SEEMLA Final Conference - Brussels - 20th November 2018

"Bioenergy production on MagL in pilot cases in Greece"

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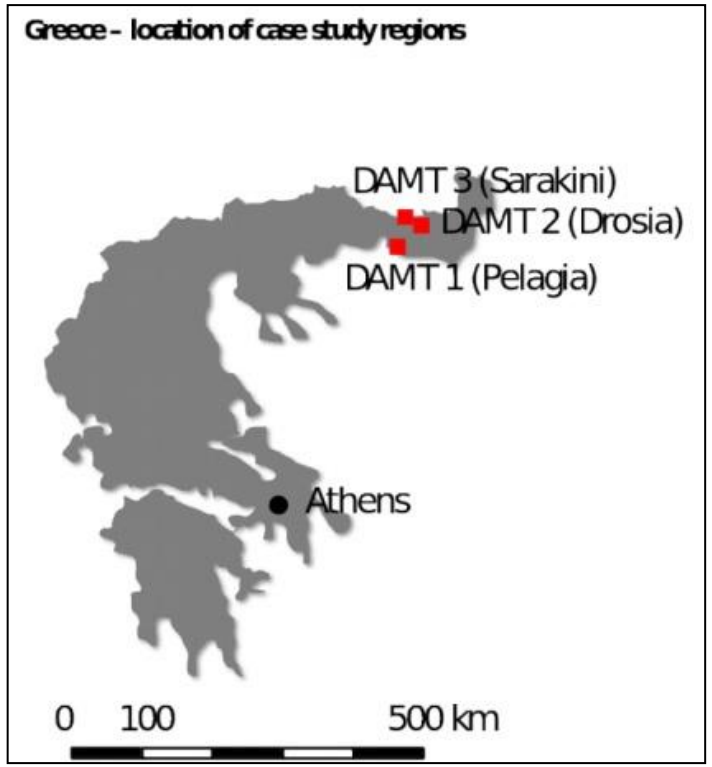
(Decentralized Administration Macedonia – Trace / DAMT)

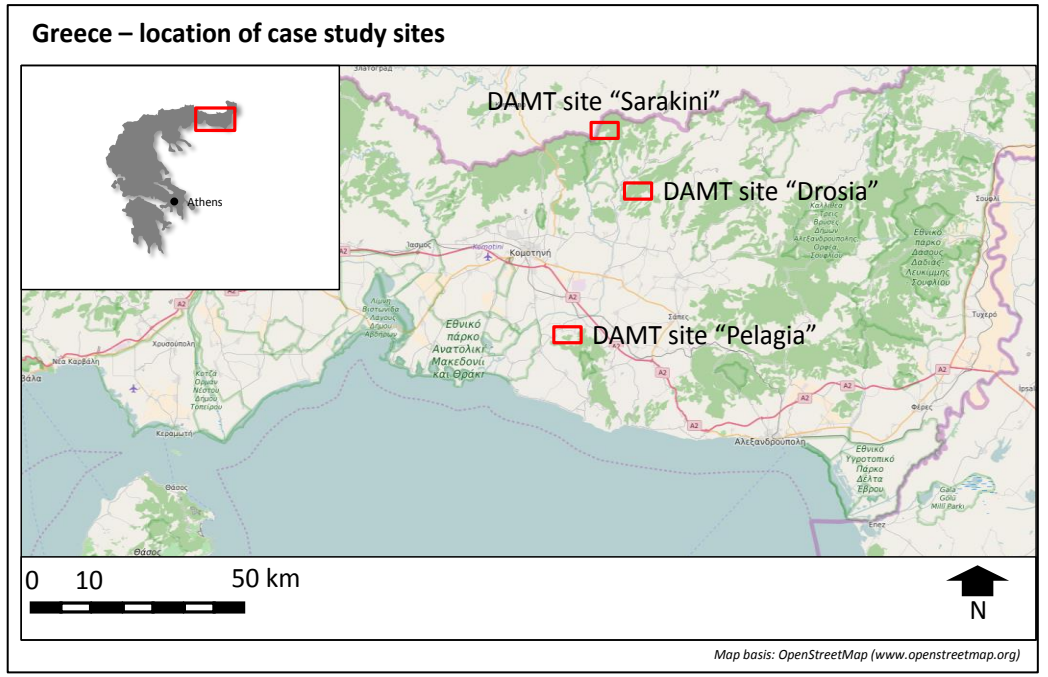
SeeMLa

Sustainable exploitation of biomass for bioenergy from marginal lands in Europe

Project coordinator
Partner
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691874

Case study sites in Greece





The SeeMLa study cases in Greece are located in the northeastern part of Greece, **in East Macedonia & Thrace region, in Rodopi prefecture.**

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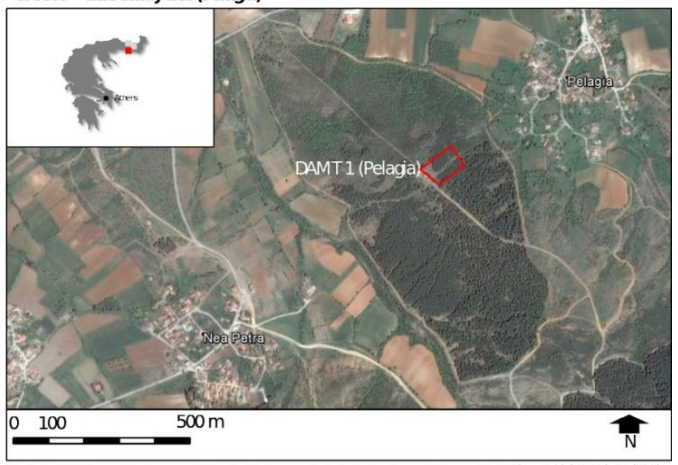
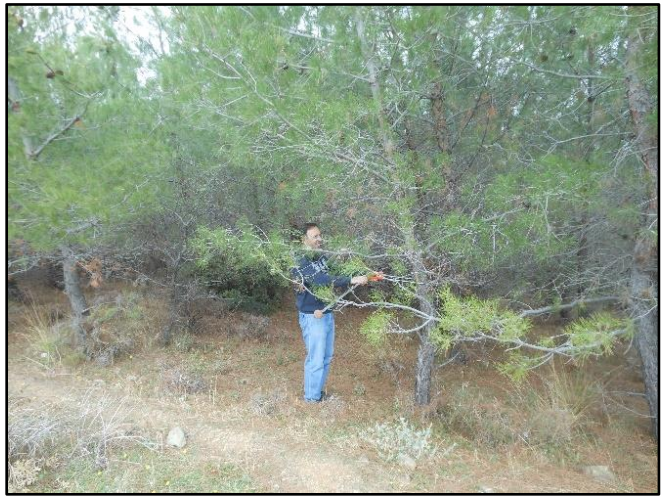
Greece – case study site (Pelagia)



DAMT Site "Pelagia"

Plot 1 is located in the south part of the Rodopi area, at an **altitude of 100 m**.

