Universidad de Valladolid

Fundación General Universidad de Valladolid

The Green Deserts. Steering committee meeting. Barcelona 20-21 / 03 / 2012

ANALYSIS BY THE UVA TEAM FOR THE "GREEN DESERTS" PROJECT

Zacarías Clérigo Pérez
Fermín Garrido Laurnaga
Salvador Hernández Navarro
José Luis Marcos Robles
Luis Ortiz Sanz

E.T.S. Ingenierías Agrarias
Palencia, March 2012

Universidad de Valladolid

Background

The lasts months we have been focussing on monitoring the plantation while using the Waterboxx. The following OBJECTIVES are used in our research:

Plant Viability

1. Estimation of the plant viability by controlling the health status through field inspection

Control of the Waterboxx

2. Visits to the field to observe the status of the Waterboxx and to check possible problems

Climatological study

3. Register the temperature, humidity inside- and outside the Waterboxx.
Installation of field recorders

Improvement in the design of the remote sensing control

4. Improvements in the design camera support

OBJECTIVE 1: Estimation of the plant viability

Plant Viability

METHODOLOGY:

- Random sampling of 5 to 10% of the plants
- Precise location and identification by GPS
- Parameters:
  - vigor (activity)
  - height of the plant
  - a biotic damages
  - defoliation percentage
  - Temperature and water height in the Waterboxx

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

RESULTS:

- Damage by frost and low temperatures:
  - Reversible damage in the plants with the Waterboxx
  - Irreversible damage in the control plants
- Damage by wildlife: moles and rabbits
  - High percentage of death control plants
  - Low percentage of death plants with the Waterboxx

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

DAMAGE BY FROST AND LOW TEMPERATURES IN RIOFRÍO DE ALISTE

- Damage in control plants:
  - Most of the control plants have disappeared

- Damage in plants with the Waterboxx:
  - Most of the plants with the Waterboxx looked dry and some even death caused by frosts (close to -10º C)

  - Once checked inside the Waterboxx we observed that the plants were green inside because they are protected. Therefore, we expect that the plants will recover during spring.

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

DAMAGE BY WILDLIFE: MOLES AND RABBITS IN MATALLANA

- Damage in control plants:
  - Most of the control plants have suffered irreversible damages Plants have disappeared or have been cut at the superior part
  - Only in special cases the plant have been cut the sprout

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

DAMAGE BY WILDLIFE: MOLES AND RABBITS IN MATALLANA

- Damage in plants with the Waterboxx:
  - Number of attacks is much less
  - Most of the damage have been caused by the moles. They have digged galleries below the boxes and came inside

OBJECTIVE 1: Estimation of the Plants viability

Plants viability

Universidad de Valladolid

Background

The lasts months we have been focussing on monitoring the plantation while using the Waterboxx. The following OBJECTIVES are used in our research:

- **Plant Viability**
  1. Estimation of the plant viability by controlling the health status through field inspection
- **Control of the Waterboxx**
  2. Visits to the field to observe the status of the Waterboxx and to check possible problems
- **Climatological study**
  3. Register the temperature, humidity inside- and outside the Waterboxx.
  Installation of field recorders
- **Improvement in the design of the remote sensing control**
  4. Improvements in the design camera support

OBJECTIVE 2: Control the status of the Waterboxx

Control of the Waterboxx

- Most of the Waterboxxes are in perfect conditions and are full with water

- Problems observed (already known):

  - Algae inside the boxes
  - Open Waterboxx by wrong installation or ice effect
  - Clogged holes by accumulation of dead leaves and mud

  - Wicks destroyed by moles

OBJECTIVE 2: Control the status of the Waterboxx

Control of the Waterboxx

Universidad de Valladolid

The lasts months we have been focussing on monitoring the plantation while using the Waterboxx. The following OBJECTIVES are used in our research:

Plant Viability	1. Estimation of the plant viability by controlling the health status through field inspection
Control of the Waterboxx	2. Visits to the field to observe the status of the Waterboxx and to check possible problems
Climatological study	3. Register the temperature, humidity inside- and outside the Waterboxx. Installation of field recorders
Improvement in the design of the remote sensing control	4. Improvements in the design camera support

OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

METHODOLOGY:

- Recorders are installed in the different plots. Inside and outside the Waterboxx
- Maintenance and control of the data
- Results interpretation

OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatologicalal study

TEMPERATURE (º C)

COMPARISON BETWEEN TWO SAMPLES INSIDE AND OUTSIDE THE WATERBOXX

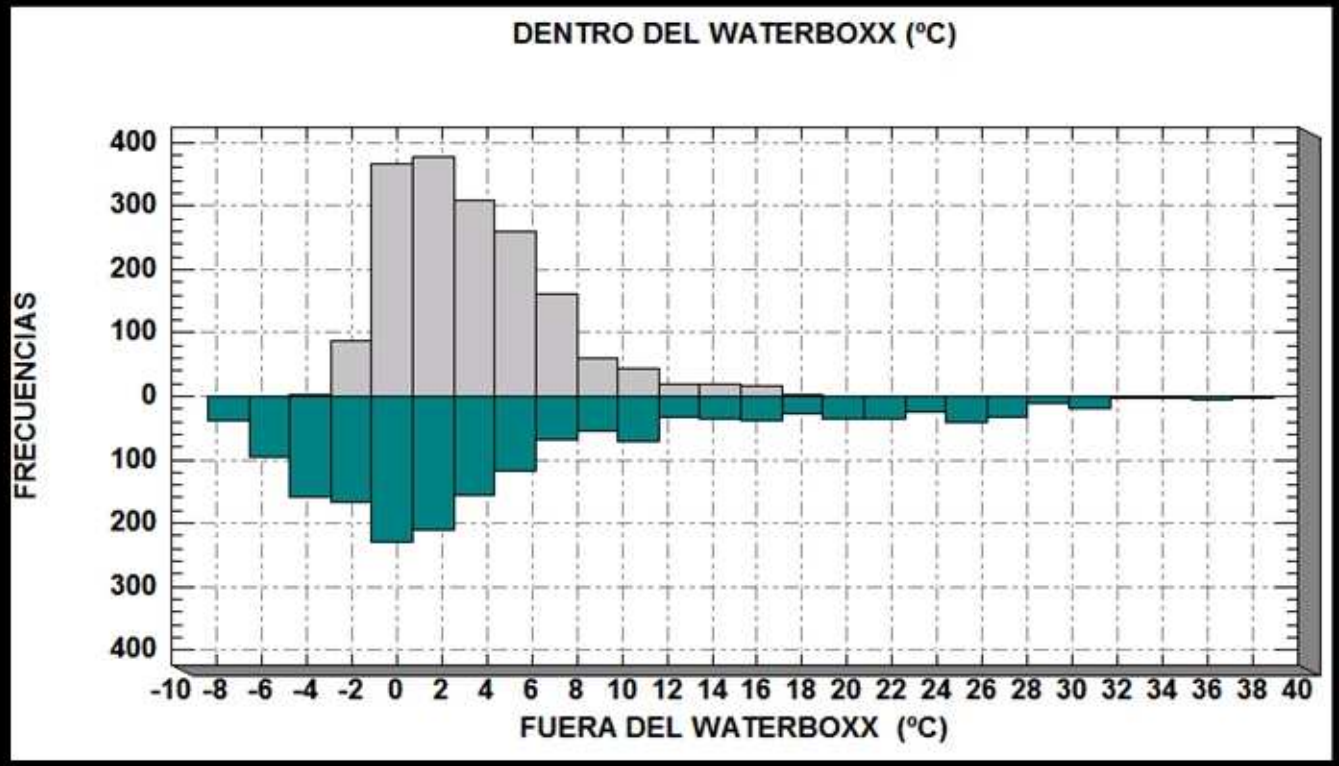
- Sample 1 INSIDE WATERBOXX (IW):
  - 1729 results between -3,0º C and 18,5ºC
- Sample 2 OUTSIDE WATERBOXX (OW):
  - 1729 results between -9,5ºC and 37,5ºC

