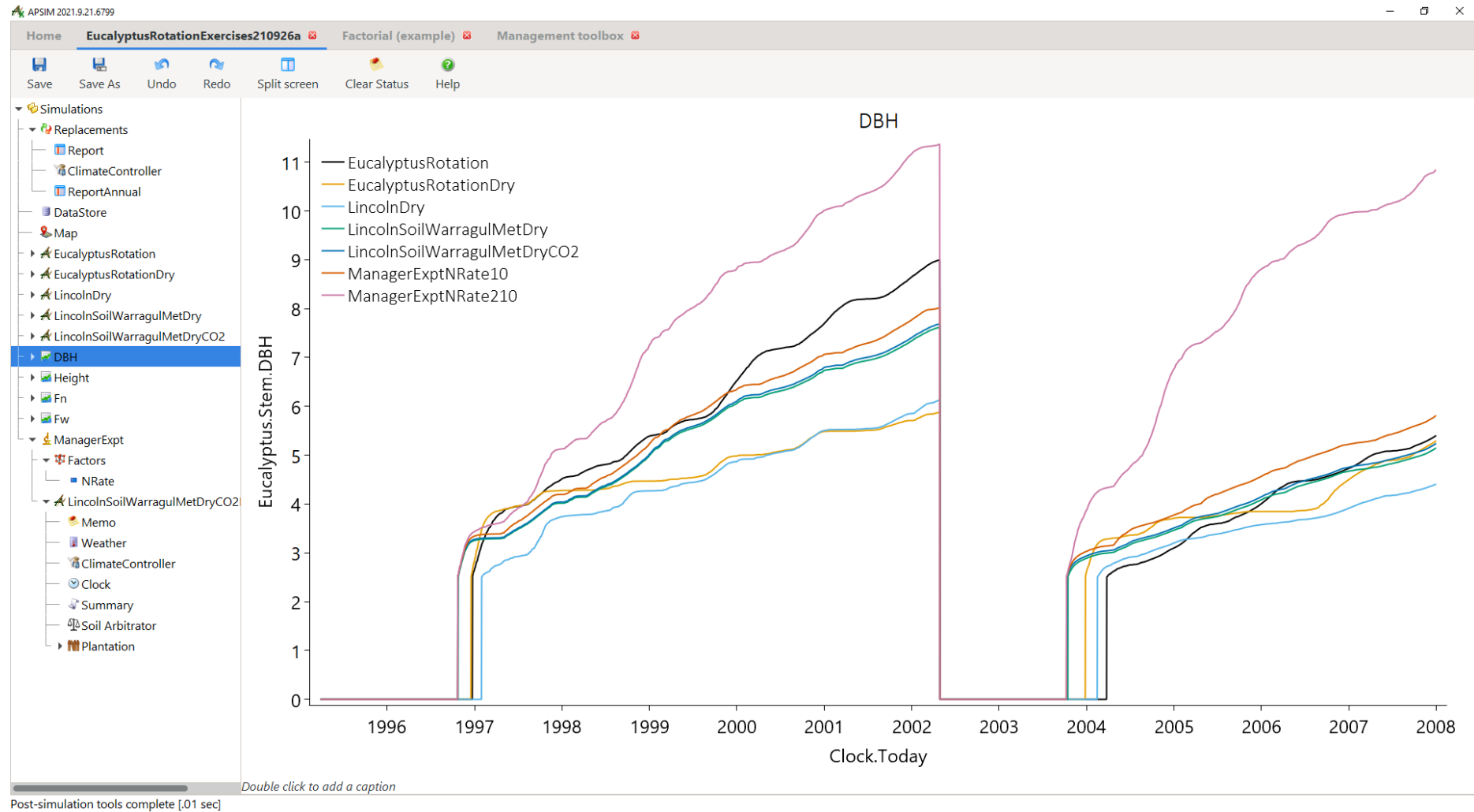
1. A property set with multiple values e.g.  
[SowingRule].Script.SowingDate = 2003-11-01, 2003-12-20
2. A property set with a range e.g.  
[FertiliserRule].Script.ApplicationAmount = 0 to 200 step 20
3. A path to a model that will be replaced with a child of this factor that has a matching type e.g.  
[Weather]
4. Can be left blank if there are 1 or more child 'CompositeFactor' nodes.

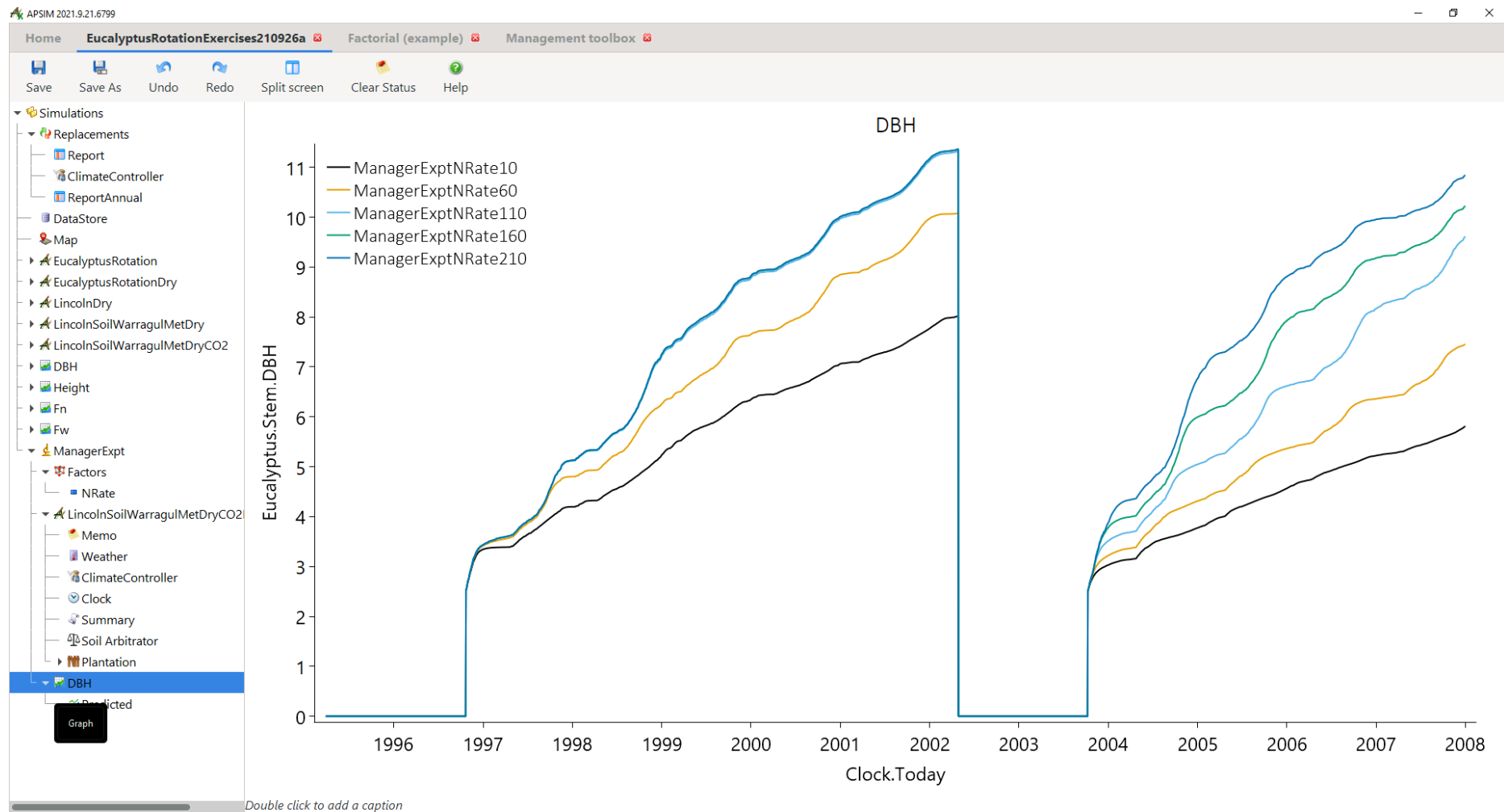
[Fertilise on fixed dates].Script.Amount = 10,210