The current land use is forest land (artificial forest plantation - Pinus brutia) and **the former land use** was shrubs, bushes and grasslands.



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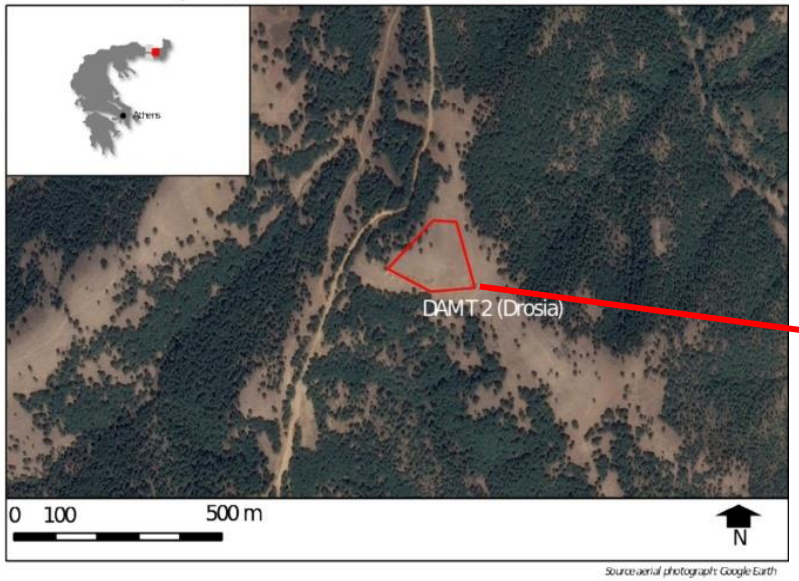
Greece – case study site (Drosia)



DAMT Site "Drosia"

Plot 2 is located in the middle of the Rodopi area **at an altitude of 600 m.**

The current land use is grassland and **the former land use** was grassland, pasture and occasional, limited cultivation.

Soils are of sandy or sandy-loamy texture.

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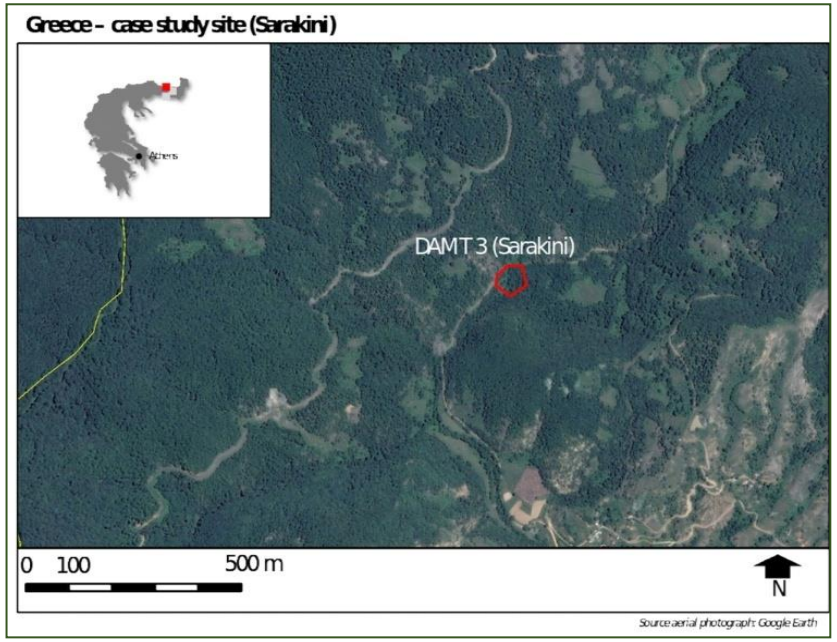

DAMT Site "Sarakini"

Plot 3 is located in the north part of Rodopi area, **at an altitude of 500 m.**

The current land use is an artificial plantation of Robinia pseudoacacia – black locust and **the former land use** was grassland, pasture and occasional, limited cultivation.

Soils are of sandy or sandy - loamy texture.

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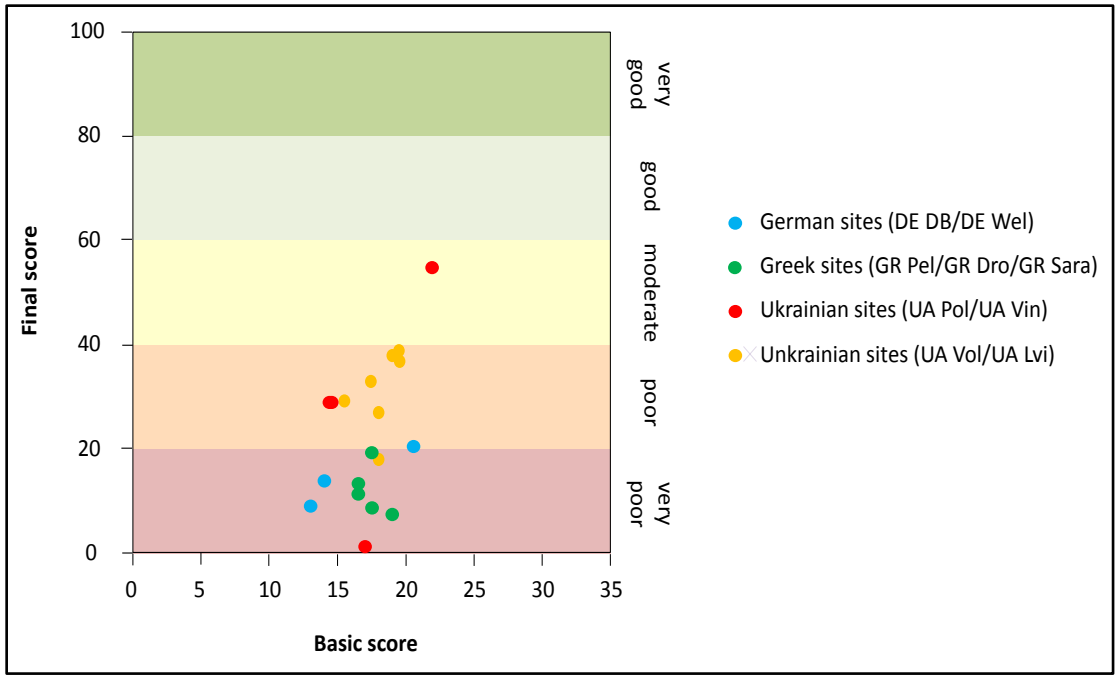
Results of SQR application at the pilot cases in Greece



Local name (village/ town)	Name of the site	Soil sample code	S.Q.R. Basic score	Hazard multiplier	Final rating score	Soil quality assessment
Pelagia	DAMT 1	GR Pel 1	19,0	0,4	7,6	very poor
		GR Pel 2	16,5	0,7	11,6	very poor
Drosia	DAMT 2	GR Dro 1	16,5	0,8	13,2	very poor
		GR Dro 2	17,5	0,5	8,8	very poor
Sarakini	DAMT 3	GR Sara 1	17,5	1,1	19,3	poor

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Activities

Establishment of a new plantation.

