



EU Berry 2011

WP2 - Improved cultivation techniques

EUBerry kick-off meeting
Brussels 26-28.9.2011



Task 2.1 Cultivation techniques for season extension (P1, P2, P6, P8, P9, P13, P14; Task Leader Pedro Bras de Oliveira P14)

Subtask 2.1.1. Controlling plant development for season extension P1, P2, P14, P6, P8-subcontract, P13

a) Strawberry

- (i) the time of runner tip rooting and transplanting
P6: trial planned
- (ii) regulated nutrient input, especially level and timing of nitrogen applications
P6 : trial started
- (iii) regulated water application
P2: with subtask 2.3.3 (one experiment).
- (iv) different varieties including day-neutral and short-day genotypes selected in WP1
- (v) different plant types including fresh and cold-stored plants
P2: 2011 – 1. Production of plant material for the experiment (1st series)
2. Preparation of the glasshouse infrastructure

D2.2) Plant architecture: Develop methods to modify strawberry plant architecture in nursery production (P1,P2, P6, P8, P9, P14), month 34]

- (vi) different temperature conditions and chilling requirements
- (vii) different light conditions utilizing light-emitting diode (LED) technology

P2: 1. Production of plant material for the experiment (1st series)
2. Preparation of the glasshouse infrastructure

D2.1 Develop method to use LED: Develop method to use LEDs in tunnels for strawberry and raspberry (P8) [month 22]

- (viii) novel soilless plant propagation method in greenhouse to produce plants for cold-storing

P2: 1. Production of plant material for the glasshouse experiment (1st series)
2. Preparation of the glasshouse infrastructure

D2.3 - Methods for improved propagation, plant protection and resource use efficiency in berry (P1, P2, P6, P7, P8, P9, P11, P13, P14,). [month 36]

b) Raspberry and Blackberry (with Subcontract)

i) Season extension of late-season (i.e. primocane) fruiting raspberry,

P2- Subcontract P2: : experiment in progress, established – autumn
2010 :2011 – first results have been collected

(ii) Blackberry production in mild winter climate P14

P14 : Early and late production - work started

c) Blueberry. A method for the off-season production of blueberry in South P14

**D2.5 - Develop method for crop season extension of raspberry in C and N
Europe and blackberry and blueberry in S Europe (P2, P8, P14,) [month 40].**

Sub-task 2.1.2. Determining economical methods to modify growth conditions for season extension (P1, P2, P8,P9, P11, P13, P14)

a)The best type of tunnel and covering properties

P 9: calculations ready

b) The ventilation system will be optimised

P 9: calculations ready

c) Cultivation scheme (timing) to minimize the requirement for additional climatisation (P 9,P14)

P9: calculations ready

d) The selected types of tunnels tested in trials set up at the commercial production level P1, P 9 , P13

P1, P13: trial starts 2012

D2.4- Season production extension: Methods to modify growth conditions in tunnels for season extension (P1,P2, P11, P13, P14). [month 38]

e) The use of light-emitting diodes (LED) light sources

P8: trial started

D2.1- Develop method to use LED: Develop method to use LEDs in tunnels for strawberry and raspberry (P8) [month 22]

Task 2.2 Ensuring profitable berry production in changing climate (P1, P2, P7, P8, P10, P13 SME and P14.

Task Leader Rolf Nestby P8)

Sub-task 2.2.1 Developing technology to control temperature stress in berry plants

a) Summer production of berries in Southern–Central European areas

P1, P13: trials start 2012

D2.2- Plant architecture: Develop methods to to avoid summer hot temperature for strawberry and raspberry in S Europe (P1, P13,P14) month 34]

b.) Methodology to prevent low temperature injuries

- (i) For raspberry, a winter protection system against frost injuries for polytunnel cultivation

P8: LTS in frutocane raspberries, work started 2011

- (ii) A low-cost device to control spring frosts

P7- subcontract: developing and calibrating the device

P2: 1. Production of plant material for the experiments

2. Field preparation including soil disinfection

D2.1 Develop methods to avoid frost injury in berry plants (P7, P8) [month 22]

Sub-task 2.2.2 Identifying the impact of changing climate on perennial berry plants (P7, P8, P10, P14)

a) Raspberry.