Post-simulation tools complete [.01 sec]



15p.





15q.

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises211005a

Save Save As Undo Redo Split screen Clear Status Help

ManagerExpt

- Factors
  - Permutation
    - NRate
    - Stocking
      - 800
      - 1600
- LincolnSoilWarragulMetDryCO2
  - Memo
  - Clock
  - Weather
  - ClimateController
  - Summary
  - Soil Arbitrator
  - Plantation
- ExptWithOvP
  - Factors
    - Permutation
      - NRate
  - ExptWithOvP
    - Memo
    - Clock
    - Weather
    - ClimateController
    - Summary
    - Soil Arbitrator
    - Plantation
      - Loam (Lincoln No1404)
        - Physical
          - EucalyptusSoil

Parameters Script

Spacing (m) between plants within rows 4.1667

Spacing (m) between rows 3

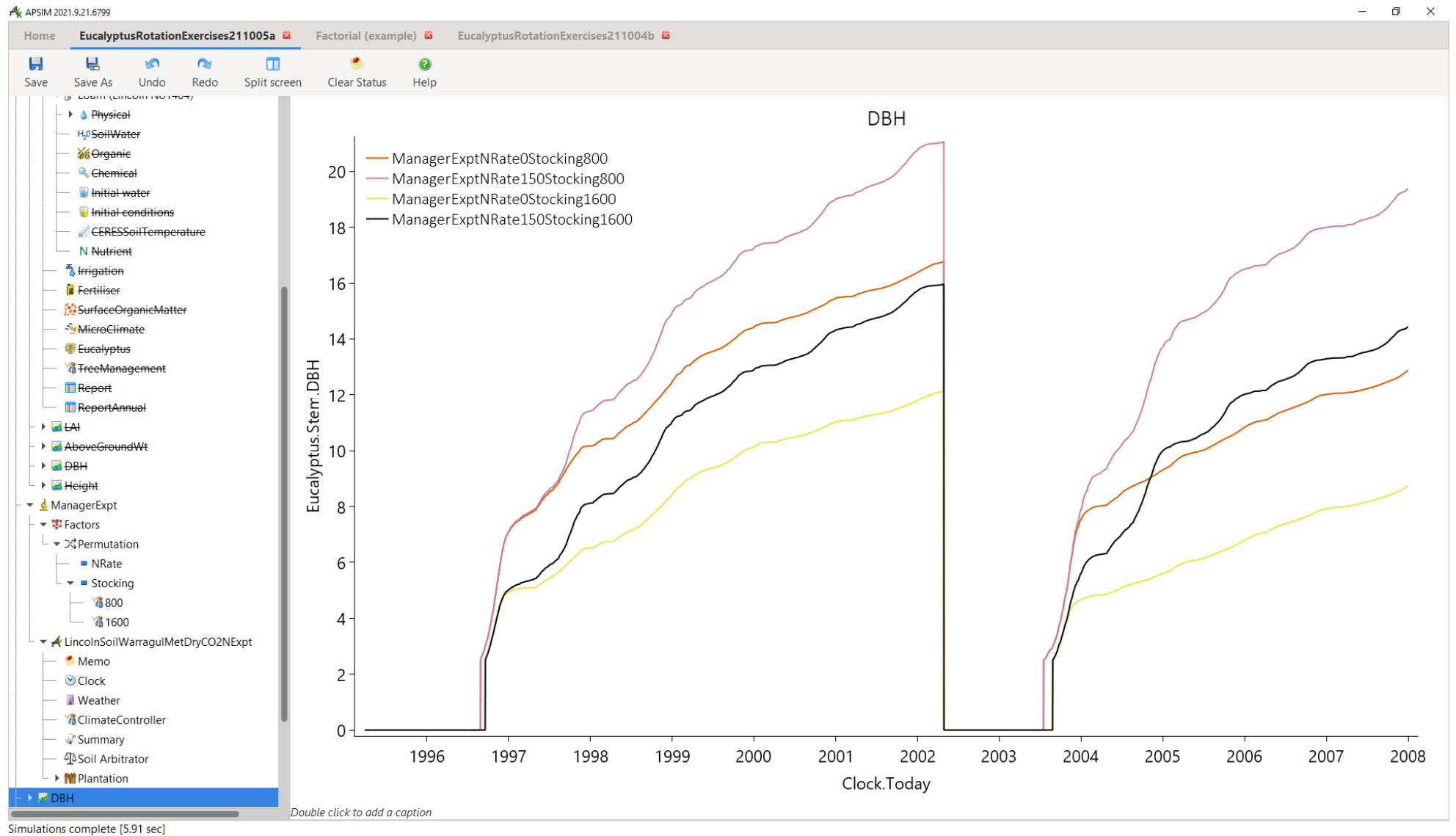
Cultivar nitens

Planting Date (dd-mmm) 1-may

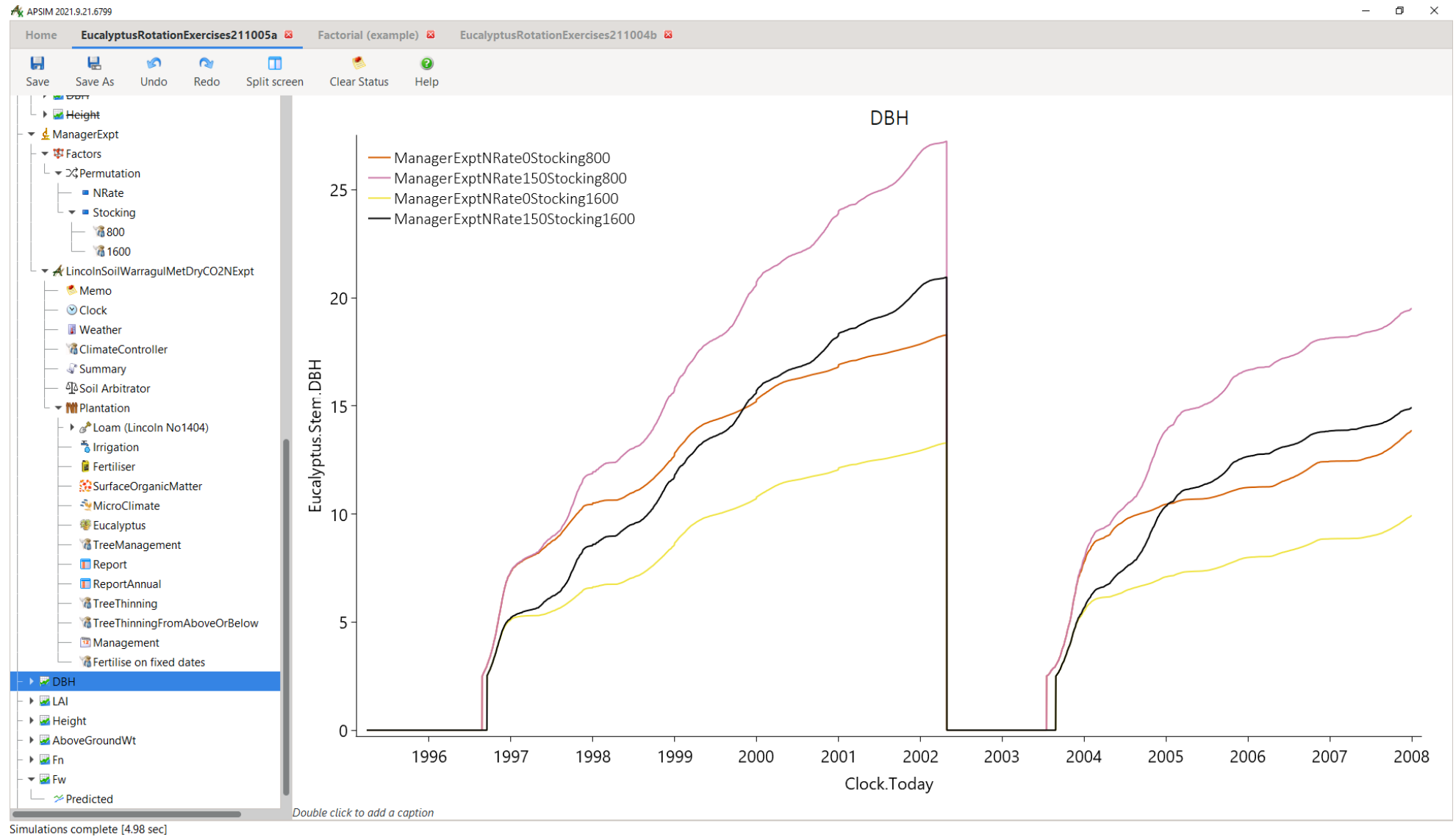
Harvest Age (years) 7

Amount of fertiliser N to be applied at planting (kg N/ha) 200

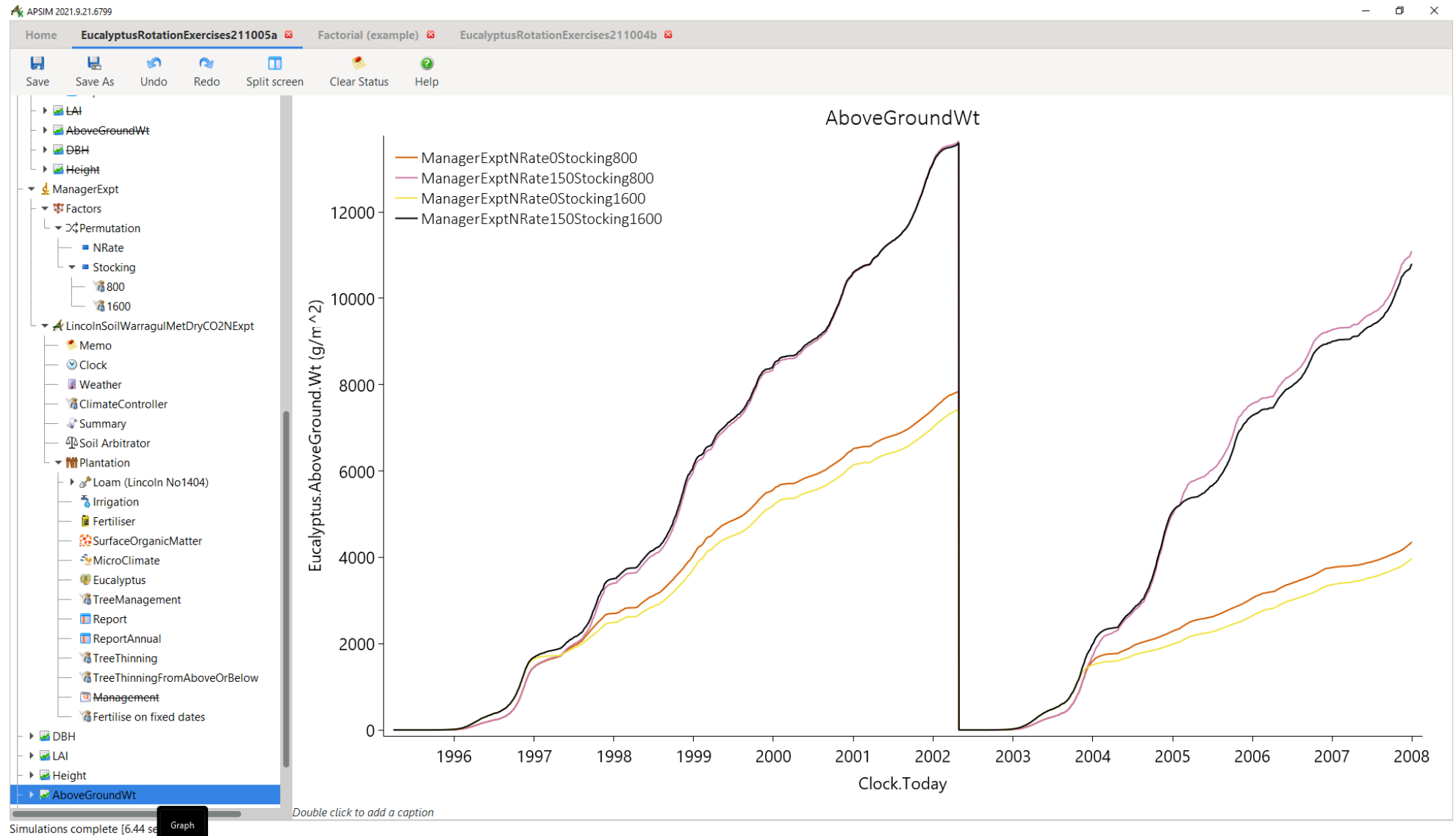
"Sow on a fixed date" compiled successfully



