

WORLD AGROFORESTRY IN PRACTICE

A sustainable way of managing collectively high mountains' forests with sylvopastoralism

AGDAL: THE FORESTS OF THE HIGH ATLAS

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LOCATION Africa, Morocco

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TYPE OF PRACTICES Sylvopastoralism

PRODUCTION Cattle, fodder, wood



1 GENERAL CONTEXT

Agdal is a generic word in the Berber language that is used to define collective areas where admission and uses are regulated by a local institution (village, several villages or even several tribes) that states rules regarding periods of time and way of exploiting the natural resources. The agdal forests are crucial for the survival of the local communities who rely on sylvopastoralism, thanks to the fodder from the leaves, the wood-fuel and the timber they produced. Hence trees are pruned into special shapes depending on their use and a strict governance is shared to regulate their management and exploitation.



2 ENVIRONMENTAL CHARACTERISTICS

It is a high-mountainous zone (1800-3800m) where climate is of mountainous sub humid Mediterranean type. Winter season is cold and long, with intense snowing periods. The temperature variation is wide with extreme temperatures between -15°C and +45°C. Rainfall are irregular but still stay abundant during autumn and spring (500 to 750 mm/year).

3 DESCRIPTION AND INTEREST

The agdal is systematically under a temporary conservation status depending on the cycle of development of the plant: from the growth of the leaves to the flowering and production of seeds. It is often under a religious protection such as a local saint or an institution.

4 types of rules are applied to the users of the agdal forests, they are about:

- Period of time to collect wood and leaves
- Quantity of extracted material
- Division of the agdal for exploitation rotations
- The tree species allowed to be cut

Tree shapes are very heterogeneous, even from the same species. They depend on the type of product you want to collect, it can be fodder directly grazed by animals, fodder collected for later, poles or even



rafters for houses' roofs. Three major shapes can be identified:

- Fodder trees, they are trees accessible for the goats to climb on and graze the leaves or trees with heavy foliage, often with a weeping bearing and exploited with some lateral pruning to promote new leaves.
- Trees for pole production, with a bushy shape where only the central lignified stalks are exploited, to obtain a straight pole.
- Trees for rafters, generally old trees with mean diameter of at least 60cm with a wide foliage and various branches. The shape of the rafters are anticipated.

4 TREE SPECIES

The tree species are generally spontaneous with essentially 3 species of Junipers (*Juniperus thurifera*, *J. oxycedrus*, *J. phoenicea*) and/or Green Oak (*Quercus ilex*). Their proportion depend on the altitude, sun exposure, soil and tree management.

5 PRODUCTS AND USES

The principal function of the agdal forests is to be living fodder-reserves that can be used easily even during extreme climate conditions (especially snow) that prevent the flock to enter the agdal and graze. Agdals are "attics with no roofs". They are also constituted of true rafter production units directly growing and shaped on the tree. Agdals are completely part of the functioning of the local communities, providing subsistence resources of various types.

6 LANDSCAPE MANAGEMENT

The collective management of the resources give sustainability to these forestry areas and make of them a true patrimony at the center of the social cohesion (Auclair et al. 2011). Annual or plurianual exploitations of the resources are regulated by rules created by its own users, and including sustainability criteria (Folke et al. 2010). These rules shape the agdals and the forestry landscape of the region, on the long term we can see that agdals maintain or even increase their surface, even in a context of intense pressure on the resources (Hammi et al. 2010).

WORDS FROM THE FIELD

Mohamed LHASSOUMI EL LHAJ
(Aït Bouguemez Valley, Azilal):

Here, you see how we try to exploit the forest without harming it, by choosing the branches we cut depending on our needs and the shape of the tree. Here we have kind of a culture of good management and conservation. It's our heritage that our ancestors passed on us, and we depend on it. What I do is useful for all the community.



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