

Short Rotation Coppice & Short Rotation Forestry Trials



SRC Willow

Date Planted: March 2015

Area: 0.68 hectares

How planted: 40 cm setts planted through geotextile membrane

Stocking rate: 10,000 plants per hectare

Planting dimensions: 2m between rows; 0.5m between plants in the row

Establishment success: ~97%

Number of varieties: 29 - includes representatives from all four European breeding programmes

Replication: 4 replicates of each variety

Number of plants per block: 40 (four rows of 10)

Names of varieties:

Lantmännen (Sweden): Inger; Klara; Linnéa; Olof; Loden; Stina; Sven; Tora; Tordis; Torhild

European Willow Breeding Partnership (UK/Sweden): Advance; Beagle; Endurance; Endeavour; Meteor; Resolution; Terra Nova; Discovery; Ashton Stott

Rothamsted Research (UK): Roth Cheviot; Roth Chiltern; Roth Cotswold; Roth Hambleton; Roth Mourne

EWB (Sweden) Erik; Esther; Wilhelm; Winter

One other variety from Germany: Drago

Estimated yields:

Variety	Avg stems per stool	Avg stem diameter (mm)	Avg height (m)	Avg per stool (green kg)	Moisture content at harvesting	Estimated Avg yield (oven dry tonnes/ha/yr)
Endurance	7.1	24.4	9.5	18.15	50%	11.34
Esther	6.0	24.9	8.5	13.50	45%	7.64
Olof	5.1	22.1	9.3	13.31	45%	7.44
Roth Cheviot	4.8	24.4	9.3	13.19	47%	7.71

Yield estimation: Four representative varieties (one from each breeding programme) were measured with calipers (stem diameters at 1m height). The same blocks were destructively harvested with electric chainsaws and weighed.

Highest yielding variety: Endurance

Estimated yield across the whole plot: 68 boiler ready tonnes (30% moisture content)



SRC Poplar

Date Planted: March 2015

Area: 0.18 hectares

How planted: 30 cm setts planted through geotextile membrane

Stocking rate: 6,000 plants per hectare

Planting dimensions: 3m between rows; 0.5m between plants in the row

Establishment success: ~93%

Number of varieties: 6

Names of varieties:

Alasia (Italy): AF13; AF16 and AF18

Lignovis (Germany): Max 1; Max 4 and Hybride 275

Replication: 4 replicates of each variety

Number of plants per block: 40 (four rows of 10)

Estimated yields:

Variety	Avg stem diameter (mm)	Avg height (m)	Avg per plant (green kg)	Estimated Avg yield (oven dry tonnes/ha/yr)*
AF13	88.9	13	44.2	15.1
AF16	89.4	12	40.6	13.8
AF18	86.2	12	48.2	16.4
Max 1	85.7	14	55.5	18.9
Hybride 275	97.6	13	60.3	20.6
Max 4	88.8	12	51.0	17.4

Yield estimation: The central two blocks of each plot were measured with calipers (stem diameters at breast height 1.37m). The outward row at the top and bottom of the plot were destructively harvested with electric chainsaws. The stem wood and brash components were weighed.

Highest yielding variety: Hybride 275

Estimated yield across the whole plot: 33 boiler ready tonnes (30% moisture content)

Stem wood to brash ratio: 72 : 28

* Assumes 50% moisture content at harvesting



SRF Poplar

Date Planted: March 2015

Area: 0.14 hectares

How planted: 1.2 m long rods planted through geotextile membrane

Stocking rate: 1,667 plants per hectare

Planting dimensions: 3m between rows; 2m between plants in the row

Establishment success: ~95%

Number of varieties: 6

Names of varieties:

Alasia (Italy): AF13; AF16 and AF18

Lignovis (Germany): Max 1; Max 4 and Hybride 275

Replication: None – single block of each variety

Number of plants per block: 40 (four rows of 10)

Estimated yields:

Variety	Avg stem diameter (mm)	Avg height (m)	Avg per plant (green kg)	Estimated Avg yield (oven dry tonnes/ha/yr)*
AF13	/	Not Measured	/	/
AF16	116.8		131.7	13.72
AF18	148.1		122.9	12.80
Max 1	119.8		138.7	14.45
Hybride 275	139.2		149.8	15.61
Max 4	/		/	/

Yield estimation: The central two blocks of each plot were measured with calipers (stem diameters at breast height 1.37m). The outward row at the top and bottom of the plot were destructively harvested with electric chainsaws. The stem wood and brash components were weighed.

Highest yielding variety: Hybride 275

Estimated yield across the whole plot: 21 boiler ready tonnes (30% moisture content)

Stem wood to brash ratio: 70 : 30

* Assumes 50% moisture content at harvesting

NB: Treat yield data with a degree of caution as fewer trees were measured to arrive at these conclusions.



SRF Eucalyptus

Date Planted: April 2015

Area: 0.10 hectares

How planted: 20 cm plug plants (3 rows were planted straight into soil and 7 rows planted through geotextile membrane)

Stocking rate: 1,667 plants per hectare

Planting dimensions: 3m between rows; 2m between plants in the row

Establishment success: ~93% (95% with membrane; 87% with no membrane)

Estimated yields:

Variety	Avg stem diameter (mm)	Avg height (m)	Avg per plant (green kg)	Estimated Avg yield (oven dry tonnes/ha/yr)*
E. glaucescens (with membrane)	189.9	12	87.4	10.7
E. glaucescens (no membrane)	112.3	10		

Yield estimation: All trees were measured with calipers (stem diameters at breast height 1.37m). The outward row at the top and bottom of the plot were destructively harvested with electric chainsaws. The stem wood and brash components were weighed.

Estimated yield across the whole plot: 12 boiler ready tonnes (30% moisture content)

Stem wood to brash ratio: 71 : 29

* Assumes 50% moisture content at harvesting

NB: Treat yield data with a degree of caution as fewer trees were measured to arrive at these conclusions.



BIOFORCE Project:



BIOFORCE (BIOMass FORestry CrEation) - Creating geospatial data systems to upscale national forestry-based biomass production. Led by Verna Earth Solutions Ltd., the project aims to create and demonstrate new, upgraded versions of Forest Research's industry standard ecological site classification (ESC) tool, and Verna's successful ForestFounder system.



Bio Global Industries (BGI) is one of 8 Biomass Connect hub sites across the UK. Along with the existing plantations of Willow, Poplar and Eucalyptus, other biomass crops will be planted during spring 2023 including SRC Willow and Poplar, SRF Poplar, Eucalyptus and Black Locust and the perennial grasses Miscanthus and Sida. For more information see: biomassconnect.org/hub-sites/bio-global-industries-bgi/



EnviroCrops - Perennial energy crops decision supportsystem: Led by Agri Food and Biosciences Institute, the project aims to develop a web app that enables farmers, land managers and consultants to make informed decisions about planting biomass crops. The BIOFORCE and EnviroCrops projects are working closely so that yield information is shared in both directions and both tools are making similar assumptions.



For more information on BioForce, Envirocrops and other Biomass Feedstocks Innovation Programme projects see: biomassconnect.org/feedstocks-projects/