

***“CONSERVATION AND THE REHABILITATION OF
THE ENGLISH WALNUT IN ITS NATURAL
ENVIRONMENT ON THE VAL-MARTANESH
REGION, ALBANIA”***

FINAL AND EVALUATION REPORT

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Conservation and the rehabilitation of the English walnut in its natural environment on the Val-Martanesh region. Albania

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EXECUTIVE SUMMARY

English walnut (*Juglans regia* L.) (Juglandaceae) is a very important hardwood species in Albania growing in many parts of the country where the climate is suitable for walnut growing. The need for conservation of this species is based on some of its characteristics, such as the scattered distribution of the species, the limited extension of the stands, and its precious timber, greatly appreciated for many uses. The Val-Martanesh population is perhaps the most valuable with individuals of outstanding qualities both in pomological and wood traits, being the last viable remnant of wild walnut populations in Albania. However, due to its high value, the species has been aggressively harvested, creating a limited supply of quality walnut trees. This natural population is under threat from a combination of human activities, chiefly fuel wood collection, grazing and pole cutting.

The overall goals of this project were (1) increase of the public awareness about walnut resources in area of Martanesh through educational and promotional activities and (2) restoration of habitats and conservation of walnut through community participation

The activities undertaken were diverse and linked to specific issues such as evaluation of the type and degree of human use, conservation and restoration through community participation, exchange of experience and know-how, education and awareness rising, all of them aiming to the realization of overall goals. The publicity given to the progress of the Project implementation has attracted considerable public attention. Media campaign and press releases have stirred the public interest and dispelled many of the misconceptions about growing and conserving walnuts in natural habitats and in similar condition. The outcomes that stem from the project are that although few hectares of new plantings have commenced more are planned for the coming years. The restored area might represent a very successful model of *in-situ* conservation and showcase of how responsible farmers and cooperative local communities are crucial for the success. Moreover, *the Project* helped many locals being enthusiasts about walnut to deepen their contacts and have tapped into a genuine pool of goodwill.

The long-term success and benefits of the conservation measures implemented would depend on the level of awareness and the support from the local community. It is very likely that many of the conservation initiatives set off by the project will continue well in the years to come. The prospects are realistic because of the relatively high level of interest generated through *the Project* among the general public and the community in the region.

Mounting pressures on natural resources in Val make conserving lands adjacent to the protected area an immediate goal. Community-based ecotourism is one way to provide incentives that lead to walnut protection.

The challenges ahead are to expand restoration efforts to the larger landscape and to meet firewood demands in places where bordering forests are not meeting local demands.

1. SETTING THE SCENE

1.1 Introduction

Walnut (*Juglans regia* L.) is an important crop species in Albania prized for its valuable timber and high-quality edible nuts. The majority of them grow in north-eastern or south-eastern part of the country and its altitudinal range varies from 400 m to an elevation of 1200 m above sea level (Dano, 1996; Kola, 2001; Zeneli et al., 2005; Zeneli and Kola, 2006). The Val-Martanesh population is perhaps the most valuable, being the last viable remnant of wild walnut populations in Albania. However, due to its high value, the species has been aggressively harvested, creating a limited supply of quality walnut trees. This natural population is under threat from a combination of human activities, chiefly fuel wood collection, grazing and pole cutting.

This project was part of a continuous effort to conserve the walnut in its natural ecosystem and to collect the most promising phenotypes to be preserved as valuable genetic sources. As conservation does not take place divorced from issues relating to local people wellbeing, we were also concerned about social justice and sustainable development. The approach followed was a community-based conservation and considered where these different but overlapping interests can best be integrated into a multifunctional landscape. Community-based conservation, in which local citizens and groups take responsibility for conservation efforts, has expanded globally in recent years (Western, 2000), but is still relatively uncommon in Albania.

Since its inception, there have been three interim reports that included (i) a detailed section on data collection and field surveys in order to better understand the physical and natural environment of the Val valley, (ii) a short narrative part providing brief information on the accomplishments, findings, major outputs, and problems and (iii) a report on the work on restoration of natural habitat in combination with the dynamic conservation of the species as well as the educational and training activities

The aim of the report is to reflect on and evaluate the work of the project “*Conservation and the rehabilitation of the English walnut in its natural environment on the Val-Martanesh region. Albania*” (hereinafter: “*the Project*”) as a whole as well as on the deliverables and outputs. This report considers the processes undertaken by *the Project*, lessons learnt, and potential “hidden” outcomes that may be of use to the community. Although the major responsibility for the writing was undertaken by Dr. Gazmend Zeneli, the writing of this report, like the Project, has been a joint effort.

The first section of this report presents a description of the problem(s) where we started and the scope of the Project, emphasizing its multipurpose in nature. The second section presents the analysis and key findings, lessons and recommendations of the processes undertaken by *the Project*. The following section presents the allocation of the financial resources of the project. Next is the list of appendices that includes some of the educational and promotional materials followed by some of the press releases.

1.2. Project Description

The Val-Martanesh population is one of the most valuable English walnut populations in Albania and includes individuals of outstanding qualities both in pomological and wood traits. Despite their importance, the walnut population and the surrounding forest have been widely destroyed and still are under high pressure. The major issue is still that of resource conflict. The region is poor and for a long time the most important income-generating activity was forest logging and fuelwood gathering for sale and domestic use. Many locals are keen to continue to utilize wood and non-wood forest products for income generation and subsistence purposes.

The overexploitation of these resources has led to the erosion of genetic diversity that is an especially significant concern in forest trees, which carry high levels of lethal recessive alleles and are particularly vulnerable to inbreeding depression. Moreover, throughout the country, there still remains little accurate data on resource availability and use, and a limited appreciation of the true value of walnut to the national economy.

At the end of 2005, the Panel of Rufford Maurice Laing Foundation decided to support the project “*Conservation and the rehabilitation of the English walnut in its natural environment on the Val-Martanesh region. Albania*”. The overall goal of the Project was to increase the public awareness about walnut resources in area of Martanesh through educational and promotional activities and to start the restoration of walnut natural ecosystem involving the local community.

The Project was implemented from January 2006 to December 2006 and had three main components: 1) data review and field survey, 2) restoration of habitat and conservation and 3) increase in public awareness. The following were the general objectives of the Project:

- *Evaluation of the status of the walnut in the area through reviewing the existing data.*
- *Evaluation of the type, importance and degree of continued human use of the walnut population and the forest around through field surveys.*

- *Restoration of habitats and conservation of walnut through participation of local community.*
- *Dynamic conservation of the species by creating good conditions for future evolution of population.*
- *Increase public participation in, and awareness in species and habitat conservation through educational and training activities.*
- *Foster exchange of information and cooperation with respect to walnut species and habitat conservation.*

2. DEVELOPMENT AND IMPLEMENTATION OF VIABLE ALTERNATIVES TO OVER-EXPLOITATION

The activities implemented under *the Project* were diverse and linked to specific issues such as evaluation of the type and degree of human use, restoration of habitats, conservation of walnut through participation of local community, *ex-situ* conservation of walnut, exchange of experience and know-how, education and awareness rising, to mention some of them. Following the general objectives of *the Project*, all activities can be assigned to one or more of the five general areas here referred to as “*processes*”.