	IW	OW
Average	3,3ºC	5,0ºC
Standard deviation	3,6ºC	9,5ºC
Coefficient of Variation	108,44%	187,86%
Minimum	-3ºC	-9,5ºC
Maximum	18,5ºC	37,5ºC
Range	21,5ºC	47ºC

OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatologicalal study

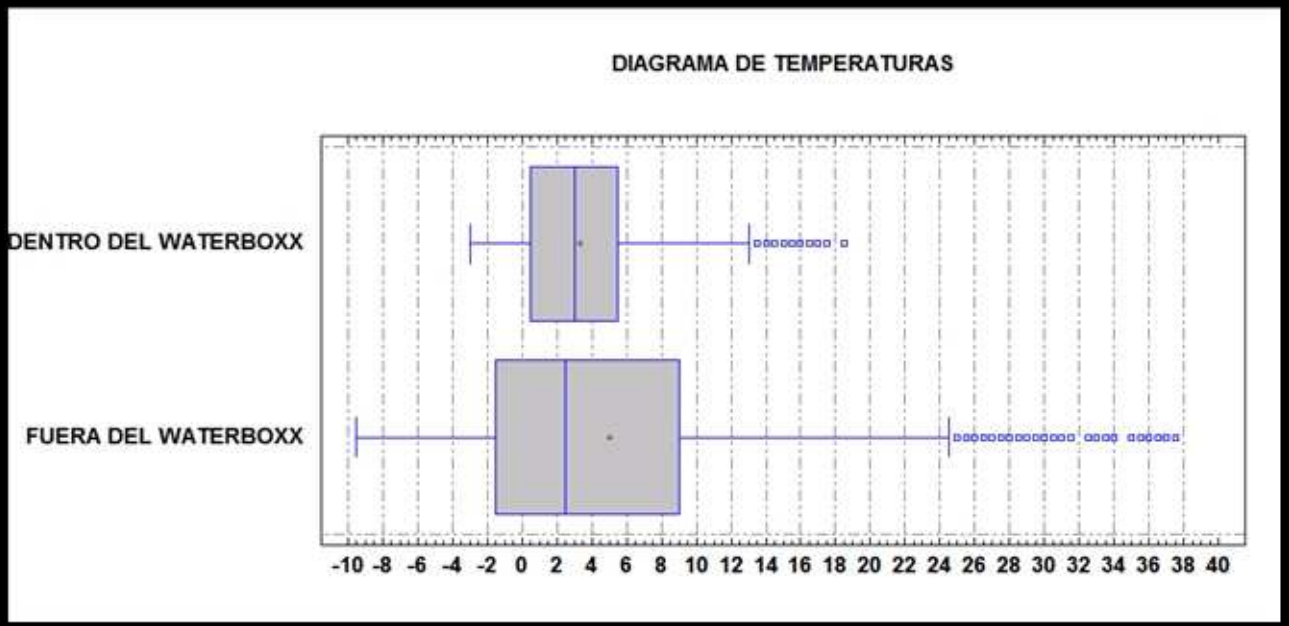
TEMPERATURE (º C)



OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

TEMPERATURE (º C)



OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

(°C)IW	(°C)OW	DIFFERENCE
-3	-6	3
-3	-7	4
-3	-7,5	4,5
-3	-7	4
-2,5	-7,5	5
-2,5	-7,5	5
-2,5	-5,5	3
-2,5	-8	5,5
-2,5	-5,5	3
-2,5	-6,5	4
-2,5	-6,5	4
-2,5	-8	6,5
-2,5	-8,5	6
-2,5	-8,5	6
-2,5	-9	6,5
-2,5	-5,5	3
-2,5	-6,5	4