(i) The influence of different climate conditions on cultivation techniques developed for raspberry production in Southern and Central Europe

P10: Late production with primocane-fruited cultivars – trial started

P10: Early production with long canes (Spring) in a greenhouse- trial started

P10: Late production with long canes (Autumn)- trial started

(ii) The effect of autumn temperatures on yield parameters for raspberry cultivars suitable for protected cultivation in the Northern Europe

P8: Plant physiology/flower development- active this year

D2.2- Understanding of berry physiology affected by environment in C and S Europe (P14, P10), flower-bud differentiation and chilling requirement (P8) [month 34]

b) Blackcurrant. Effects of autumn temperatures on phenological characters of blackcurrant genotypes

D2.2) flower-bud differentiation and chilling requirement (P8) [month 34]

c) Blueberry.

(i) In the North, flower initiation and development on semi-highbush blueberry
P7 work in 2011

In a trial on high-bush blueberries, a walk-in plastic tunnel is used to mimic weather conditions related to climate change, i.e. higher growth temperatures. Preliminary observations were started in 2011.

The following parameters were observed:

- the timing of bud break, flowering, cropping, end of growth, leaf abscission;
- the quantity of flowers and berries
- shoot growth
- winter injuries
- occurrence of pests and diseases

(ii) European blueberry (*V. myrtillus*)

Task 2.3. Reducing environmental impact (P1, P2, P6, P7, P8, P9, P11- SME and P14; Task Leader Gijs van Kruistum P9)

Sub-task 2.3.1 Improved biocontrol and integrated pest management (P2, P7, P8, P9, P11, P14)

a) Developing IPM strategies to reduce the use of pesticides in berry production

(i) BestPractices, a methodology to reduce chemical input

P9: trial with IPM for Thrips, first results

(ii) Sustainable IPM strategies in strawberry and blackberry crops in the South

(iii) Rationalization of pest management in berry crops in glasshouse production

P2:1. Production of plant material for the glasshouse experiment (1st series)

D2.3- Propagation methods: Methods for plant protection in berry (P2, P8, P9,) [month 36]

b) Developing biological-based strategies for pesticide-free berry production

- (i) New concepts will be developed for low input integrated pest management
P7: trial with raspberry started with raspberry gall mite in tunnels and open field
- (ii) The effects of LED lights will be studied on the populations of arthropod pests and biocontrol agents
P8: work started
- (iii) A biocontrol system to reduce the use of pesticides on strawberry in the South
P11

D2.3- Propagation methods: Methods for improved plant protection use in berry (P7, P8, P11) [month 36]

Sub-task 2.3.2. Improved disease management by biocontrol and other sustainable methods (P 6, P7, P8, P 9,P11-SME,P14)

a) Developing IPM strategies for disease control to reduce fungicides in berry production

P9: trials started, first results obtained

b) Utilisation of beneficial microorganisms in biocontrol and increasing disease resistance.

P7: screening of micro-organisms (bacteria), trials started in greenhouse

c) Control of strawberry powdery mildew with new technology and Natural Defence Stimulators

(i) The control of strawberry powdery mildew (*Podosphaera aphanis*) disease with light duration and light quality: P8: work started

(ii) Natural Defence Stimulators (NDS) and sprinkler irrigation methods P 6, P11
P6: trials started with preliminary tests

d) Evaluation of diseases on blueberry in the South. P14

D2.3- Propagation methods: Methods for improved plant protection in berry (P6, P7, P8, P9, P11, P14) [month 36]

Sub-task 2.3.3. Improved substrate, nutrient and water use efficiency (P1, P2, P11 SME, P13 SME, P14)

a) Water and nutrient use efficiency and improved organic substrates of strawberry in Central and Southern Europe

- (i) To develop methods to identify strawberry cultivars that utilize water effectively,

P2: – 1. Production of plant material for the glasshouse experiment (1st series)

2. Production of plant material for the field experiment

3. Preparation of the glasshouse infrastructure

- (ii) The effect of increased temperature and reduced water availability

P1: experiment ready, results will be presented

- (iii) Nutrient use, especially nitrogen and phosphorous use in nursery cultivation

P1: trial started, preliminary results available, completed in 2012

- (iv) Renewable growth substrates

b) Nutrient and water use efficiency of raspberry

P1 P13: start in 2012

D2.3- Propagation methods: Methods for improved resource use efficiency in berry (P1, P2, P13) [month 36]