2.1. Evaluation of the status, type, importance and degree of relevant pressures and threats on the walnut population.

Facing the overwhelming conservation need and the lack of knowledge, at the onset of *the Project* the main tasks were to (1) to gather precise information about the status of the walnut in the area (focusing on the species and the habitat) and (2) to evaluate the type, importance and degree of continued human use of the walnut population and the forest around and indicators on status-pressure-threat for biodiversity (scale and intensity, trends, likely future trends etc.). The systematic approach followed, required an initial phase where priorities were discussed based on the known and anticipated threats on genetic resources. It also included evaluating the different existing option. To provide a base line for the process of recovery and conservation of species, we took into consideration the intensive studies of species' biology from both literature and own experience and from intensive editing of data collected in previous years. We reviewed also all relevant and recent scientific reports and studies about the environment in the region as well as relevant legislation and legislative proposals. In addition to these, during several field surveys we collected more data and information. The field surveys were organized in co-operation with representatives of Forest Service of Bulqiza District, Forest and Pasture Users Association (FPUA) of Martaneshi commune and Commission of Forest and Pasture (CFP) of the Vali Village.

A description of environmental conditions of the site including geographical position, climate, geology, flora and fauna is given in the following:

2.1.1. Geography and geology

Geographically, the Martanesh Commune area is located in the central mountain region of Albania, in the southern part of the Bulqiza district, ca. 20 km from the city of Bulqiza. Commune includes 7 villages (Melcu, Lene, Gjon, Nderfushas, Val, Peshk, and Stravec) which lay in the altitudes between 600m and 1450m above sea level. The administrative headquarter is located in the small town of Krasta. The Martanesh Commune has ca. 6200 inhabitants, living in seven villages and in the small town of Krasta. Detailed information on the demography and natural resources of the commune is given on the Table 1. The area is dominated by mountains, hills and basins with a steep descent from the mountain ridges to the valley floor. Most of the forest and pastures managed by this commune are located in the mountains' slopes or on the hillsides and fewer in plateaus.



Geographical location of the project site. (<http://www.tageo.com/index-e-al-v-41-d-m169254.htm>)

Geologically, the Val valley represents a typical karstic valley, among the rarest in Albania from its dimensions, evolution and morphological peculiarities. The Martanesh Commune is part of the larger regional that has formed a number of horsts and grabens. The structural geology of the Martanesh is a complex system. The Martaneshi soils are results of complex series of pedogenesis affecting the residual products of the dissolution of Mesozoic calcareous stones. The dominant lithology is various forms of limestone and secondarily, evaporites deposits (DGFP, 2005).

Table 1. Demographic and economic data of the Martaneshi commune

No.	Village	Inhabitants	Number of families	Arable land (ha)	Forest area (ha)	Fruit orchards (ha)	Husbandry animals (No.)
1	Melcu	106	26	45	421	6	118
2	Lene	219	42	55	208	9	207
3	Gjon	175	43	60	352	2	151
4	Nderfushas	110	49	55	254	10	205
5	Vali	218	50	80	344	16	281
6	Peshku	193	74	50	656	12	312
7	Stravec	46	13	20	431	5	107
8	Kraste (I)	5100	1049	-	-	-	-
	Commune	6166	1346	365	2666	60	1381

Walnut (*Juglans regia* L.) natural plantation with ca. 12 000 individuals grows at the end of the valley, partly mixed with *Quercus petraea*, *Sorbus torminalis*, *Acer tataricum*, *Cornus mas* competing them in both root system and crown, the last looking sometimes in a strange shape as results of pruning until early 90's. Walnut grow in both sides of the slopes, some of them steep (angle slopes >30%) and dried. Exceptions were the trees at the far end of the valley, which grow much better both in height (4.5-12m) and diameter (6-16cm at DBH). Unfortunately, apart from pruning, trees have been also subject of grazing and have suffered some of the worst overexploitation and degradation (DGFP, 2005).

2.1.2. Hydrographic network

The main method of data collection was reference to previous studies on the area. Martanesh territory is very rich on rivers and springs which provide the base flow component of the system. The main hydrographic network consists of Mullijas's stream, Lena's stream, Luçana's stream, Thekna's stream, Mati's River and several of their small branches and creeks. Most of these rivers and streams have water all year around, while the small creeks and their branches usually dry up in the summer. During high precipitation seasons and when the snow melts, they represent a great risk for the local people because they might cause flooding. Gaining a firm understanding of the hydrogeology is complicated by the regular interaction between groundwater in the fractured limestone aquifer and by the poorly defined aquifer boundaries. The large variations in transmissivity have, to date, been presumed to be a result of a more interconnected network of fractures as well as more solution activity in the lower part of the study area.

2.1.3. Climate

Because no climate stations are located within the Martanesh Commune study boundary, for the climate and meteorological information we relied on the use of other stations with a similar climate to get a complete picture. Also, the data from the Meteorological Institute were used. The climate of the Martanesh Commune is typical of phytoclimatic zones *Castanetum* (cold subzone) and *Fagetum* (warm subzone). The climate is characterized by mild to cold rainy winters and moderately warm summers. The variable rainfall and temperature is influenced mainly by elevation. The annual mean air temperature is 10.2° C. The absolute maximum air temperature recorded is 37.0° C while the minimum temperatures move in the interval (-4.6) to (-15.0) ° C (Anonymous, 1980).



View of the surrounding area at the end of November

This area is characterized by a relatively high amount of the rainfall and snow. The first days of snow are noted in the end of November, but snow can last till March. The rainfall range is between 1000- 1250 mm/annum. The highest precipitation total (70%) is recorded during the cold months (October - March). July and August are the driest months, with minimum rainfall, 31 and 34 mm respectively. Dominant wind directions are the north and northwest, but mountain terrain does not create conditions for strong winds.