16.



16e.





17a.

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises211005a

Save Save As Undo Redo Split screen Clear Status Help

- ManagerExpt
  - Factors
  - LincolnSoilWarragulMetDryCO2
    - Memo
    - Clock
    - Weather
    - ClimateController
    - Summary
    - Soil Arbitrator
    - Plantation
      - Loam (Lincoln No1404)
      - Irrigation
      - Fertiliser
      - SurfaceOrganicMatter
      - MicroClimate
      - Eucalyptus
      - TreeManagement
      - Report
      - ReportAnnual
      - TreeThinning
      - TreeThinningFromAboveO
      - Management

```

1 1996-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
2 1997-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
3 1998-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
4 1999-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
5 1999-01-01 [TreeThinning].Script.DoThin(0.33);
6 2000-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
7 2001-01-01 [TreeThinningFromAboveOrBelow].Script.DoThin(0.05);
8 1997-06-15 [Fertiliser].Apply(Amount: 20, Type: Fertiliser.Types.NH4N, 0);
9

```

17e.

APSIM 2021.9.21.6799

Home EucalyptusRotationExercises210926a Factorial (example) Management toolbox Standard toolbox Pinus (example) Barley (example)

Save Save As Undo Redo Split screen Clear Status Help

Simulations

- Replacements
  - Report
  - ClimateController
  - ReportAnnual
  - DataStore
  - Map
  - EucalyptusRotation
  - EucalyptusRotationDry
  - LincolnDry
  - LincolnSoilWarragulMetDry
  - LincolnSoilWarragulMetDryCO2
  - DBH
  - Height
  - Fn
  - Fw
- ManagerExpt
  - Factors
  - LincolnSoilWarragulMetDryCC
    - Memo
    - Clock
    - Weather
    - ClimateController
    - Summary
    - Soil Arbitrator
    - Plantation
      - Irrigation
      - Fertiliser
      - SurfaceOrganicMatter
      - MicroClimate
      - Eucalyptus
      - TreeManagement
      - Report

Properties Data

Reporting variables:

- 1 [Clock].Today
- 2 [TreeManagement].Script.TimeSincePlanting
- 3 [Eucalyptus].Age
- 4 [Eucalyptus].AboveGround.Wt
- 5 [Eucalyptus].BelowGround.Wt
- 6 [Eucalyptus].Total.Wt
- 7 [Eucalyptus].Stem.Wt
- 8 [Eucalyptus].FineRoot.Wt
- 9 [Eucalyptus].CoarseRoot.Wt
- 10 [Eucalyptus].Total.N
- 11 [Eucalyptus].Branch.Wt
- 12 [Eucalyptus].Leaf.Transpiration
- 13 [Eucalyptus].Leaf.CoverGreen
- 14 [Eucalyptus].Leaf.LAI
- 15 [Eucalyptus].Stem.DBH
- 16 [Eucalyptus].Stem.Ht
- 17 [Eucalyptus].RootShootRatio
- 18 // [Pinus].Stem.Ht
- 19 [Eucalyptus].Leaf.Fn
- 20 [Eucalyptus].Leaf.Fw
- 21 [Barley].AboveGround.Wt