Monitoring and selective woodcuttings in nearby clusters of existing artificial forest plantation.

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DAMT Site "Drosia"

On this study case we were established a new plantation with the forest tree species of **Pinus nigra (Black pine)** and **Robinia pseudoacacia (Black locust).**

ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΑΠΟΚΕΝΤΡΩΜΕΝΗ ΔΙΟΙΚΗΣΗ ΜΑΚΕΔΟΝΙΑΣ - ΘΡΑΚΗΣ
ΓΕΝΙΚΗ ΔΙΕΥΘΥΝΣΗ ΔΑΣΩΝ κ΄ ΑΓΡΟΤΙΚΩΝ ΥΠΟΘΕΣΕΩΝ

ΕΙΔΙΚΗ ΔΑΣΟΤΕΧΝΙΚΗ ΜΕΛΕΤΗ

«Εγκατάστασης πειραματικής, πιλοτικής επιφάνειας προγράμματος SEEMLA - H2020 - LCE – 2014 -2015/ H2020-LCE-2015-3, στη δασική θέση «Μάνδρα», Τοπικής Κοινότητας Δροσιάς, Δημοτικής Ενότητας Φιλλύρας, Δήμου Αρριανών, της Περιφερειακής Ενότητας Ροδόπης».

«Δασική μελέτη εγκατάστασης πειραματικής, πιλοτικής επιφάνειας προγράμματος SEEMLA - H2020 - LCE – 2014 -2015/ H2020-LCE-2015-3, στη δασική θέση «Μάνδρα», Τοπικής Κοινότητας Δροσιάς, Δημοτικής Ενότητας Φιλλύρας, Δήμου Αρριανών, της Περιφερειακής Ενότητας Ροδόπης» - ΝΟΕΜΒΡΙΟΣ 2016.

1

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Pits formation - cleaning and irrigation

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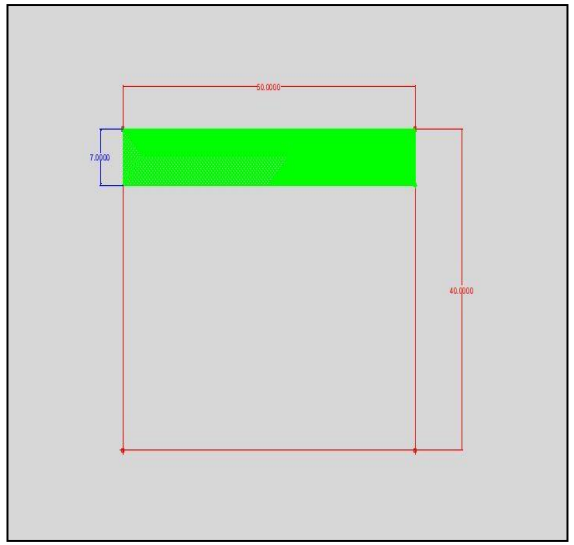
After the planting we selected **a monitoring plot** (50.0 m. X 7.0 m.) as representative sample of the plantation which is constituted of **sixty (60) trees**, **percentage about 7%** of the total number of this case study's plantation trees.



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Plantation monitoring

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Measurements in the new plantation

- Total number of trees (n)
- Survival rate (surviving trees / total trees per plot)
- Height (m)
- Stem diameter (mm)
- Height increase (%)
- Diameter increase (%)

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Monitoring

Black Locust measurements	
Total number of plantation trees (n) (11/2017 establishment)	320
Total number of existing trees (n) (monitoring 11/2018)	292
Survival rate	91%
Average Height (m) (monitoring 11/2018)	2.70m
Average Stem diameter (mm) (monitoring 11/2018)	19.71mm

Black Pine measurements	
Total number of plantation trees (n) (11/2017 of establishment)	570
Total number of existing trees (n) (monitoring 11/2018)	520
Survival rate	91%
Average Height (m) (monitoring 11/2018)	0.21m
Average Stem diameter (mm) (monitoring 11/2018)	6.42mm