TEMPERATURE (º C)

(°C)IW	(°C)OW	DIFFERENCE
16	29	13
16	25,5	9,5
16	37,5	21,5
16	33,5	17,5
16	33,5	17,5
16,5	30	13,5
16,5	27,5	11
16,5	31,5	15
16,5	30	13,5
16,5	36	19,5
16,5	36,5	20
16,5	37,5	21
17	31	14
17	29,5	12,5
17	33	16
17,5	37	19,5
17,5	35,5	18
17,5	31,5	14

OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

HUMIDITY (% HR)

COMPARISON BETWEEN TWO SAMPLES - HUMIDITY(%RH)IW & HUMIDITY(%RH)OW

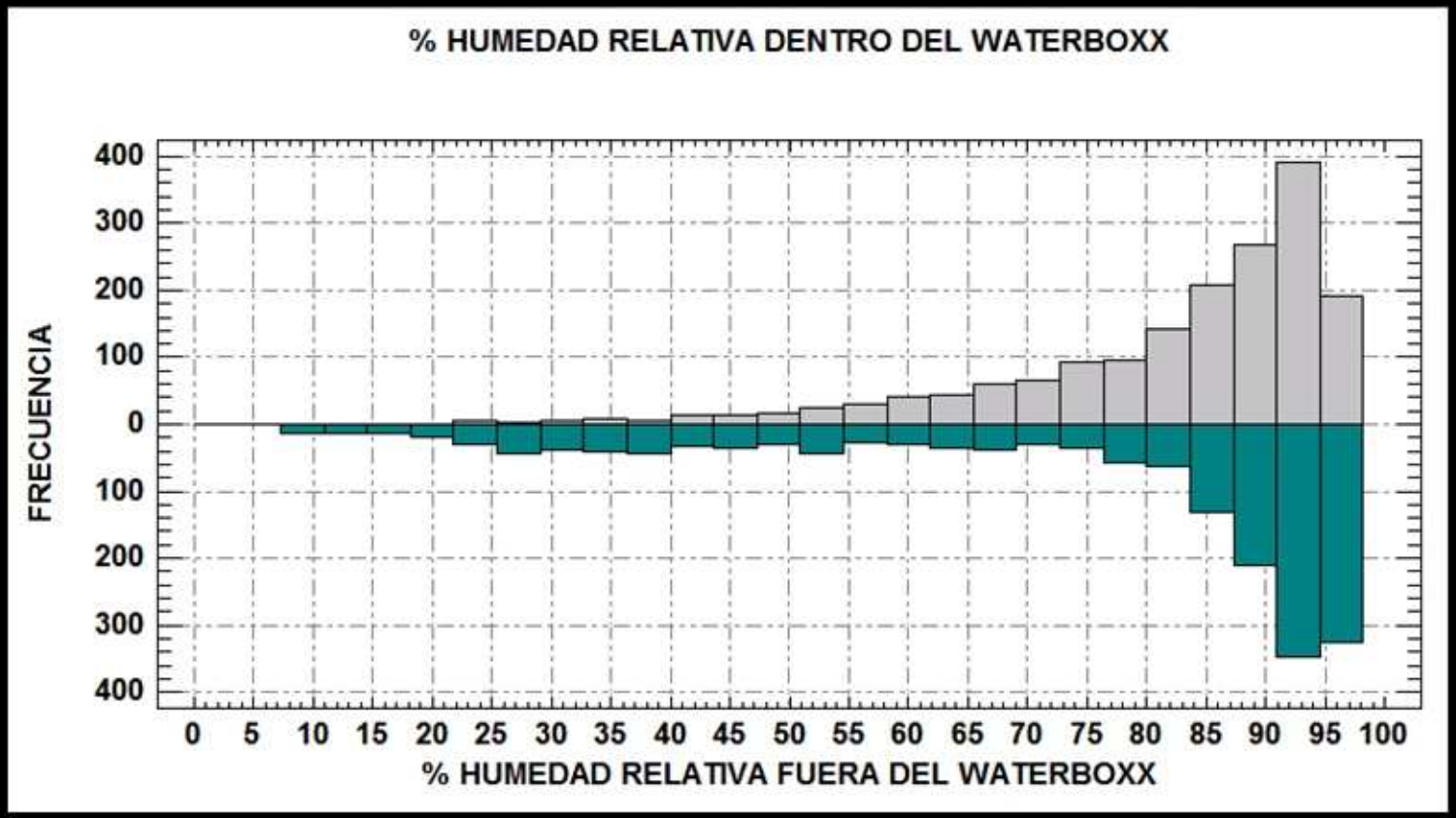
- SAMPLE 1 INSIDE WATERBOXX:
  - 1729 results between 23,0 and 98,5
- SAMPLE 2 OUTSIDE WATERBOXX:
  - 1729 results between 6,5 and 98,5

