



# **Deliverable Report**

**December 2016**

**Action A5**

**Installation of a nursery to produce  
autochthonous species flora to the  
conservation actions**



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### Technical form

Installation of a nursery to produce autochthonous species flora to the conservation actions

Action A5 – Project LIFELINES – LIFE14 NAT/PT/001081

Report non-technical

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## Introduction

In the frame of LIFE LINES project, MARCA-ADL is the responsible to install and make operational the nursery for autochthonous species with capacity to supply the needs of plants and seeds to the installation of the green infrastructure preview for the conservation actions of the project.

## Localization

The land ceded by the association Casa João Cidade – Comunidade Sócio Terapêutica as about 5000m<sup>2</sup> and belonging to Natura 2000 network, more precisely in Serra de Monfurado (Site of Community Importance) located about 3km from the city of Montemor-o-Novo near the access to the chapel of Santa Margarida (Fig. 1.)



Fig 1. Location of the MARCA-ADL nursery.

## Infrastructure

The nursery is equipped with an office/house of support, built in wood which allows to be moved. This house as about 18m<sup>2</sup>, divided between a storage room to keep materials and equipment, an office/kitchen and a bathroom. The office as water supply from the irrigation system and a dry bathroom which permit not having a more complex system (pit).

The water to the nursery essential for the full development of plants is provided by an existing water hole, the same used to give water to the surroundings areas, if this is not enough for the needs of the nursery, can be supported by the water of treatment station, using a water pump located in the last tank of the treatment station.

The irrigation system is divided in three major parts: shadow, acclimatization and flowerbeds (to produce seeds).

The nursery is also equipped to a composting area which allows us to reduce the need of bring rooting substrate to the place. At the moment doesn't exist any access to the equipment of crushing and shred of the woody plant material.

### **Productive areas**

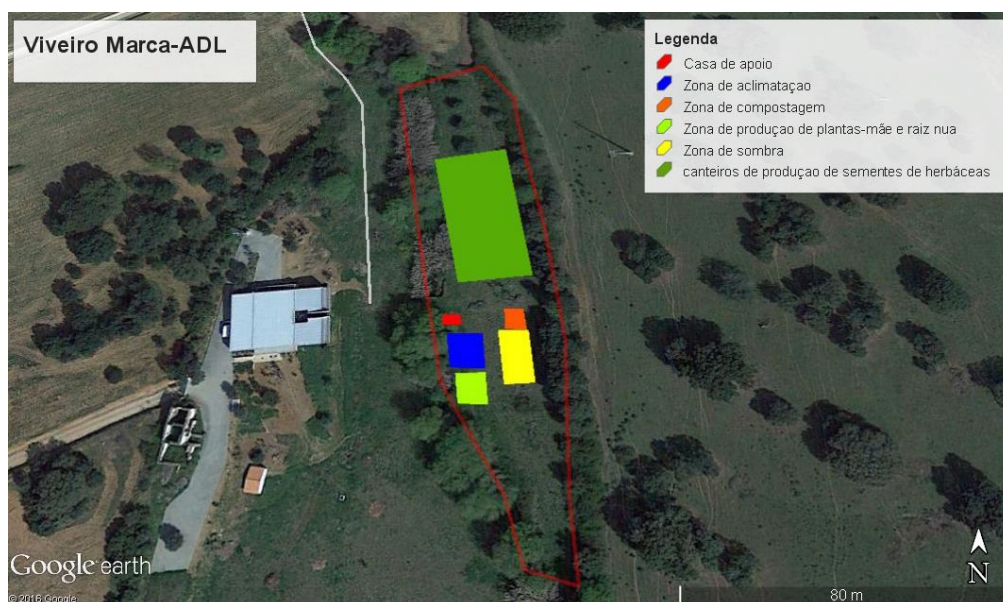
The shadow area has about 120 m<sup>2</sup> with soil covered by an "anti growth" cover and is covered on the top by a shading net and has automatic irrigation by dispersion. The Vases and pouches for seedlings were placed on top of the "anti growth" cover, where in a first phase they can germinate and grow protected of the direct sun.

The acclimatization area has about 100m<sup>2</sup> with soil covered with an "anti growth" cover where the plants get used to the sun and are stored before being transplanted to a definitive location. This area has also automatic irrigation by dispersion.

The plots reserved to the production of herbaceous seeds to be used in future conservation tasks have an area of about 1000m<sup>2</sup>, with uncovered soil and handmade irrigation (hose) in case of necessity. It is not predictable however that this area needs to be irrigated with regularity because the plants to be produced are from the region and very well adapted to local conditions. For the cultivation of these seeds the flowerbeds were prepared in lines with the equipment bought for the project (mounted rotary cultivators and motor hoes). The seeds are sown directly in the soil as indicated by the "Flora and Vegetation team" of the University of Évora.

The area reserved to bare root plants production and mother plants was implemented to produce species that don't need vases or similar allowing to reduce plastic consumables without compromising the production. This area was prepared to receive mother plants (donors of cuttings and seeds) without being necessary to compromise their natural populations and at the same time reduce costs of collecting plant material for propagation. This land is surrounded by

a hedge with a lot of autochthonous shrubs, some of them will serve to provide seeds and piles without the necessity of planting them.