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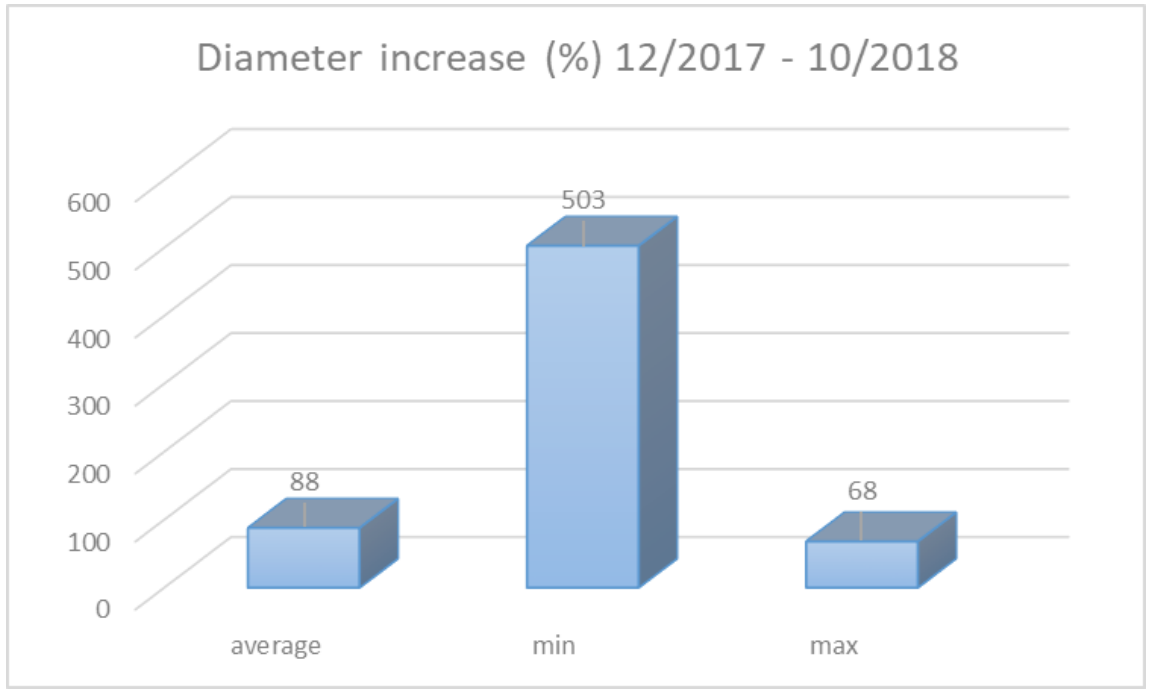
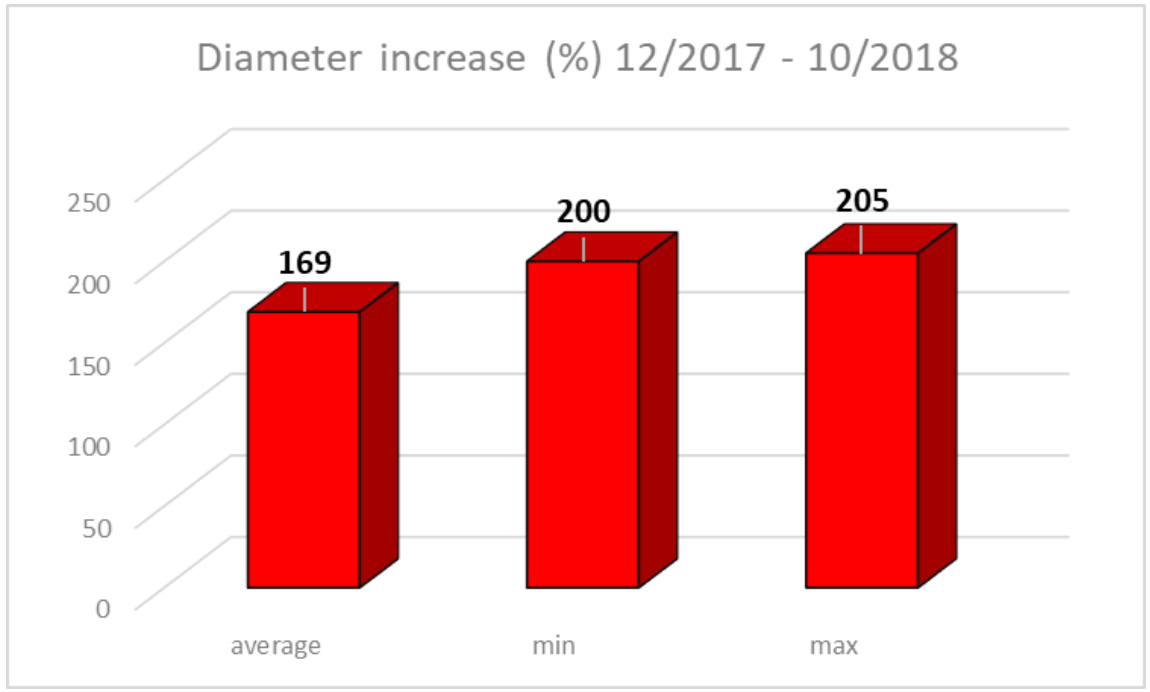
Diameter increase (%)

Black Locust



Black Pine



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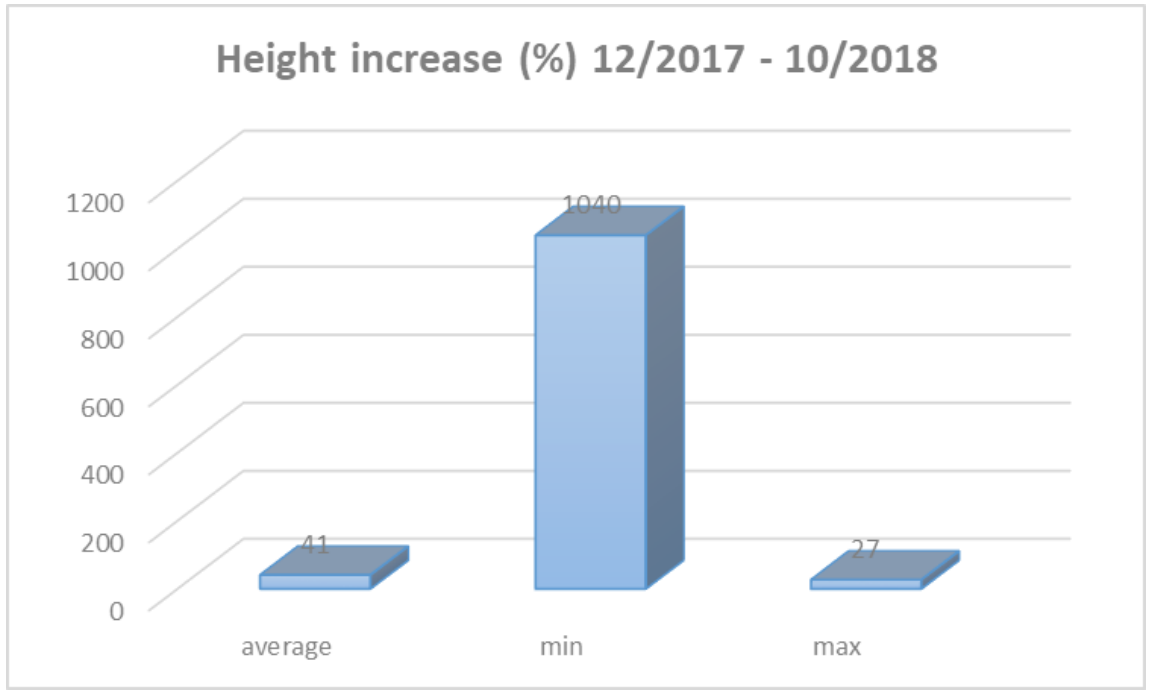
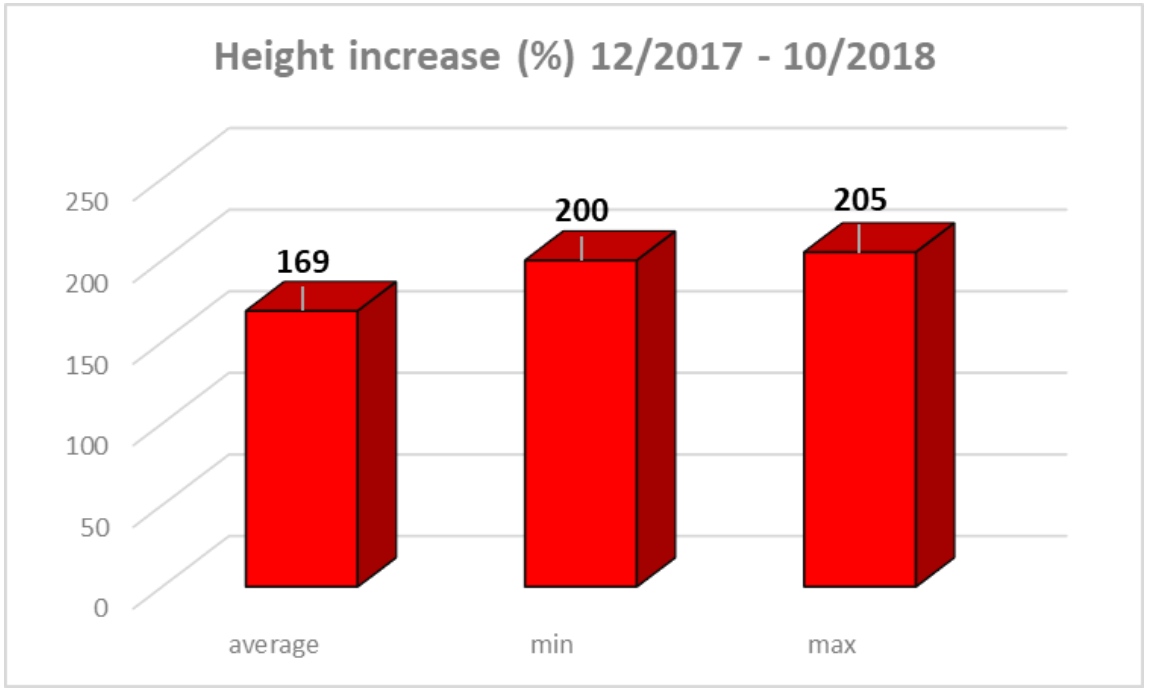
Height increase (%)