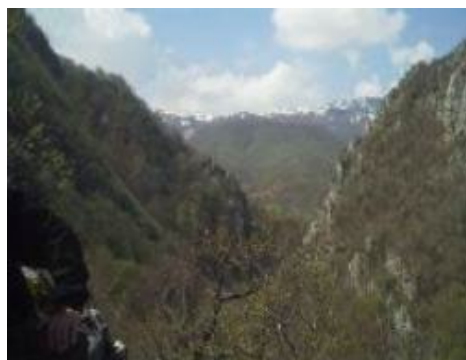
2.1.4. Forest species

Forests in the Martanesh area are dominated by the oak (*Quercus sp.*) species. They cover an area of ca. 1310 ha. Main oak species are the sessile oak (*Quercus petraea*) and the oak (*Quercus ceris*). Topographic position may affect the distribution of some oak species. These species grow in the whole area as pure or mixed forest with other forest species such as European Ash (*Fraxinus excelsior* L.), Sycamore (*Acer pseudoplatanus* L.), Hazel (*Corylus avellana*), Hornbeam (*Carpinus betulus*) or shrubs. Oak forests are heavily used for both fuelwood gathering for sale and domestic use. This has been the main and most important income-generating activity for many locals who are keen to continue to utilize wood and non-wood forest products for income generation and subsistence purposes.

The incidence of walnut varies with respect to slope angle (categorized as gentle for slopes <10%, moderate for slopes 10 to 30%, and steep for slopes >30%) (DGFP, 2005).

2.1.5. Flora and plant associations

Several forest tree associations are present in the Val valley forest. The main one is the Class Querco-Fagetea (BR. - BL. & Vlieg. 1937) or also called as oak-hornbeam forests. The forest vegetation is dominated by *Quercus petraea* with the presence of *Carpinus betulus*, *Acer campestre*, *Sorbus torminalis* etc. The ground vegetation is mainly of the mezophyte type with the dominance of *Asperula tourina*, *Anemone nemorosa*, *Melica uniflora*, *Brachypodium sylvaticum*, *Cardamine bulbifera* etc. Parts of floristic cortège are also *Golium oderatum*, *Dryopteris filix-mass*, *Poa nemonolis*, *Salvia glutinosa*, *Anemone nemorosa*, *Lathyrus venetus*, etc. All these species are considered as shade species suggesting that forest crown density is above 0.8 (categorized as low for densities <0.5, moderate for densities 0.5 to 0.8, and high for densities >0.8)(Vangjeli et al., 1997; DGFP, 2005).



Part of the Vali valley at the beginning of May

The Luzulo - Fagetum association is usually represented in the damaged forest as results of forest logging and other forest operations which have occurred mainly in the last few years, creating low crown and stand density forest. Oaks are the main forest species while associated species include: *Fragaria vesca* (indicator of non-regenerated areas), *Asperula tourina*, *Linaria pelopensiaca*, *Pteridium aquilinum* (indicator of forest of low crown-density), *Juniperus communis*, *Rubus idaeus*, etc. (Vangjeli et al., 1997).

The presence of heliophyte species such as those above-mentioned indicates a crown and stand density below the normal levels. Other associations such as Quercetum montanum moesiicum carpinetosum (forest dominated by *Quercus petraea*, *Sorbus torminalis*, *Acer tataricum*, *Cornus mas* etc.) and Quercu cerris-carpinetum (dominated by *Quercus cerris* and *Carpinus orientalis*) are less represented.

The flora of the non-forested land is also characterized by a high diversity of shrubs and herbaceous plants that form it. This biologic biodiversity is dedicated to the amplitude on the altitude above sea (from 600-1450m), as well soil and geologic diversity, ground configuration and human spontaneous activities (intensive logging, branch loggings, a wrong definition of land usage, intensive and uncontrolled grazing, impact on the change of habitats destroying some important aspects of fauna).

Based on the field survey and on the Red Book (Vangjeli et al., 1995), several threatened species (of different threatens IUCN categories) grow on the area of Martanesh. These are listed below:

1. *Coryllus colurna* L. – Hazel
2. *Dryopteris filix-mass* L. – Fern
3. *Colchicum autumnale* L.- Autumn crocus
4. *Fraxinus excelsior* L. – European Ash
5. *Orchis sp.* Div. – Orchis
6. *Juniperus oxycedrus* L. - Juniper
7. *Sambucus nigra* L. - Elder
8. *Viscum album* L. – Mistletoe
9. *Saturea montana* L.- Winter savoury

2.1.6. Fauna

Classification of potential vegetation by habitat types based on climax over story and understory species is commonly used throughout Albania. These habitat types are important in understanding the presence or absence of birds and animals. The Val valley has a very rich fauna, although it should be noted that because of extensive forest logging and illegal hunting the number of species and individuals has sharply decreased. The valley is home of more than 20 bird species which live in different habitats such as Hazel grouse (*Bonasa bonasia*), Wood Pigeon (*Columba palumbus*), Common Crane (*Grus grus*) etc. Potentially, the area can offer shelter to more than 25 mammal species, but because of habitat loss, actually only 10 species are recorded to live in the area such as Squirrel (*Sciurus vulgaris*), Hedgehog (*Erinaceus europaeus*), Hare (*Lepus europaeus*), Weasel (*Mustela nivalis*), Dormouse (*Glis glis*). In the Val valley and its surrounded forest, several of large carnivores can be found. Around 14 species of carnivores live mainly in the forest while some of them use also other habitats. Some of these species such as brown bear (*Ursus arctos* L.) and Lynx (*Lynx lynx*) are considered protected species by the Albanian law, and since 1990 hunting has been officially prohibited. In spite of that, sometimes the bear is being hunted, mostly because it is considered to cause damages to farmers' crops and livestock. In fact, in summer and autumn the bear used to frequently feed on crops, livestock and fruit-trees, causing sometimes considerable damages to the farmers' small economy. Wolf (*Canis lupus* L.), Badger (*Meles meles*), Fox (*Vulpes vulpes*), and large ungulates such as roe deer (*Capreolus capreolus*) and wild boar (*Sus scrofa*) are inhabitants of the surrounded forest (Vangjeli et al., 1997; DGFP, 2005).

Key finding:

*Natural and human selection have been strong forces in shaping walnut populations in the Vali-Martanesh region, leading to a high phenotypic variability. The most important abiotic factors are autumn frosts, which sometimes lead to tree death, and late spring frosts that have an effect on stem form. The main biotic damage factors are fungal attacks. *Armillaria mellea*, *Phytophthora cinamomii* and *Phytophthora cambivora* are important diseases affecting the root system while antracnosis (*Gnomonia leptostyla*) causes summer leaf fall. Although walnuts are thought to require topsoil of at least 1m depth, well-drained, non-stratified soils, the project provides evidence that walnuts can perform well on shallow, fragile soil.*

2.1.7. Local structures for communal forest management:

In the last decade, communal forests adjacent to villages have suffered some of the worst overexploitation and degradation. This particularly for forest where rights were vaguely defined, where neither effective State nor community control or consensus about the distribution of rights had exist and where defence of either formal or customary rights against encroachment or challenge, were inadequate.