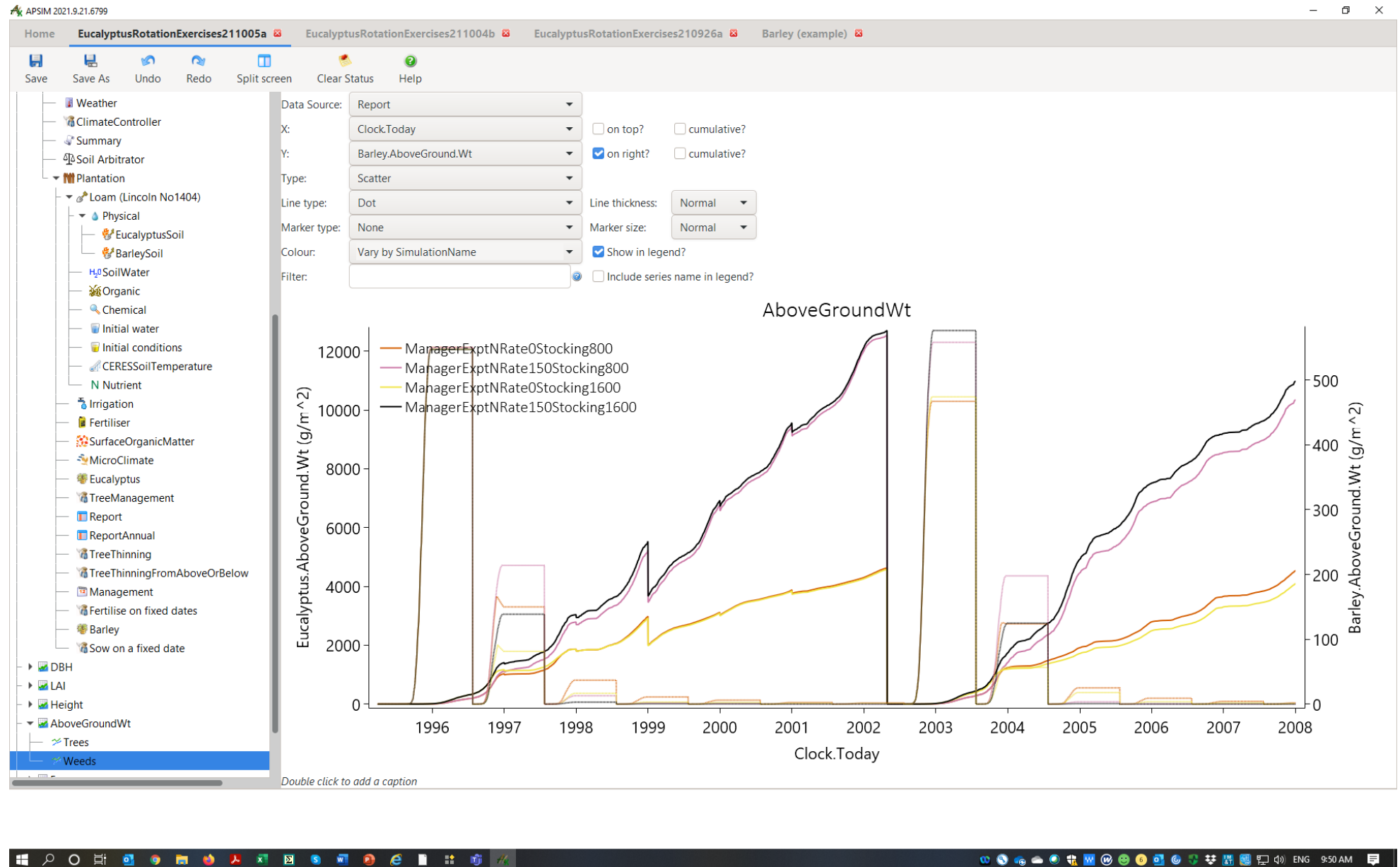
Reporting frequency:

- 1 [Clock].DoReport

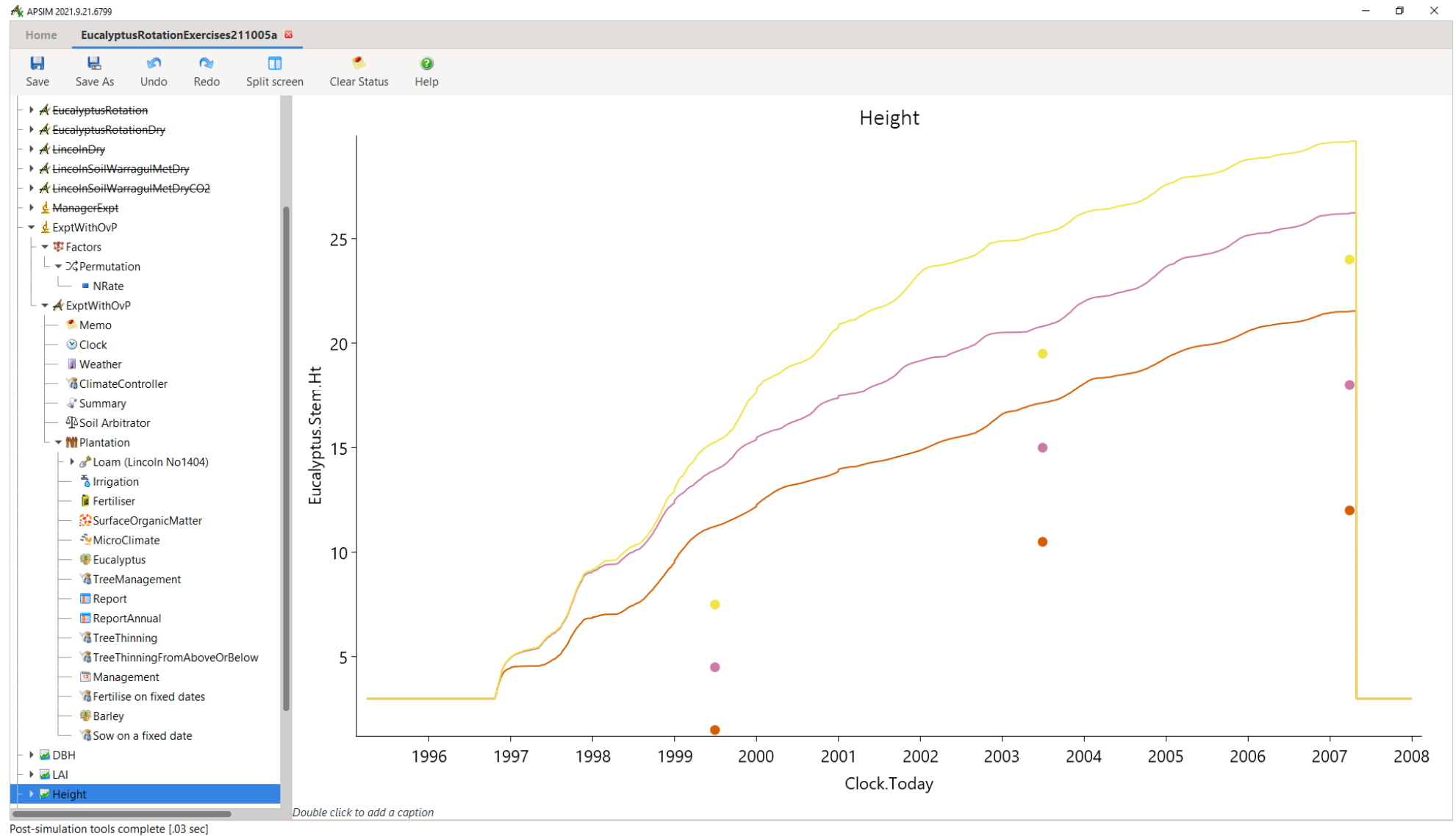
Group by:

Desktop 3:35 PM 26/09/2021

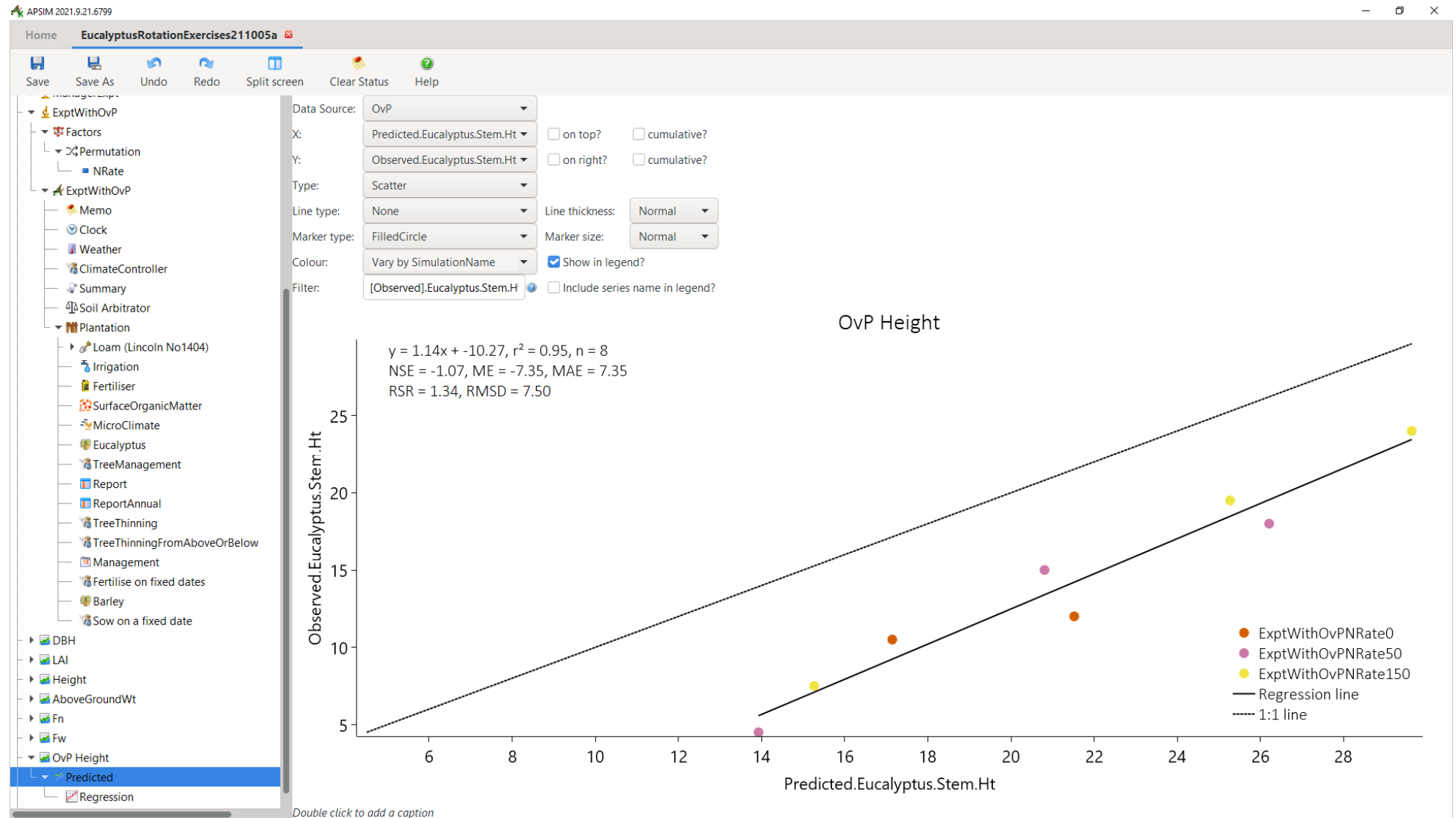
17h.



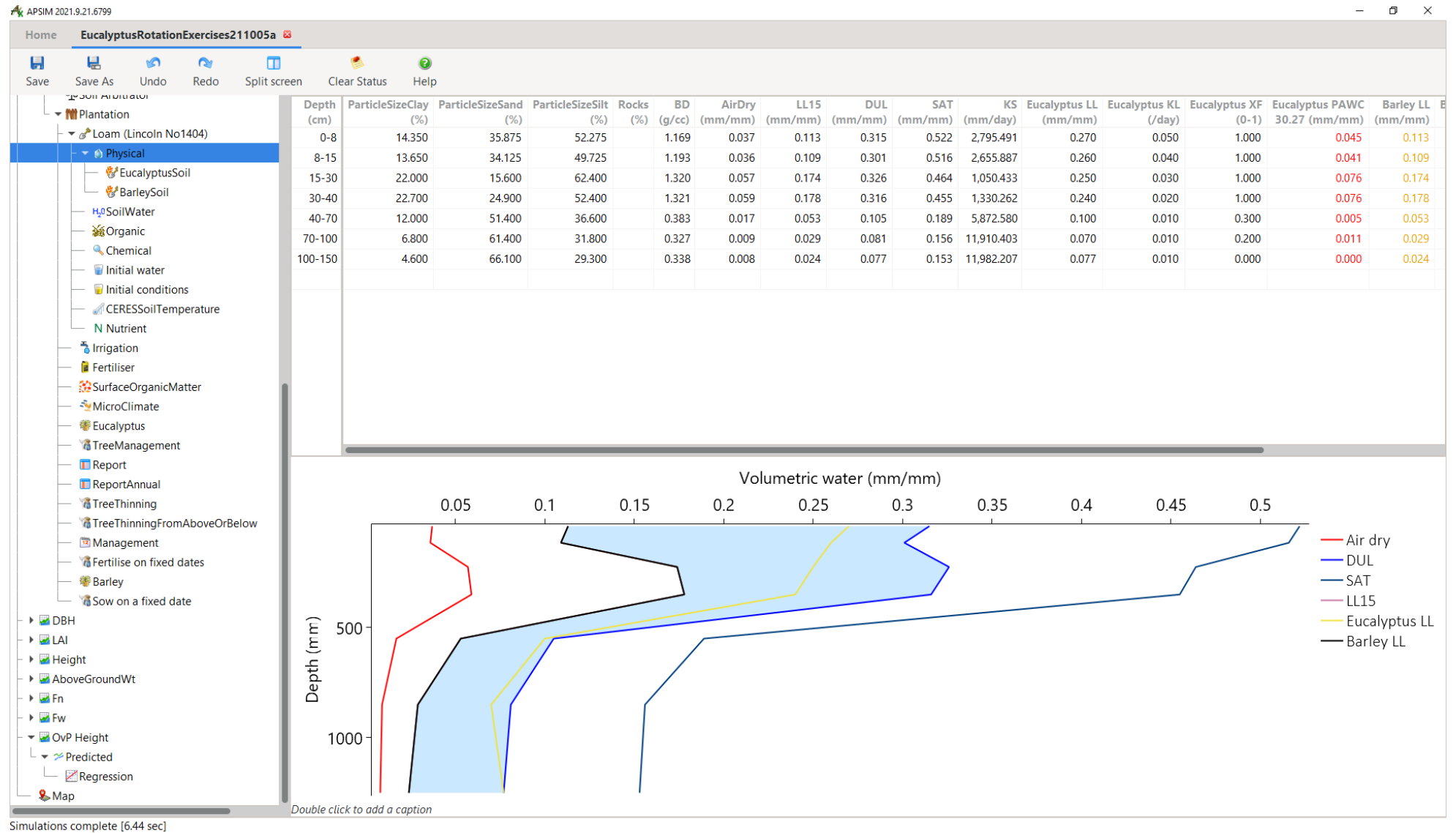
18k.