Black Locust



Black Pine



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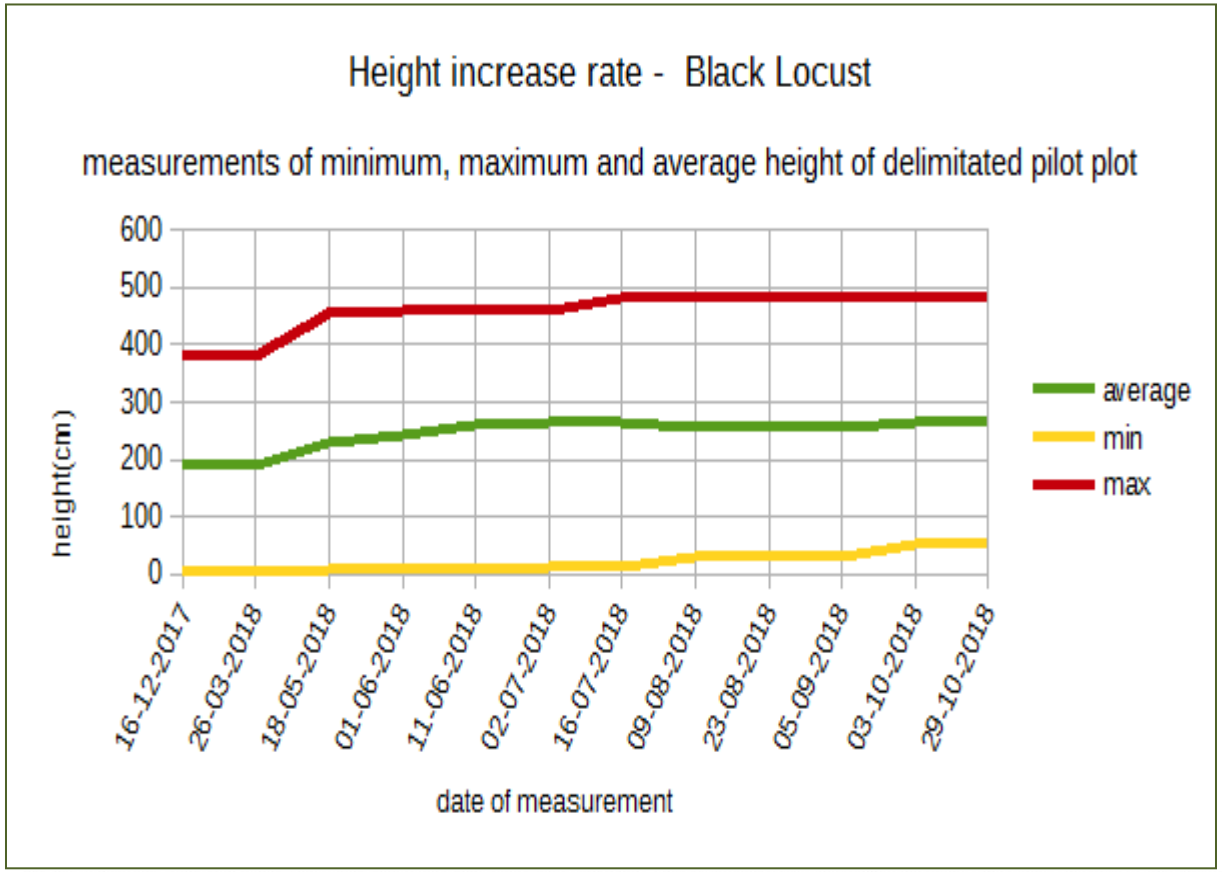
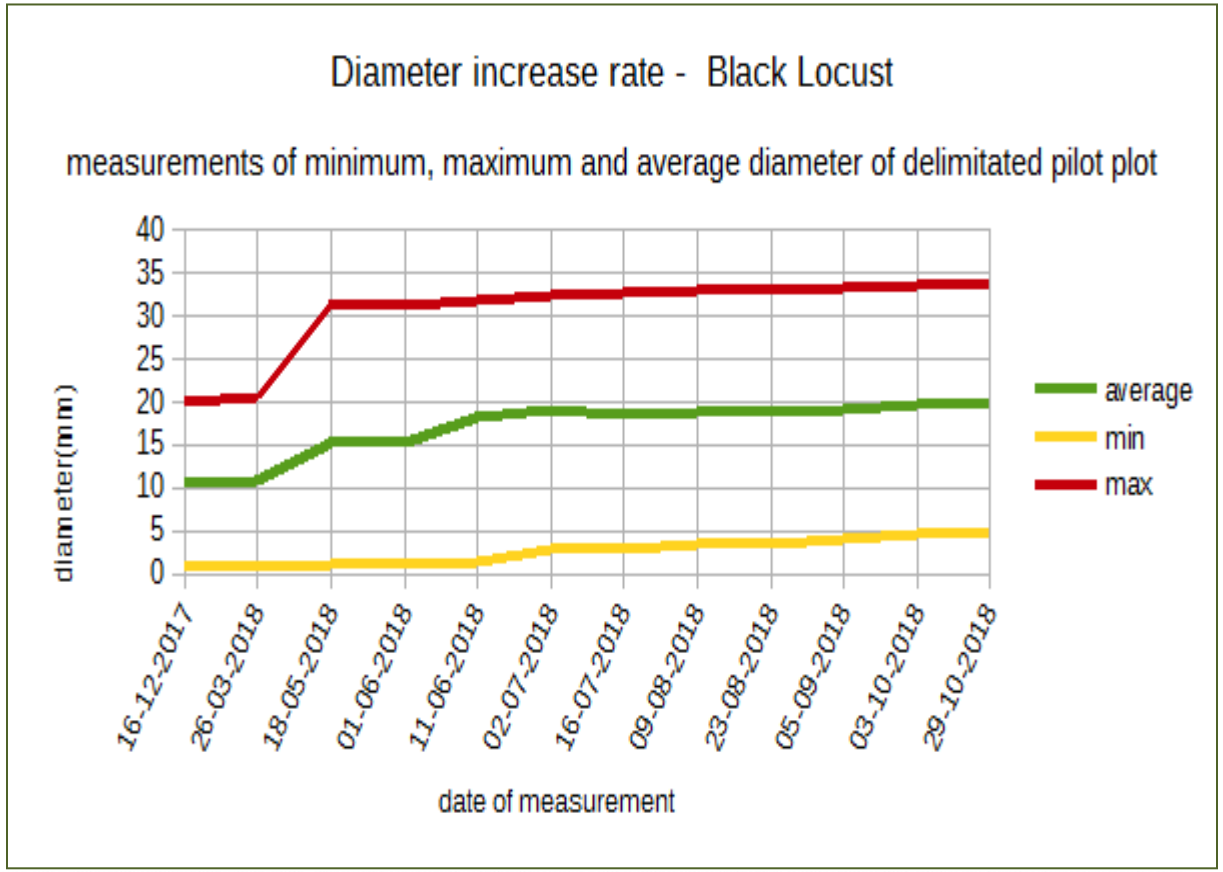
Black Locust