Walnut trees at the end of the valley



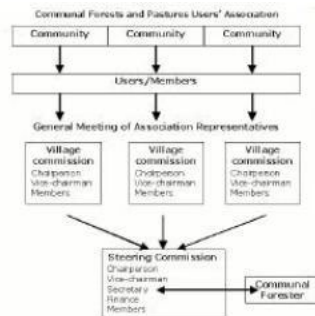
Old walnut tree growing in extreme soil conditions

Forest and pastures in Martaneshi commune are transferred from the state ownership to the commune in 2002, through the financial support of Albanian Forestry Project (AFP, 2002). One important element in sustainable forest management is the self-organizational of the population through creation users' groups and associations enjoying legal person status, such as Forest and Pasture Users Associations (FPUAs) at commune's level. Commune has contracted the FPUA-s for implementing the forest and pasture management plan. All forest and pasture users in commune are members of the FPUA. Users are identified during the transfer process: families with private user claims; individual users; family group (so-called 'fis'); and village use (land in use by the whole village called "mera"). As part of the process of transferring usage rights, Val villagers have create *village commissions*, consisting of individuals elected by the users of communal forests and pastures. The forest and pasture village commission is elected in an open meeting of the village members and assist in the development of the projects.

Conservation and the rehabilitation of the English walnut on the Val-Martanesh region

The diagram below indicates how village commissions and FPUA-s are related. This is based on statutes and regulations. The FPUA is a legal entity and registered at the court as non-profit making organization.

The FPUA can employ staff to carry out CFPM implementation tasks. In general, a Communal Forester is employed who is responsible for the administrative tasks and technical issues related to CFPM. The Communal Forester also gives technical assistance to the users in implementation of activities.



Neither communes nor users have any explicit rights to sell forestry products. Current Forestry Laws restrict communes' role to that of proper management of the resources in accordance with provisions of management plan and under Directorate of Forestry Services supervision to serve the broad interest of the public. At this point, commune's incomes are essentially restricted to fines, tariffs and licensing fees. Future sources might include rental or usufruct right fees for land acquired in ownership.

Key finding:

Decentralization, as it has taken shape, has marginalized the role of villages as “de jure” arbiters over shared community resources, something that many condemn as being at odds with deep-seated traditions and counterproductive from the point of view of optimal resource management. Based on the last years experience, one very important lesson learnt is that the key policy issue is to consider the village as the basic unit for sustainable forest management and for income generation.

2.2. Restoration of habitats and conservation of walnut through participation of local community

Community participation refers to the active process whereby the beneficiaries of a given undertaking influence the goals, direction and execution of such activity rather than merely receiving a share of its benefits. Experience has shown that achievement of rational, equitable and sustainable development is difficult without the participation and full support of the local communities in the planning and implementation of development activities, including; policies, projects and programs (Olson and Buchner, 2002).

In the course of *the Project* implementation, we used various approaches to ensure that community was fully involved in developing and implementing a set of viable alternatives which we thought could minimise pressure on existing walnut plantation. Initially, contacts with the representatives from the Martaneshi commune (administrative unit), the Forest Service of Bulqiza District, Forest and Pasture Users Association (FPUA) of Martaneshi commune and Commission of Forest and Pasture (CFP) of the Vali Village were established. The Commune Chairmen and other community leaders were informed about Project objectives and components. In addition to that, we considered that to be effective, participation must be direct, not just through representation, and must give absolute power to local communities to make their own decisions and ultimate control over their implementation. Thus, we established direct contact and realized several conversational interviews with locals who helped us to define their felt needs and identify possible solutions.

After a detailed survey of both sides of the valley and collection of rich materials including photographs, notes on the environment and the species growth, a flipchart was organized with people who participated in the field survey.

As foreseen in *the Project* application, one of the major issues where we put emphasis was the conservation and restoration of natural tree composition and the habitat. The approach was to develop and implement such a strategy that on one side the species will be able to protect their survival, while on the other hand, the ecosystem is protected and the habitat for other organisms is maintained.



Walnut trees damaged from pruning



During the slipchart

Since local people have an interest in walnut and adjacent forests areas, protection and conservation should consider these people's rights and local history. We considered important to have a thorough understanding of "Who are the users of the area" and "For what purpose do they use it?". Conservation without local peoples' involvement is almost invariably not a viable option (Soule and Sanjayan, 1998).

To allow natural regeneration and to discourage grazing and timber cutting in degraded walnut and surrounded forest, an agreement was achieved with Forest and Pasture Users Association (FPUA) of Martaneshi commune and Commission of Forest and Pasture (CFP) of the Vali Village, to fence off part of the area. This included the bottom of the valley and an area of 2 ha in both sides of the slopes and will be for 5 years. The idea of using a "Schnell" type was discussed but later rejected because; (1) this type of fence is relatively expensive and (2) based on the previous experiences, the agreements with FPUA-s and CFP-s have been sufficient to protect or conserve certain areas of interest. Thus, we marked the area and fenced off using simple fence.



Walnut trees growing in good soil condition



Fencing off part of the area

We hope that within two years, the community can expand its forest regeneration area. To return more profits to local people, a community-based ecotourism program for the regenerating forest needs to be designed.

In addition to that, the assisted natural regeneration, a cost-effective and ecologically sound approach of protecting and encouraging re-growth was employed. Its exploit the natural processes of vegetation recovery through enhanced protection practices, facilitation of the growth of existing woody species through liberation cutting and may include some enrichment planting. Following this approach, an area of ca. 2 ha (property of Bala's family, one of the oldest families in the region) was fenced and regularly cleared of brush. Trees in this area were pruned to remove parts that had been previously damaged by grazing livestock or by negligent shepherds.



During rehabilitation work

This restored area might represent a very successful model of *in-situ* conservation and showcase of how responsible farmers and cooperative local communities are crucial for the success. Second alternative for the *in-situ* conservation of the walnut in its natural habitat, as foreseen in *the Project* proposal, was the restoration of the most damaged area by planting of young seedling from other parts of the massif. In several parts of the valley, altogether more than 200 seedlings from other parts of the massif have been planted. Vegetative propagation of some superior trees conditions has been performed but the success of the grafting need to be evaluated in the coming years because sometimes many scions fail and they need regular care and control.

Key finding:

Community participation, good forest management and forest landscape restoration address different aspects of forest conservation and development, but they interact in the field. The followed approach and the steps undertaken aimed to integrate the three into a coherent approach at landscape level. The project provides evidence that such integration is possible although includes negotiation and trade-offs.

2.3. Dynamic conservation of the species by creating good conditions for future evolution of population

In addition to the measurement for the *in-situ* conservation of the walnut in its natural habitat, the second approach employed was the *ex-situ* conservation or dynamic conservation of the species by creating good conditions for future evolution of populations.