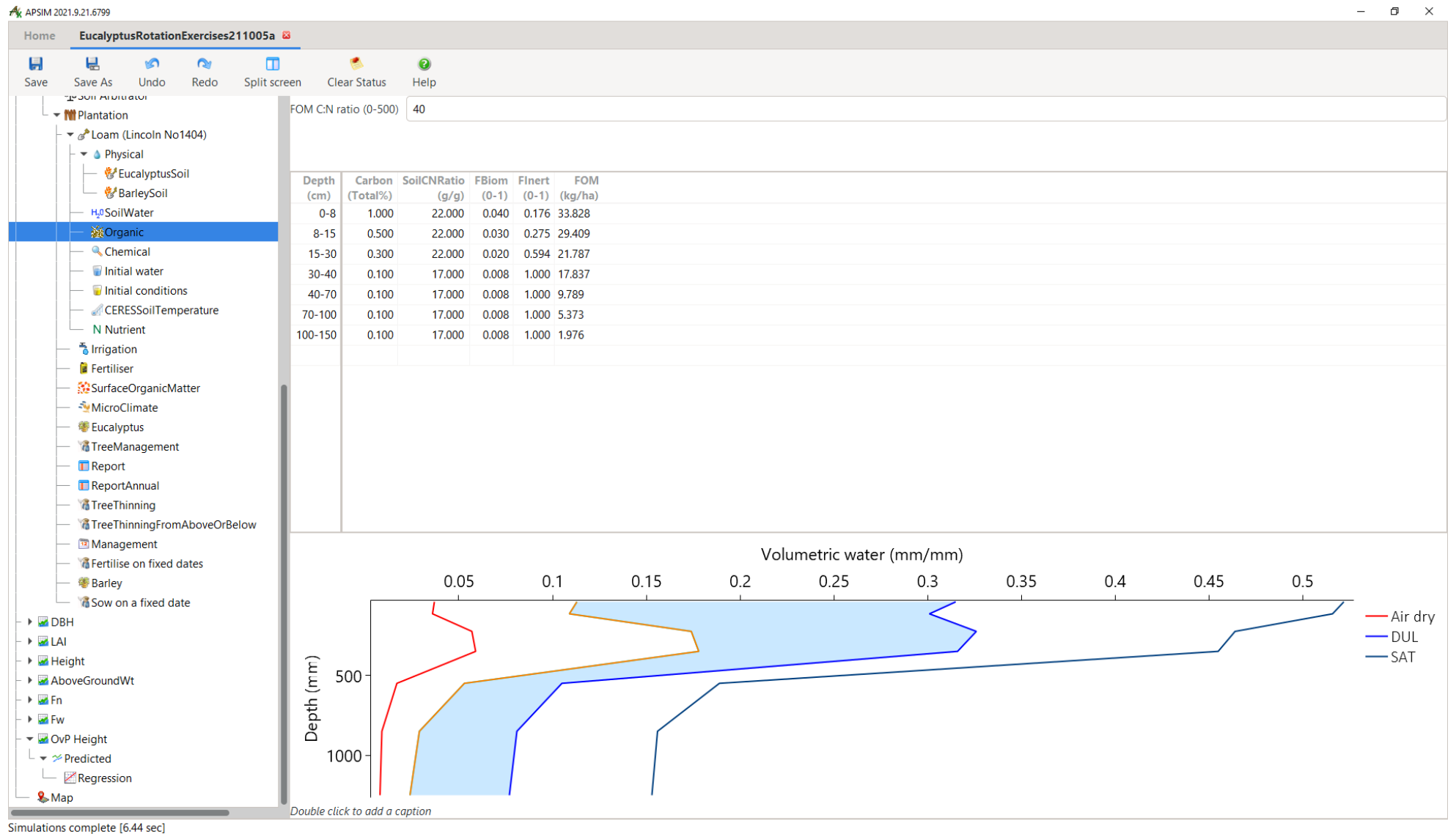


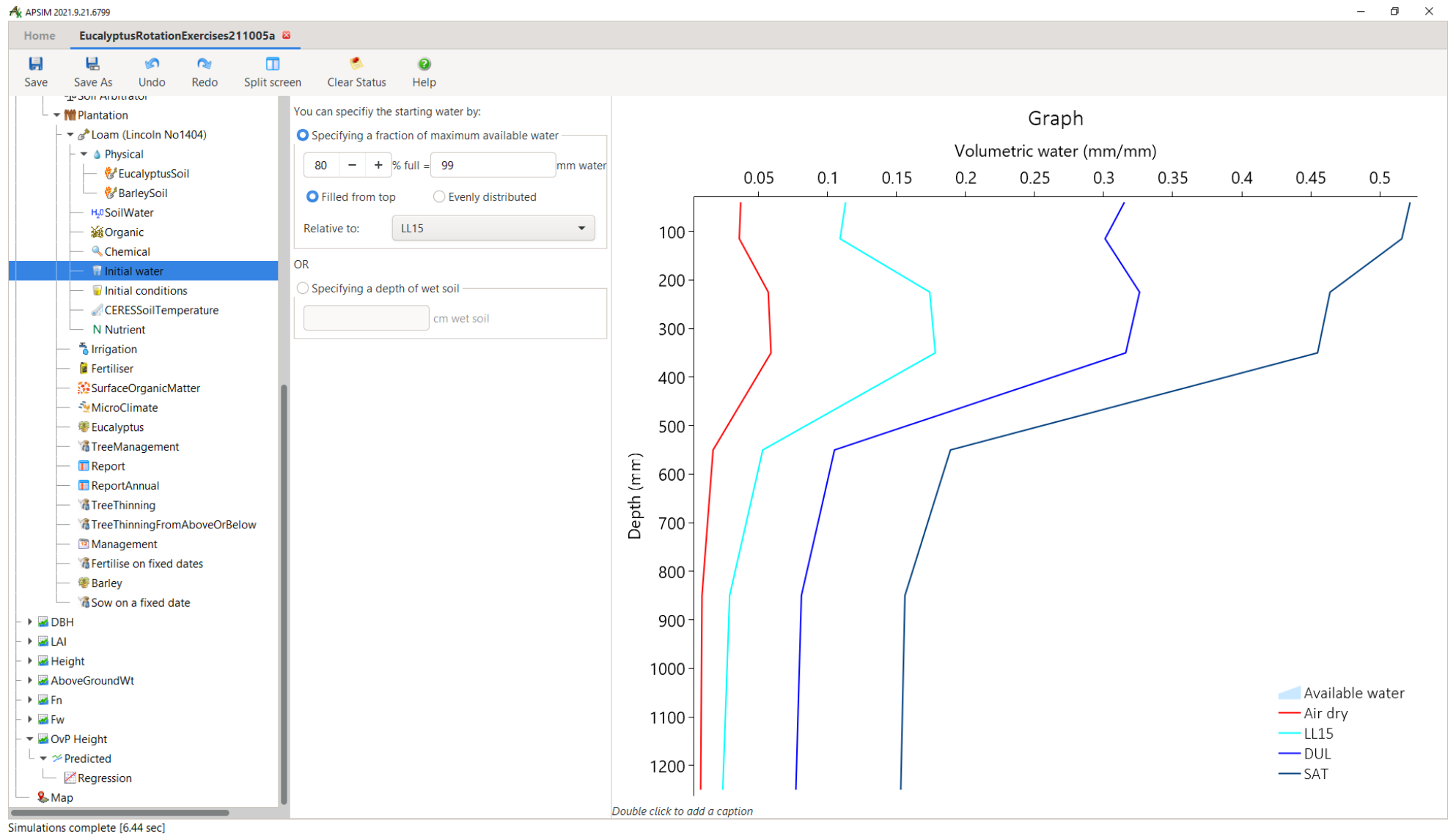
19h.