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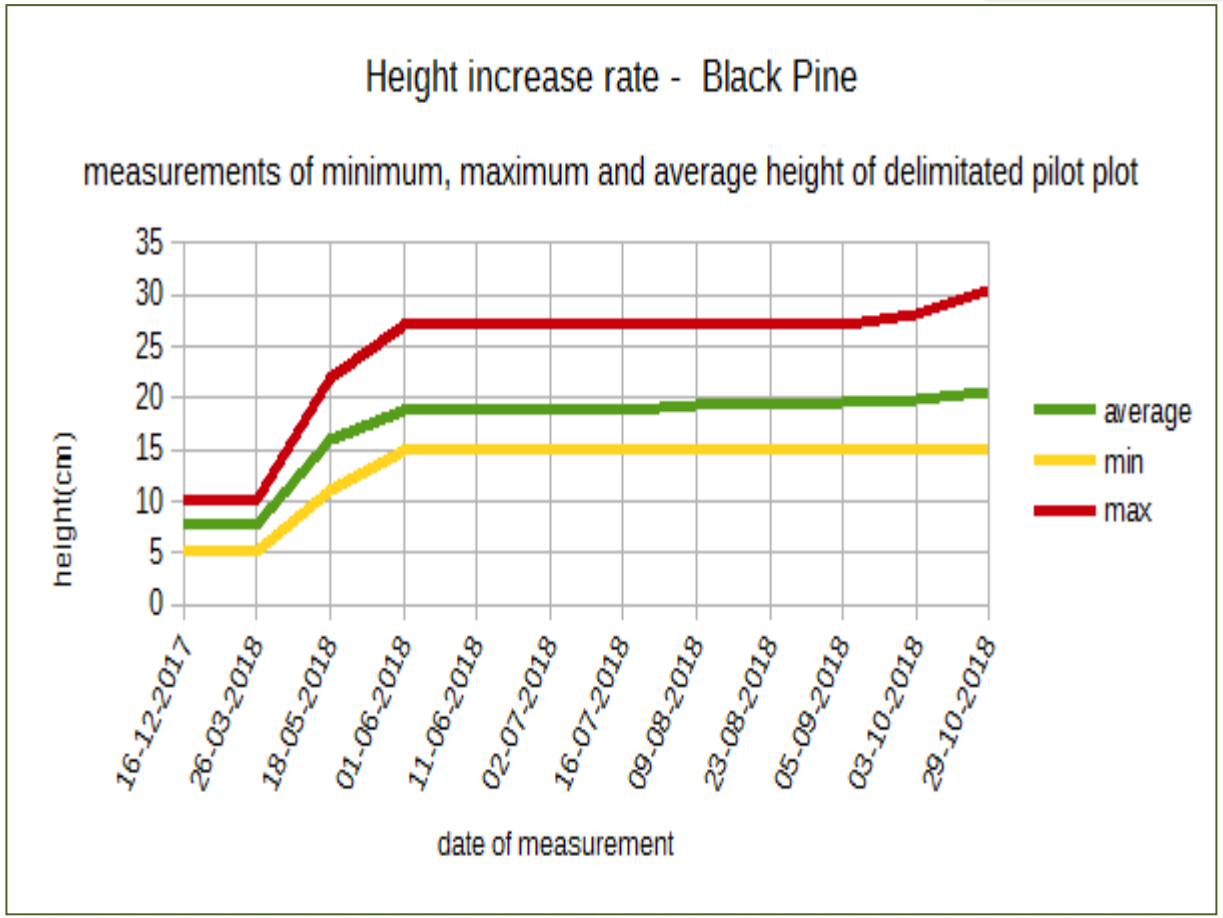
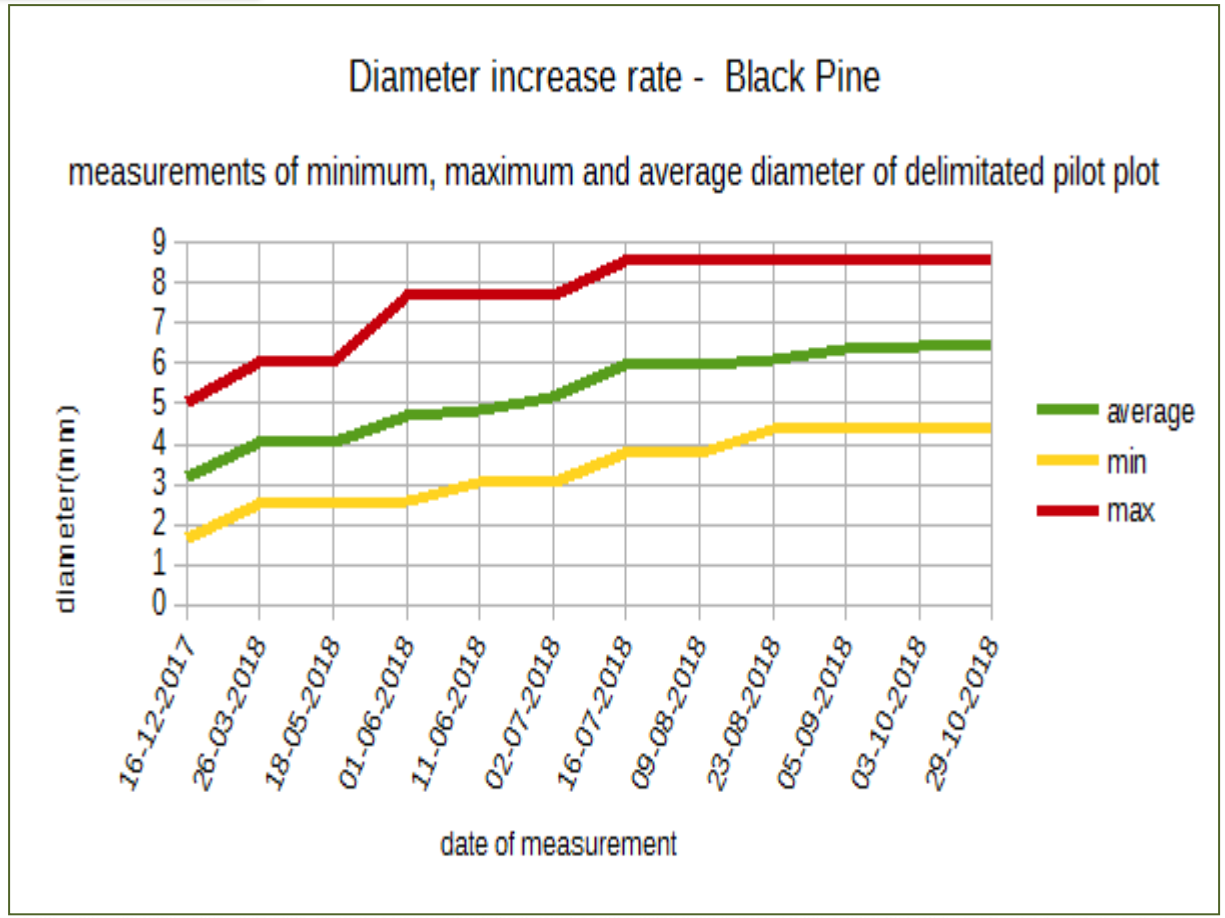
Black Pine