The first step in this process was the collection of ripen walnut fruits from superior trees which were in good healthy conditions. The whole area was divided in 10 sample plots based on the physical environment and the growth of the walnut in the massif. From each sample plot 10 trees were chosen, taking care that trees had no symptoms of walnut blight caused by the bacteria *Xanthomonas campestris* or symptoms of anthracnose. Individual trees differed in numerous morphological and physiological characteristics including fruit productivity and vigour, however.

The investigation included quantitative as well as qualitative traits. UPOV descriptors (1989) were used in classifying all the traits. Time of fruit ripening was recorded when at least 50 % of nuts had ripened. Based on the fruit ripening time, trees were classified as early (fruits ripened before September 10), medium (fruits ripened between September 11 and September 30), and late (fruits ripened in October).



Representative fruits from all 10 sample plots



Measuring fruit dimensions

In addition, data concerning pomological traits such as fruit dimension, fruit weight, kernel weight, kernel fullness and kernel percentage of weight relative to total weight of nut were measured. According to UPOV descriptors (1989), pericarp was excluded, and all the measurements were made on physiologically ripe nuts, immediately after harvest. According to the size, nuts were classified as very small, small, medium, large and very large. The above-mentioned categorization was used in grouping the kernel size. Measurements of kernel were performed one month after harvest, during which time nuts were kept at room temperature. Ease of kernel removal was categorized as very easily, easily, medium or difficult.

These selected trees can serve as the starting material for obtaining scions for future vegetative propagation of the walnut.

Secondly, in collaboration with the Walnut Growers Association and the Communal Forest and Pasture Association, an area of ca. 1 ha (300 seedlings) was planted with seedlings from the Vali massif in another location named “Rrapsh i Hotit”.



View of the newly planted trees



Planting a seedling in the Peace Botanical Garden

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“Rrapsh i Hotit” is located in the northern part of Albania in the district of Malesia e Madhe, Kastrat Commune. The climatic and soil conditions in this area (the cross between the “Cemi valley” and “Perroi i thate” valley) are similar with those of Vali valley. The Project was designed from Prof. Ahmet Osja, one of the best specialists of the field with a long-life experience in the conservation and improvement of genetic resources.

Another 5 walnut seedlings from the Vali population were planted in the “Peace Botanical Garden” in Tarabosh.

Aftercare will be the key for the successful development of the seedlings. Over the years the young trees would require regular pruning to encourage them to reach the necessary height. Also, for the first few years it is necessary to control competing weeds around the base of each tree. There is a real risk of lack of manpower resources over the following years. It is expected, however, that over the years the newly established orchard will become a valuable source of graft-wood for other walnut growers in the region.

Key finding:

The Project helped many local people, farmers and other people being enthusiasts about walnut to deepen their contacts and have tapped into a genuine pool of goodwill. This enthusiasm would be well supported by the work in the villages of Vali and Rrapsh i Hotit, as well as the possibility for obtaining high quality scions from the newly established plantations.

2.4. Increase public participation in, and awareness through educational and training activities

A very important component of *the Project* was the increase in public awareness, especially of local community, through educational and training activities. Public awareness is the foundation for community sensitization and increased effective participation of local communities in *in-situ* conservation of species and habitats. The public participation is not only important in primary data gathering, but also to develop changes.

Different kinds of public awareness methods including personal contact, group interviews, participatory approach, distribution of leaflets, flyers, and educational and promotional materials, media campaigns, and others were used in this *Project*.

2.4.1. Workshops

To facilitate the participation of the local community two special workshops were organized during *the Project* implementation.

The first workshop took place at the administrative office of the commune and was well-attended. After the introductory and welcome speech by the representative of the commune, the team staff explained in detail the objectives of *the Project* and the ways of realizing them. After that, representatives of the Forest Service of Bulqiza’s District gave a general overview of the forest resources and walnuts in the area and showed where they might offer the technical expertise.

One of the strategies employed for promoting people's participation was the so called "reversals in learning". Reversals in learning include sitting, asking and listening, learning directly from the poorest, understanding and eliciting indigenous technical knowledge, joint research and development with rural people, learning by doing and simulation games (Brockington, 2003).



During the workshop

Several participants brought their experiences with walnuts, treating them for fruit and wood production, emphasizing also the damage caused by logging and grazing. Part of the problem, as was pointed out from some of the participants, is the ownership since some farmers don't treat with the same care a communal ownership compares with private properties.

When discussing *the Project*, one member mentioned that project staff should spend more time explaining the aims of *the Project* to farmers and taking direct contacts and discussing the conservation issues not only with people who participated in the workshop but also with those who missed it for different reasons. They suggested that management and conservation of the plantation should change from a management and conservation activities undertaken by outsiders (as they consider the Forest Service of Bulqiza's District) to on-farm experiments on communal land. Another suggestion was that activities should be more based on the needs and desires of the farmers, who seem now to be much more willing to take part in planning and management. At the end, *the Project* staff answered questions from the local farmers. There was much interest as shown also by the number of questions asked.

A second workshop was organized on October 10th. The emphasis was put on the grafting techniques to local community as well as to schoolchildren from primary schools. During the course, an expert agronomist delivered a short presentation on grafting techniques that was accompanied by practical demonstrations. Also, with assistance of two expert farmers the schoolchildren grafted a number of trees on their own. A relatively new grafting technique, the so called "The four-flap Graft" (Helmers and Stockton, 1998) was introduced together with other established ones (Mac Donald, 1994; Dirr and Heuser, 1990). The idea of the farmer-to-farmer training was discussed, and several local experts were identified willing to help and train the local farmers.

Another discussed issue was the possibility of establishing walnut nurseries, but farmers weren't very optimistic about them. Since the walnut market is very fragile, they fear that such a big investment might be too risky and not very effective at the moment.

2.4.2. Promotional materials

Extensive effort has been put into preparing and distributing educational and promotional materials about walnut, species and habitat conservation.

To promote the eco-tourism in the Vali valley, two information boards were set up; one at the administrative headquarter of the commune and one in the village of Vali.

100 copies of the flyer about the walnut, its values, 2 pages-full colours; 4 figures, one table, in Albanian language were prepared. The flyer was distributed to the general public and the locals during the workshops and the seminar.

As part of the educational and promotional materials, 100 copies of the technical notes have been distributed. In addition to the technical notes, a leaflet about vegetative propagation was prepared and distributed during second workshop and the final seminar. Several posters were distributed and hanged on visible places. These materials are given in Attachment I of this report.

2.4.3. Media campaign

Implementation of *the Project* was supported by an intensive media campaign. The followed approach was to explain that the ecologies and social impacts of coexistence are most important because this is an issue that extends far beyond the boundaries of conserved or restored area. Several of the team activities about walnut in the Val valley and the surrounding habitats have been published in local and national media.