	Humidity(%rh)DW	Humidity(%rh)FW
Results		1729 1729
Average	82,5124	75,1631
Standard deviation	13,9403	24,7487
Coefficient of Variation		16,89% 32,
Minimum	23	6,5
Maximum	98,5	98,5
Range	75,5	92

OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

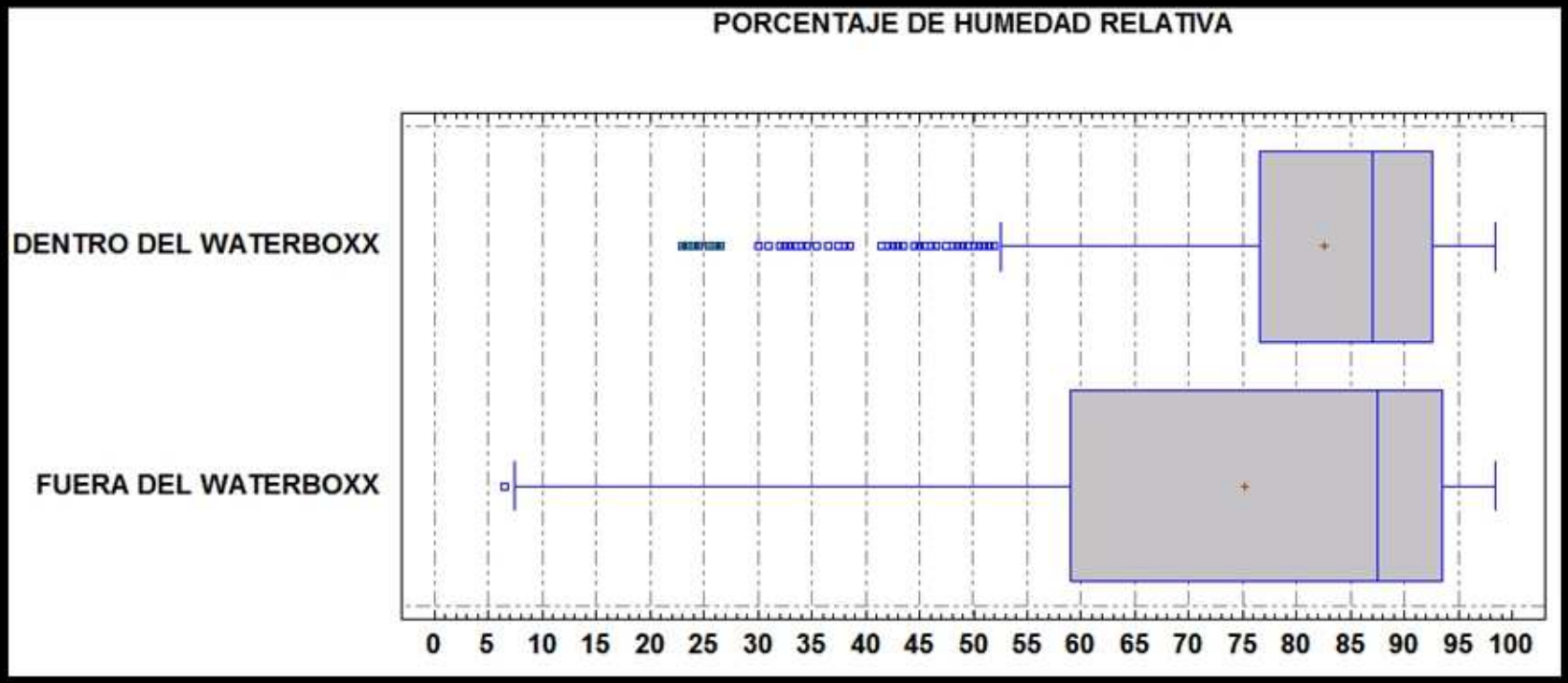
HUMIDITY(% HR)



OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

HUMIDITY (% HR)



OBJECTIVE 3: Watch the temperature, humidity inside and outside the Waterboxx.

Climatological study

HUMIDITY (% HR)

(% HR)IW	(% HR)OW	DIFFERENCE
23	7,5	15,5
23,5	6,5	17
24	8,5	15,5
24,5	10	14,5
24,5	7,5	17
25,5	15,5	10
25,5	7,5	18
26	7,5	18,5
26,5	17	9,5
30	25,5	4,5
30	9	21
31	10	21
32	18	14
32	10	22
32,5	25,5	7
33	9	24

(%HR)IW	(%HR)OW	DIFFERENCE
98	94,5	3,5
98	94	4
98	94	4
98	94	4
98	95	3
98	95,5	2,5
98	82,5	15,5
98	46,5	51,5
98	98	0
98	36,5	61,5
98	31,5	66,5
98,5	35,5	63
98,5	38,5	60
98,5	96	2,5

Universidad de Valladolid

Background

The lasts months we have been focussing on monitoring the plantation while using the Waterboxx. The following OBJECTIVES are used in our research:

- Plant Viability
- Control of the Waterboxx
- Climatological study
- Improvement in the design of the remote sensing control

1. Estimation of the plant viability by controlling the health status through field inspection
2. Visits to the field to observe the status of the Waterboxx and to check possible problems
3. Register the temperature, humidity inside- and outside the Waterboxx.
   Installation of field recorders
4. Improvements in the design camera support

OBJECTIVE 4: Improvement in the design of the remote sensing control

Improvements in the racks of drones camera support

METHODOLOGY:

- Research phase to adapt the rack prototype of cameras support to make it possible to obtain requested data through MDT technology

- Issues with weight and autonomy of the drones

2012 IUFRO CONFERENCE DIVISION 5 FOREST PRODUCTS

8›13 JULY'12
ESTORIL CONGRESS CENTRE
LISBON – PORTUGAL
www.iufro2012.org

HOMEPAGE
KEY DATES
CALL FOR ABSTRACTS
CONFERENCE THEMES
PROGRAM
KEYNOTE SPEAKERS
TECHNICAL VISITS
ORGANISATION
SCIENTIST ASSISTANCE PROGRAM
& YOUNG SCIENTIST PROGRAM
UTL GRANTS
DOWNLOADS
CONFERENCE VENUE
GREEN CONFERENCE
REGISTRATION AND
ACCOMMODATION
SPONSORSHIP AND EXHIBITION
TRAVEL AND LOCAL INFORMATION
OFFICIAL AIRLINE CARRIER
SOCIAL PROGRAM
USEFULL LINKS
CONTACTS

IUFRO

PRELIMINARY PROGRAM AVAILABLE (click here for printable version in PDF)

Online Registration