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Activities in clusters of existing artificial forest plantations

Selective woodcuttings and chipping in delimitated pilot plots

Wood production transferred to a wood processing industry company for pellet production

Wood items transferred to a laboratory for specialised measurements

Proceeded measurements – Statistical Analysis

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WOODCUTTING
in existing artificial forest plots

Wood slices from the woodcutting products for laboratory measurements and analysis

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CHIPPING

After woodcuttings, the woodcutting residues as well as branches with a diameter smaller than 0.06m were collected and crushed. Then were transferred along with the wood products to the wood processing industry company. A small quantity sent for laboratory measurements.

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Wood production assessment (size of area 0.1 ha)

Species	Pinus Brutia (Calabrian pine)		Pinus nigra (Black pine)		Robinia pseudoacacia (Black Locust)
Wood production (m3)	woodcuttings	chipping	woodcuttings	chipping	woodcuttings
	18.83	15.95	12.35	14.02	17.95

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PELLETIZING

ALFA WOOD GROUP
Enplus Wood Pellets

The wood production has been transferred to the biomass production unit of a wood processing industry company. (ALFA WOOD NEVROKOPI A.E.B.E. - Pellet and Briquette Industry - Greece).

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Analysis of pellet production cost (€ per tonne) of dry material

Process	Total cost per tonne of dry material
transfer of raw material	40 €/t
weighting – packing - conditioning - storage of finished product	24 €/t
cost of required working energy	20 €/t
other parameters*	76-86 €/t
estimated total cost of production of 1 ton of pellets	160-170 €/t

•other parameters = water (liters) required during production at all stages
cost of cleaning (working hours)
cost of cleaning (liter of fuel)
scrubbing frequency per year
cost of cleaning production line equipment (man-hours)
cost of cleaning production line equipment (liter of fuel)
production line cleaning frequency per year
cleaning costs of energy-burning equipment (working hours)
cleaning costs of energy production equipment - burner (liter of fuel)
frequency of cleaning energy-burning equipment per year

losses of raw material (in dry mass) 5% - 10%

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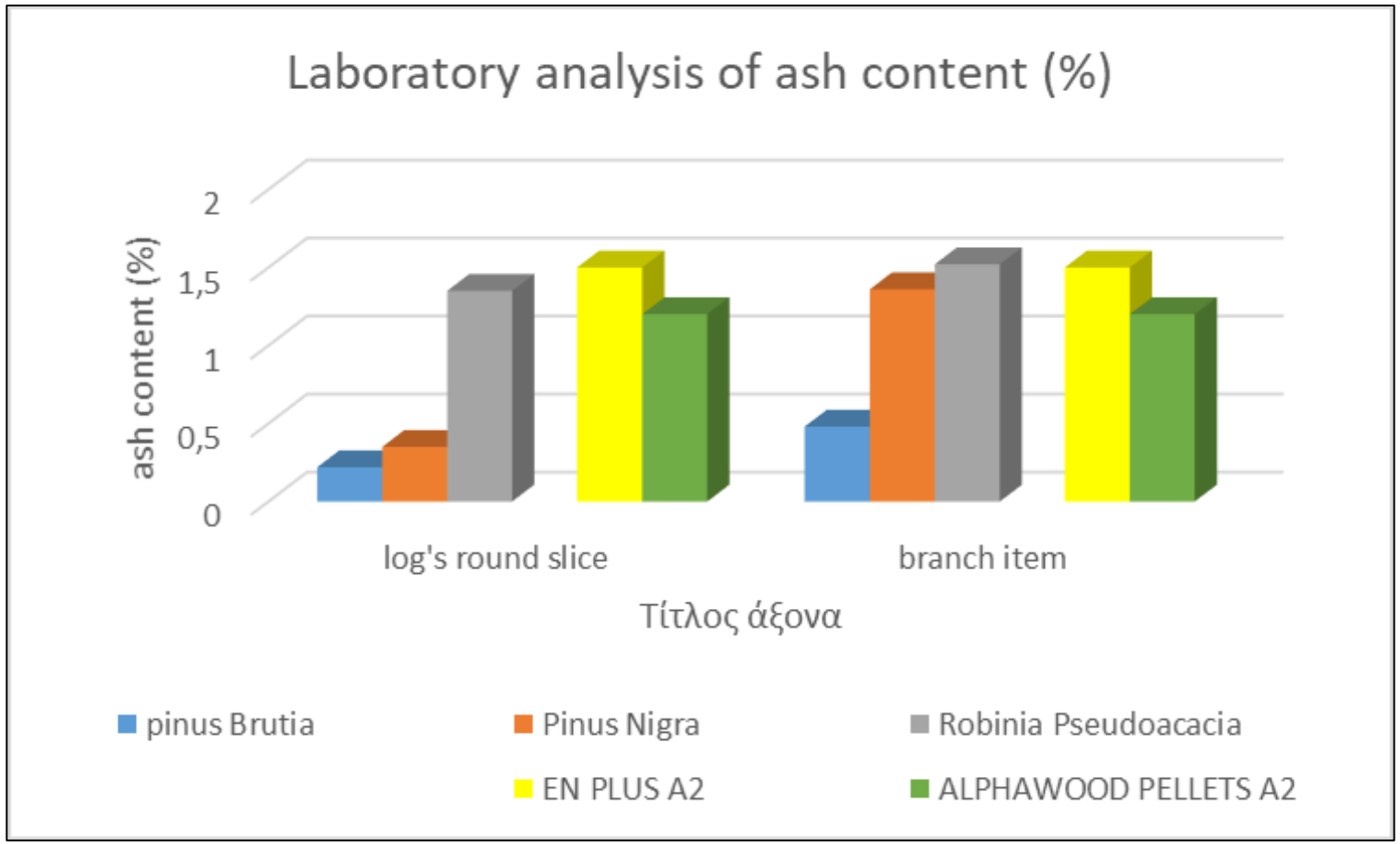
Laboratory analysis results