The daily national newspaper "Standard" in its issue of December 2nd published a long article about the walnut and the Vali valley promoting the eco-tourism in the region (attached). Several other papers from our team have been published in the newspaper "Kurora e Gjelber" ("The Green Crown").

This newspaper is published by the Communal Forest Association and addresses forest and environmental issues. Because of its audience, we thought that this newspaper might be the best to promote our activities. In the August's issue, the newspaper has published a two-page article about *the Project*. In October, another article about the vegetative propagation of walnut was published in the newspaper by Gazmend Zeneli and Haki Kola while in December the paper entitled "Those who remove a stone, plant a tree" by M.Sc. Gjon Fierza, had been published. In November M.Sc. Haki Kola published the paper "the Green Constitution", although the main focus of the paper wasn't the walnut. In the coming issue of the newspaper, the article "Social and economic incomes of planting walnut species in Albania" by Prof. Dr. Ahmet Osja has been submitted. Some of these materials are given in Attachment II of this report.

Key finding:

The publicity given to the progress of the Project implementation has attracted considerable public attention. Media campaign and press releases have stirred the public interest and dispelled many of the misconceptions about growing and conserving walnuts in natural habitats and in similar condition. The outcomes that stem from the project are that although few ha of new plantings have commenced more are planned for the coming years.

2.5. Fostering exchange of information and cooperation with respect to walnut species and habitat conservation

A number of actions were focusing on promoting exchange of information and cooperation with respect to walnut species and habitat. To facilitate the participation of the local people and exchange of experience and know-how, to increase the awareness about the walnut resources and promote the successful implementation of *the Project*, a special seminar was organized at the last phase of *the Project* implementation. The seminar was held on December 15, 2006, in “Peace Botanical Garden”, Tarabosh, and Shkodra. Among the participants were local experts, interested farmers, representatives from the regional Walnut Growers Association, representatives from the Communal Forest Association, representatives from the Forest and Pasture Users Association (FPUA) of Martaneshi commune and that of the region, etc.

The following talks were presented:

Prof. Dr. Ahmet Osja: Nut species in Albania and their social and economical values.

Msc. Gjon Fierza: Genetic diversity of walnuts in Albania.

Dr. Janaq Male: Organization of local farmers for a better soil utilization by planting traditional tree varieties in the region.



At the end of the seminar



During the seminar

M.Sc Haki Kola, Prof. Dr. Maxhun Dida, Dr. Gazmend Zeneli: Phenotypic diversity in walnuts of north-eastern Albania.

Dr. Ferdin Lici: “Herba Dukagjini” a good example of a cooperative for better management of natural resources.

Mr. Islam Lai: Role of the Forest and Pasture Users Association (FPUA) of the Shkodra region in conservation of local and traditional varieties.

M.Sc. Haki Kola: Footprints of Green Constitution (Kanun-the old mountain law).

Dr. Gazmend Zeneli, M.Sc Haki Kola: “Can Species Conservation and Utilization Work Together? New Experiences and Lessons Learned from *the Project*”.



Discussion during the seminar

At the meeting the participants agreed on the proposal to establish an informal network of farmers in the region concerned with the conservation of the traditional walnut varieties. During the meeting, several promotional materials including the flyer about walnut, leaflet technical notes, leaflet of vegetative propagation of walnut, and copies of the newspapers where members of our team have published materials about walnut were distributed.

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For their contribution in walnut rehabilitation and propagation, the Communal Forest Association issued three *Honorary Certificates* to Prof. Dr. Ahmet Osja, Mr. Ndoke Shaba from the Forest and Pasture Users Association (FPUA) of Kastrat commune and Mr. Ylli Bala from the FPUA of Martaneshi commune.

Key recommendation:

Although the Project has given the local people a new sense of empowerment, cooperation and understanding between diverse groups will be crucial to successfully implement community-based conservation. To ensure forestry is practiced in an environmentally responsible, socially beneficial and economically viable way it is essential to sustain the partnerships between conservationists as community organizers and local communities. Through the support of the infrastructure and the lifestyles in the area of Vali, the highly differentiated landscape will be preserved and improved. The attractive landscape, the healthy environment and locally produced organic food can make the region attractive for tourists.

3. FINANCIAL MANAGEMENT

The implementation the Project extended over a period of twelve months (January 2006 to December 2006). Generally, the allocation of the financial resources followed the initial planning. However, due to minor changes in the implementation schedule of some activities, it was necessary to reallocate the sources of financing among the budget items. The most significant reallocation was the transfer to the “Press releases” budget item from the items of DVD preparation and TV broadcasting. The allocation changes from TV broadcasting to press releases was imposed by the fact that the amount of money required, exceeded the money initially planned for this activity. Also, instead of preparing and distributing copies of DVD, we distributed several copies of a VHS material about techniques of plant propagation including also the *in-vitro* techniques entitled “Plant culture” (Hartmann and Kester, 1989). The rest of the financial sources were spent as planned in the application.

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5. APPENDICES:

5.1. Educational and promotional materials

5.1.1. Technical notes



Conservation and the rehabilitation of the English Walnut in Martanesh

SHENIME TEKNIKE ARRA (*Juglans regia* L.)

Karakteristika te pergjithshme

Arra eshte nje lloj drusor shume i vlefshem i konsideruar edhe si "dru kombinat" per perdorimet qe gjejne pjese te ndryshme te saj. Ne vendin tone arra arrin 25-30m lartesi dhe nje diameter mbi 1m. Trungu ne moshe te re eshte i rregullt dhe cilindrik. Levoren e ka te lemuar, me shkelqim me ngjyre hiri ne te argjente, qe me vone peson carje gjatesore. Jeton 100 - 200 vjet.

Sistemi rrenjor ne moshe te re eshte boshtor dhe rritja e rrenjes boshtore ndalon reth moshes 30-35 vjet, kur druri arrin lartesine 6-7 m. Rreth moshes 60-80 vjecare sistemi rrenjor zhvillohet ne nje thellesi te vogel (rreth 10cm) ose ne siperfaqe te tokes.

Kurora ne fillim eshte pak e rregullt por me kohe vet-rregullohet duke marre nje forme te rregullt dhe ne druret e vetmuar arrin nje diameter 8-14 m. Gjethet jane te vendosura ne menyre te kembyer, te perbera, me 5-9 flete eliptike, 6-12

cm te gjata dhe 3-8 cm te gjera, me maje, pothuajse te plote anash, aromatike, arome qe vjen nga prezenca e juglandines (nje triterpenoid).

Arra eshte nje lloj me lule njeseksore monoike. Lulet mashkulllore jane te grumbulluara ne gathe anesore te varur, ndersa ato femerore jane te grumbulluara ne maje te bisqeve dyvjecare. Arra pas mbjelljes ne plantacion fillon te frutifikoje rreth moshes 10-vjecare, por ne frutifikim te plote hyn rreth moshes 25-30 vjet. Maksimumin e prodhimit e arrin rreth moshes 60 vjecare.

