



LIFE 16 CCA/IT/ 000011
**Desert-Adapt - Preparing desertification areas for
increased climate change**



PROPOSED STEPS FOR THE SELECTION OF PLANT SPECIES

1) *Setting a Preliminary list*

After having assigned the functions, many chosen options will require to plant new plants. Planting can be conceived for different purposes.

- **Plant used to create new marketing opportunities**, for example new orchards of fruit trees, or aromatic plants.
- **Plants aimed to implementing already existing economic functions**, e.g. seeding new species to increase the biodiversity of pastures or increase the quality of pastures by seeding leguminous plants.
- **Plants aimed at in-farm use associated to an already existing economic activity**, like fodder or carobs as animal feed for animal breeders, strips of flower bushes within agricultural land to support pollination.
- **Plants aimed at creating eco-services to be eventually introduced into a tourism scheme**, for example plants allowing wild birds nesting and feeding thus favor bird re-colonization of area, or re-forestation of degraded areas with local species to re-create the natural environment.
- **Plants aimed at implementing the quality of the ecosystem in line with its ecological vocation**, planting more oaks in degraded areas of Dehesa, Montado or Mediterranean agro pastoral systems; re-forest burned areas, etc.

When setting the preliminary list of plant species to be used, it would be important to take into account the information gathered during **the background information collection**, with special reference to:

- limitations due to ecological (ex. bioclimatic zones) or regulatory reasons (alien species list for a specific area, regulation for Natura 2000 and SIC areas)
- successful examples from other farmers of climate resistant species
- information on local races adapted to local agro-ecological conditions
- list of native species for natural areas
- market opportunities

2) *Preliminary market evaluation for species with direct economic function*

The plant species that give direct access to the market (to primary distribution or to transformation chain) should be chosen on the basis of two criteria:

1. their potential for marketing
2. their suitability to local agroclimatic conditions

Four steps are proposed to identify the most suitable species which respect to the two criteria

- **STEP 1: Suggested but not compulsory. Identify the species (its saleable product) by macro category of economic value on the market.**

The working group of Desert Adapt project will provide in the replication toolkit a table with the average expected income per hectare for the selected agro-products sold on the market in Mediterranean area. It can be used by the land manager to have an initial comparative idea of the potential value of the different commodities but should not be considered as a final evaluation for cost/analysis because many criteria might influence the real price of a commodity.

- **STEP 2: Compulsory. The evaluation of suitability to local agro-climatic conditions**

It is of paramount importance that land manager selects plants that respond as much as possible to the need to adapt to climate change and contribute to increase the natural capital of the land. A preliminary evaluation should be done for the plants inserted in the preliminary list to evaluate those with the best adaptation performance to dry/hot conditions and which might have additional features to require minimal management and extra value for the ecosystem.

A land design in areas under climatic and desertification risk should not include species which are routinely irrigated or have high evapotranspiration rates and are not typically used in Mediterranean climate.

- **STEP 3: Strongly suggested. Analysis of local marketing opportunities and distribution channels**

Once the most suitable plant species have been identified a further selection can be done on the basis of the local marketing opportunities and prices. Many factors should be taken into account when evaluating the marketing potential of a product:

1. Target market available and relative price (local sale at the farm, consumers, distributor, auctions, wholesale, processor, importer/exporter, shops or restaurants).
2. Volume of the products to sell. Mainstream market high volumes/low price. Niche markets small volumes/ high price.
3. Competition in the market (niche market are often more profitable).
4. Added value (dried, packed, labelled, cut or un-cut, processed).
5. Transport distance to the market.
6. Season to sell (outside the season is better).
7. Quality (size, colour, etc) of the product to sell (and this is related to growing circumstances).
8. Your required profit margin and your costs (where costs are based on local wages, taxes, fuel etc).

- **STEP 4: Strongly suggested. Cost/benefit analysis**

To identify the profit margin, the land owner should run a preliminary cost/benefit analysis in order to understand the real margin of profit beyond the costs incurred for the crop management.

Within the cost analysis the following elements should be included:

1. Initial costs (investment)

- a. Seeds or planting material, and wages for planting
 - b. Protection material (fences, plant protectors) and costs for measure to enhance survival of seedlings (es. mulching, plant aids)
 - c. Interest rates (costs of initial investment, bank costs etc).
2. Annual costs
- a. Wages and/or costs for subcontracting for annual maintaining the land and plants (pruning, weeding etc)
 - b. Machine costs (fuel & electricity, maintenance, depreciation).
 - c. Costs for water (mostly in the first stages of planting, thereafter only for emergency irrigation).
 - d. Other material like biological fertilizers.
3. Adaptation measures: The costs of adaptation measure to increment plant survival, and soil quality should be included. Failure to consider appropriate adaptation measure might lead to failure of the investment due to massive seedling death in the first summer season.
4. Harvesting costs: wages, renting machines, 1st level packaging etc.

3) *Final list*

Once the complete analysis is finished the land manager can define a final list of species which are going to be used, the planting calendars along the year, all the necessary inputs for the field operations etc.