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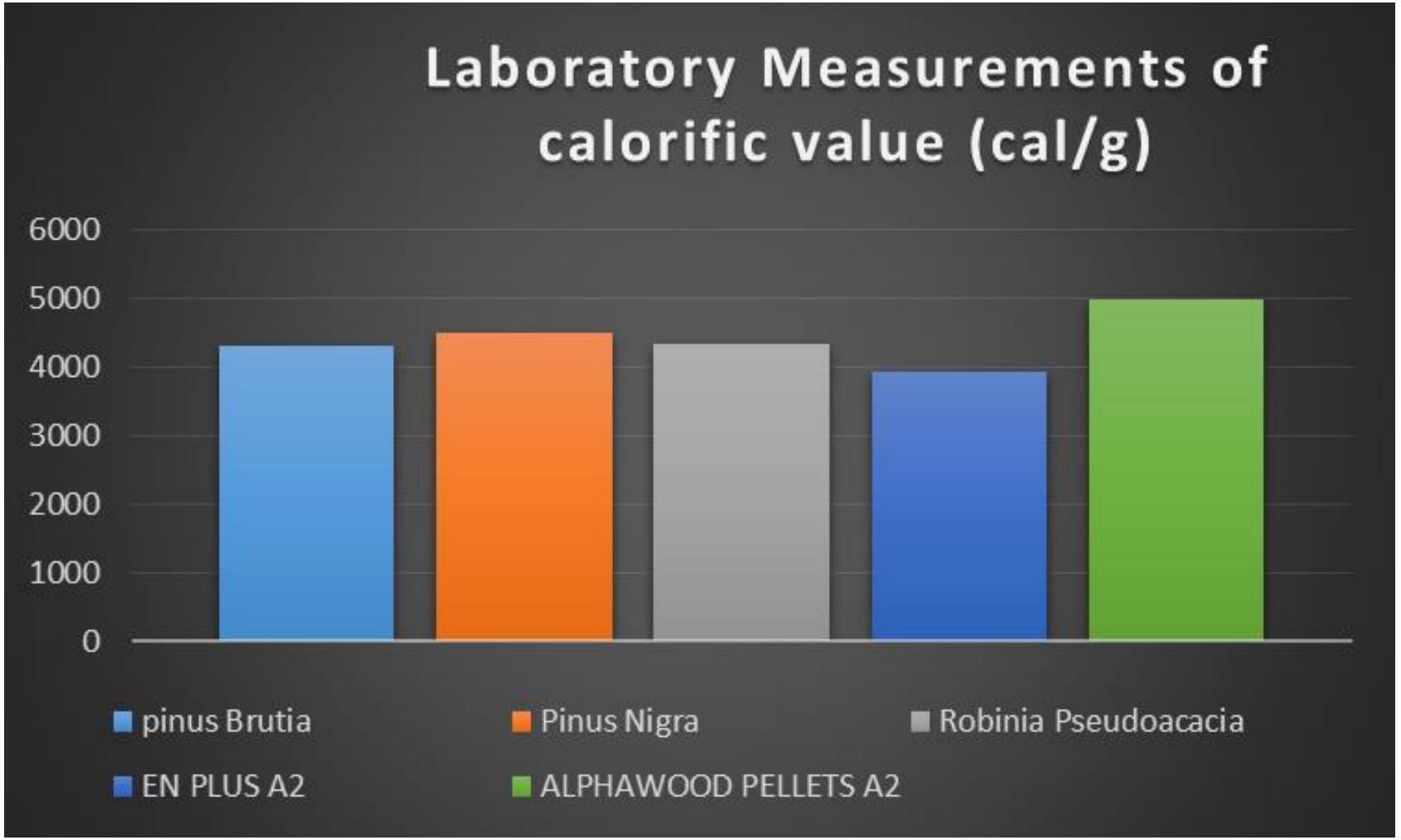

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Problems in planting activities

a. Weather conditions

a1. Due to the heavy winter and the bad weather conditions (snowfalls and very low temperatures -frost- for a long period) in the first planting period, and taking into account the duration of the vegetation growing period and the need for protecting the seedlings, we decided to postpone all the planting works for the next planting period (Oct – Nov 2017).

DAMT “Drosia” pilot area (Jan – Feb 2017)

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a2. In the spring of 2018 (April – May 2018) and the first days of June 2018 were observed intense phenomena of drought and high temperature.

Based to the climatic data it was observed, monthly rainfall 0.0 mm and highest temperature 32,8 ^{o}C and with a fluctuation between 28.5^{o}C and 33.0^{o}C for ten (10) consecutive days.

As a result was observed a risk of drought in plantation, but this overcame with irrigation.

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b. Pest existence

At the last days of April 2018 in certain plants of black locust we located gypsy moths (Limantria dispar).

After one month (end of May and first days of June 2018) in small number of black locust plants was observed the existence of a few stripped branches, because gypsy moths ate the leaves.

However gypsy moths started to migrate on trees of the surrounding forest vegetation with big growth (oaks) and the nymph begun shapes cocoon.

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Thank you for your attention

SeeMLa

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