### Species to produce

After installing the structures of the nursery and preparing the plots, propagation work was started concerning the sowing of herbaceous to produce seeds and the sowing of woody alveoli of woody species. To produce the seeds of the herbaceous plants were used the seeds collected by the Flora and Vegetation team of the University of Évora.

We have in the first year of activity the following species:

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| - <i>Aegilops geniculata</i> ,     | - <i>Diploaxis catholica</i> ,      |
| - <i>Aegilops triumcialis</i> ,    | - <i>Hymenocarpus lotoides</i> ,    |
| - <i>Brachypodium distachyon</i> , | - <i>Lamarckia aurea</i> ,          |
| - <i>Brachypodium Sylvaticum</i> , | - <i>Lupinus micranthus</i> ,       |
| - <i>Briza maxima</i> ,            | - <i>Papaver hybridum</i> ,         |
| - <i>Briza minor</i> ,             | - <i>Papaver rhoeas</i> ,           |
| - <i>Campanula lusitanica</i> ,    | - <i>Papaver pinnatifidum</i> ,     |
| - <i>Cynosurus echinatus</i> ,     | - <i>Petrorrhagia nanteuillii</i> , |
| - <i>Dactylis glomerata</i> ,      | - <i>Silene colorata</i> ,          |

- |   |                                |
|---|--------------------------------|
| - <i>Silene gallica</i> ,                         | - <i>Trifolium arvense</i> ,   |
| - <i>Silene inaperta</i> subsp. <i>Inaperta</i> , | - <i>Trifolium campestre</i> , |
| - <i>Silene scrubiflora</i> ,                     | - <i>Trifolium stellatum</i> . |
| - <i>Stipa capensis</i> ,                         |                                |

The seeds from these plants will be at the end of the season cleaned and separated to posterior utilization in the conservation actions.

Until this moment we have the following woody species that are produced with forest alveoli:

- |  |                                   |
|--|-----------------------------------|
| - <i>Prunus lusitanica</i> ,                       | - <i>Ulex australis</i> subsp.    |
| - <i>Castanea sativa</i> ,                         | <i>Welwitschianus</i> ,           |
| - <i>Quercus suber</i> ,                           | - <i>Prunus spinosa</i> ,         |
| - <i>Quercus pyrenaica</i> ,                       | - <i>Fraixinus angustifolia</i> , |
| - <i>Quercus faginea</i> ,                         | - <i>Quercus lusitânica</i> ,     |
| - <i>Quercus rotundifolia</i> ,                    | - <i>Rosa</i> sp.,                |
| - <i>Rhamnus alaternos</i> ,                       | - <i>Crataegus monogyna</i> ,     |
| - <i>Osyris alba</i> ,                             | - <i>Viburnum tinus</i> ,         |
| - <i>Pyrus bourgeana</i> ,                         | - <i>Myrtus communis</i> ,        |
| - <i>Ruscus aculeatus</i> ,                        | - <i>Cydonia oblonga</i> ,        |
| - <i>Callicotome villosa</i> ,                     | - <i>rosmarinus officinalis</i> . |
| - <i>Cytisus arboreus</i> subsp. <i>Baeticus</i> , |                                   |

This list is not complete and will be added more plants especially that ones that are propagate by piles, when the time of the year is more suitable to this kind of procedure. The collect of seeds and new autochthonous species will be a continuous work until the next years of the project. Will be also produce some bulbous plants whose seeds have not yet been collected, but for which we find a solution in the portuguese market.

### Substrate

As rooting substrate we use a mixture of land, peat, vermiculite, sand and local land, when possible added a compost or vermicompost to fertilizing. These composts are produced *in-situ* in simple structures made for this purpose. For now, and regarding to questions related with the non-installation of the nursery in the local preview when the application has made, it has not



possible to produce all the necessary substrate in-situ needed to the production of plants. In other hand we have the capacity to produce alveoli forest plants, bare root plants, plants in vase and herbaceous to produce seeds above the quantities that are preview in the application.

### Considerations

The associated beneficiary MARCA\_ADL has the nursery completely operational in the preview deadline to the A.5 action **“Installation of autochthonous plant nursery for conservation actions.”** complying the progress indicators of the project for this action:

Progress indicator	Quantity	Executed
Nº Created nurseries	nº, O=1	1
Area of produced plants created	m2, O=5.000	5000
Plots to seeds production installed	m2, O=1.000	1000
Number of woody species in growth	nº, O=4	22
Number of bulbous species in growth	nº, O=1	2
Growing plants to conservation tasks (Actions C)	nº, O=1000	3000

The bulbous species will be seeded in the end of the winter/beginning of Spring to the first plants are available in full growth in September of 2017.

**Annex (some pictures of the nursery and their components).**



**Office/house of support.**



**Shadow area**



**Acclimatization area**





**Plot to produce mother plants of bare roots.**



**Plot to produce herbaceous seeds.**