Kushtet e rritjes

Kushtet ideale te rritjes se arres do te ishin klima e bute pa ngica te vonta pranverore dhe tokat pjellore, te pasura, me aciditet te ulet ose neutral (pH 6-7). Zhvillohet normalisht ne zonat me periudhe vegjetacioni mbi gjashte muaj dhe sasi reshjesh vjetore mbi 700 mm, keto te shperndara uniformisht. Arra ka kerkesa per lageshtine e ajrit dhe te tokes. Gjate periudhes se vegjetacionit kerkon nje lageshti relative te ajrit nga 50% deri 80%. Temperaturat e larta (mbi 35° C) te shoqeruara me thatesire mund te shkaktojne djegje te bisqeve e sidomos te frutave. Persa i perket lageshtise se toke, ka kerkesa ndaj saj por duron me mire thatesiren sesa lageshtine e tepert. Ujerat freatike duhet te jene ne thellesine 5-6m pasi prania e tyre ne thellesi me te vogla mund te shkaktoje asfiksimin e rrenjeve dhe tharjen e degeve te poshtme te kurores. Shkon ne tipe te ndryshme tokash, me thellesi mesatare, te fresketa e te pershkueshme. Toka dhe nenshtresat e saj duhet te jene te shkrufta qe te lejojne depertimin e rrenjes boshtore ne thellesi.

Shumezimi i arres

Arra shumezohet kryesisht me fare. Fruti piqet ne vjeshte kur fillon te hapet sharku. Arrat mblidhen, nxirren nga sharku, hapen per te thare ne shtresa me trashesi 10-15cm dhe perzihen kohe pas kohe. Tharja vazhdon per 3-4 dite.

Per mbjellje perzgjidhen kokrrat e medha me forme te rrumbullaket ose pak ovale me gujade te holle e lemuar nga jashte me tul te bardhe e te holle qe ndahet lehte kur thyhet gujada. Kur mbjellja behet ne pranvere, behet shtratifikimi per 60-90 dite ne rere te laget dhe ruhen ne mjedise te ftohta me temperature 0-5°C. Kushtet e ruajtjes dhe lageshtia kontrollohen here pas here. Gjate shtratifikimit tregohet kujdes qe ne momentin e mbjelljes gujadat duhet te jene paksa te hapura ose te kene mbire, vecse rrenjeza te jete deri ne 1cm.

Mbjelljet ne fidanishte behen ne thellesine 8-10cm ne rreshta me largesi 25-30cm ndermjet tyre dhe 6-10cm fara nga fara. Ne nje meter gjatesi rreshti mbillen 16-20 kokrra (rreth 150gr) per te marre 11-13 fidane. Maja e arres duhet te vendoset poshte me kujdes, pa demtuar rrenjen. Farat mbulohen me tericat dherishte plehu te dekompozuar mire me nje shtrese 3-4 cm. Per te marre fidane me sistem rrenjor te zhvilluar mire rekomandohet qe ne vitin e pare te behet prerja e rrenjes boshtore. Kjo mund te behet ne muajin maj kur del çifti i dyte i gjetheve. Prerja e rrenjes behet ne thellesine 12-15cm nga qafa e fidanit, me bel ose me kazme. Pas prerjes farishtorja nivelohet dhe ujitet me uje te bollshem. Vitin e dyte

kryhen te njejta sherbime. Fidanet e afte per mbjellje duhet te kene lartesine 1m, rrenjen 25 cm dhe diametrin e qafes 15 mm.

Kur kerkohen fidane te rritur rekomandohet shperngulja e fidaneve me moshe nje ose dy vjecare. Ne shperngultore fidanet mbillen ne rreshta me largesi 60-100cm dhe 40-50cm fidani nga fidani. Pas shkuljes behet krasitja e rrenjeve dhe prerja e rrenjes boshtore 25cm nga qafa e fidanit si dhe priten degezat e that dhe te demtuara. Ne shperngultore fidanet mbahen 3-5 vjet. Ne vitin e trete kur fidanet kane arritur 1.8 - 2m behet formimi i kurores. Kujdes duhet treguar qe gjate ketij operacioni te mos demtohen sythat fundore, pasi arra i perballon me veshtiresi krasitjet per formimin e kurores. Shkulja e fidanit per tu mbjelle ne objekt kerkon kujdes te vecante. Shkulja duhet te behet rreth fundit te shkurtit ose fillimit te marsit. Fidanet duhet te kene rrenjen boshtore me gjatesi 40-50cm ndersa rrenjet anesore te jene 20-25cm.

Ne objekt mbillen fidane nga farishtorja (2 vjecare) ose shperngultorja (5-8vjecare). Skema e mbjelljes varion ne varesi te pjellorise se tokes dhe synimit qe do ndiqet. Per lende drusore skema rekomandohet 6x6m duke parashikuar qe rreth moshes 25-30 vjet kjo te dyfishohet. Per frut, ne tokat e rrafshata pjellore, perdoren mbjelljet lineare ne rreshta 20-25 m dhe 12-15m brenda reshtit. Ndermjet rreshtave mund te mbillen drure te tjere frutore qe kane rritje te shpejte dhe hyjne heret ne frutifikim (vishnja, pjeshka, kumbulla, etj). Mbjellja behet ne gropa me madhesi 100x100x80 cm.

Mirembajtja

Ne vitin e pare te mbjelljes ne objekt fidanet rriten pak prandaj gjate kesaj periudhe drureve iu behen disa prashitje ne nje siperfaqe te barabarte me madhesine e kurores. Pleherohen me pleh organik te dekompozuar mire dhe kur ka mundesi ujiten 2-3 here ne vit. Rekomandohet qe gjate 10 viteve te para te behen pleherime shtese duke perdorur si norme per 1m²: 80g superfosfat, 15g nitrat kaliumi, 30g nitrat amoni, 60g sulfat amoni dhe 3-4 kg pleh organik. Pleherimi baze behet ne vjeshte, kurse ai plotesues fillon heretne pranvere.

Shumezimi i arres me copa te rrenjezuar ne konteniere kartoni

Nje metode tjeter e zbatuar me sukses per te shumezuar arren eshte edhe metoda e meposhtme:

- Pritet trangu per te nxitur formimin e kercenjve adventive. Ky veprim zakonisht behet gjate sezonit te pushimit te vegjacionit ose heret ne pranvere dhe ne vere kur ka filluar rritja.
- Kur kercenjte adventive arrijne 20-25cm dhe baza e kercellit eshte forcuar (eshte arritur formimi i celulozes) behet prerja e copave dhe grumbullimi i tyre.
- Zhytet dhe nxirret shpejt baza e seciles cope ne perzierje 7.00 ppm Indoli te Acidit Butirik (IBA) ne etanol.
- Futet baza e seciles cope ne thellesi prej 5cm ne nje perzierje 50/50 peat dhe perlite ne nje kontenier kartoni.