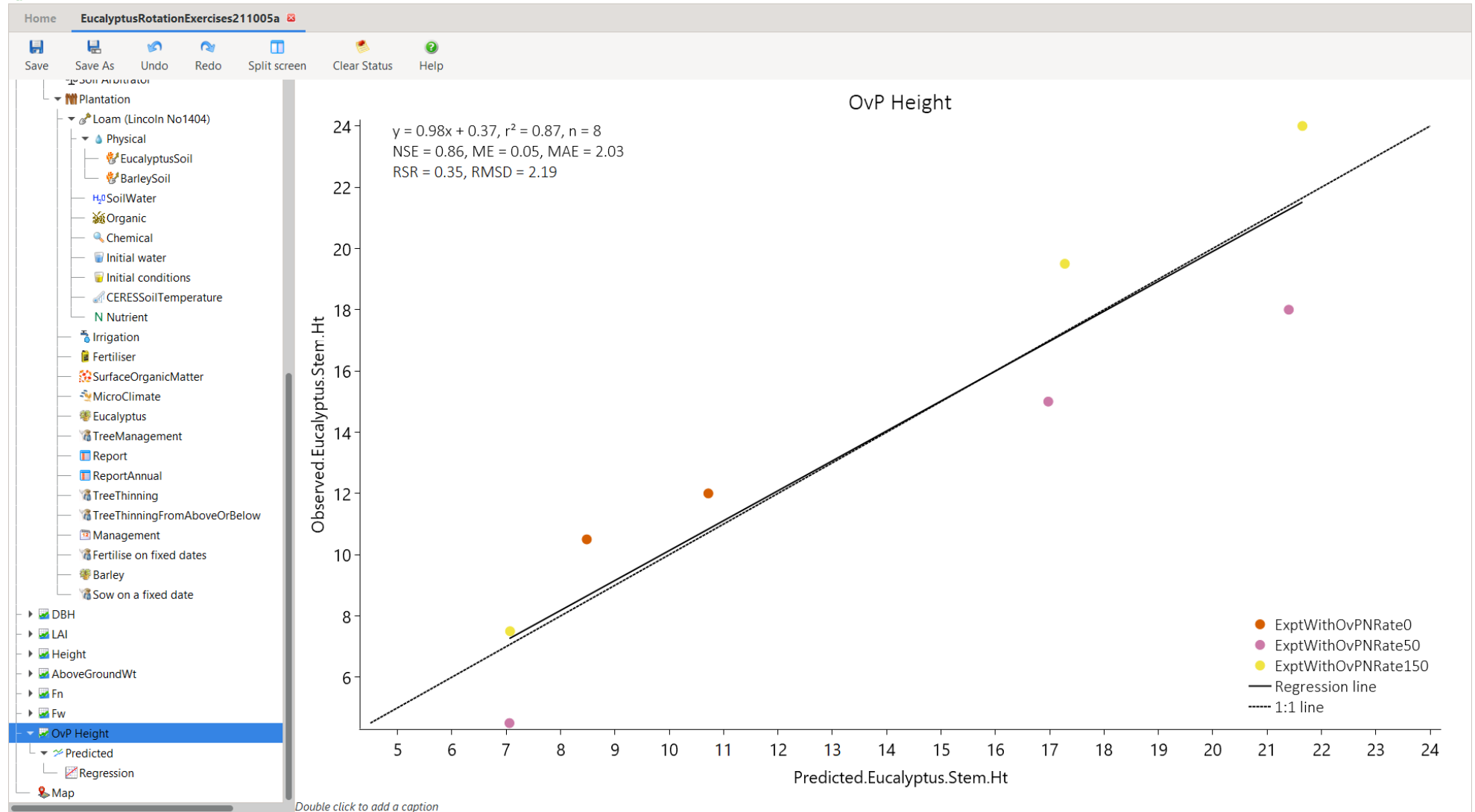
20d-f.











Simulations complete [6.44 sec]