- Prisni nga nje cope te vogel te seciles qoshe te bazes se kontenierit per te siguruar kullimin.
- Vendosni kontenieret ne sera ne vende hijezuara 50-70%. Perndryshe vendosni ato ne hijezim te plote 100%, p.sh. ne nje vend me drite por jo direkt nen rrezet e diellit.
- Copat rrenjezojne dhe rritja e kercenjve te rinj fillon pas rreth 35 ditesh. Kur kercenjte e rinj jane rreth 2.5-7.5 cm ato mund te trajtohen sikurse te gjitha bimet e tjera perpara mbjelljes ne fushe te hapur.

5.1.2. *Vegetative propagation of walnut.*



Dr. Haki Kola
Dr. Gazmend Zeneli

Shumëzimi vegetativ i arrës (*Juglans regia* L.)

Hyrje

Nga studimi i popullatave të arrës krahas të tjerave, vërehet një variacion i madh përsa i përket formës dhe madhësisë së frutit, sipërfaqes dhe trashësisë së levozhgës, shtresave të brendshme që mbështjellin e ndajnë thelbinjtë, në raportet midis thelbit e kokrrës, në përmbajtjen e yndyrnave, proteinave, karbohidrateve, në ritmet e rritjes, në prodhimtarinë në individë të ndryshëm, në afatet e lulëzimit dhe në shumë tregues të tjerë. Në aspektin ekonomik këto ndryshime reflektojnë në realizim të ardhurash të ndryshme nga kultivuesit si nga rendimenti e prodhimtaria e drurit në afate e sipërfaqe të ndryshme, ashtu edhe nga cilësia e prodhimtaria e frutave.

Metoda tradicionale e shumëzimit me farë të fidanëve nuk i garanton kultivuesit formën e dëshiruar, pasi karakteristikë bazë e bimëve heterozigote me pjalmim të kryqëzuar, ku futet edhe arra, në rastin e prejardhjes farore, është ndryshueshmëria në treguesit e frutave, në treguesit morfologjik etj. Në praktikën e kultivimit të arrës, përpjekjet e bëra për të zgjedhur farën, përgjithësisht kanë qenë pasukseseshme, pasi në brezninë e re me prejardhje të zgjedhur, cilësitë e individëve të rritur kanë rezultuar me ndryshime nga origjina, ndryshime më të dukshme në cilësitë e frutit. Kështu nuk përjashtohen edhe ndryshime pozitive, por duhet theksuar zhgënjimi i kultivuesit kur pas një dekade pritjesh e shërbimesh, përfton jo individin e pritur e të premtuar nga prodhuesi i fidanëve.

Qëllimi:

Realizimi i shumëzimit vegetativ të arrës synon:

Së pari: Ruajtjen e fondit të pasur genotipik të arrës, duke krijuar koleksione për format më të vlefshme, por që rriten të shpërndara, ruajtja e të cilave aktualisht është e pagarrantuar. Kjo do të përbente një ndihmesë për të hedhur bazat për realizimin e programeve të përmirësimit gjenetik të kulturës së arrës, e cila ka shumë vlera për zonat rurale të vendit tonë.

Së dyti: Fidanishteve u krijohet mundësia për ta garantuar kultivuesin për formën që dëshiron në të gjitha aspektet, cka përbën një stimul për shtimin në perspektivë të këtij druri të vlefshëm.

Së treti: Në aspektin ekonomik, krijohet mundësia që në të njëjtat afate kohore dhe në të njëjtat hapësira të realizohen rendimente më të larta si në prodhimin e drurit ashtu edhe të frutit.

Materiali dhe Metoda

Conservation and the rehabilitation of the English walnut on the Val-Martanesh region

Në rrethin e Dibrës, ashtu dhe në të gjithë Shqipërinë, në drejtim të shtimit vegetativ të arrës, eksperiencia mungon. Në përgjithësi punëtorët dhe specialistët e fidanishteve i njohin teknikat e shtimit vegetativ, si me anë kalemash (plepi), copa rrënjësh (akacia), me rrënjëzim fundor (lajthia, ftoi) apo me shartim në mjedise të mbyllura (shartimi dimëror i hardhisë), apo në mjedise të hapura (shartimi me kalema në pranverë, apo shartimi me syth të fjetur në fund të verës në vijën e fidanishtes.) Literatura rekomandon për arrën si shtimin vegetativ nëpërmjet rrënjëzimit në tokë duke përdorur nxitës të rritjes (acidin giberlinik etj.), rrënjëzimin me hinkë në kurorë, ashtu si dhe shartimet në mjedise të mbyllura (dimëror) në kushte me temperaturë e lagështirë të kontrolluar, ashtu dhe shartimin direkt në vijën e fidanishtes me syth të fjetur në periudhën e vegjacionit.

1. Për shartimin dimëror

Literatura rekomandon afatet nga dhjetori deri në gjysmën e parë të shkurtit, duke e mundësuar atë edhe në mars. Në eksperimentet që ngrihen për këtë qëllim për nën-shartesë përdoren fidana njëvjecar, për mbishartesë kalema të marrë nga llastarë njëvjecarë të cilët duhet të kenë realizuar pjekje të mirë.

Përgatitja e nënshartesës

Përdoren fidana njëvjecare. Zgjidhen fidana me diametër në qafën e rrënjës 1-1.2cm. Shkulja bëhet në vjeshtë pas rënies së gjetheve. Nënshartesat merren nga fidanishtja 12-15 ditë përpara shartimit. Përgatitja konsiston në pastrimin nga dheu dhe shkurtimin e rrënjëve boshtore e anësore. Pas kësaj vendosen në mjedis me temperaturë 26-28° C dhe lagështirë të ajrit jo më pak se 85%. Pas kësaj futen në arkat që do të përdoren për shtratifikim. Mbulohen me tallash që laget here pas here me ujë të ngrohtë. Kjo ndihmon në aktivizimin e qelizave të meristemës apikale dhe kambiumit.

Përgatitja e mbishartesës

Kalemat zgjidhen nga llastarë njëvjecare të shëndetshëm e të pjekur mirë. Bëhet kujdes në dallimin e sytheve vegetativ nga ato me destinacion prodhim lule/frut. Mbishartesa realizohet nga kalema me gjatësi mesatare 25 cm dhe diametër mesatar 8mm. Përfshihen llastarët e papjekur ose ato që e kanë diametrin e palcës mbi 1/3 e diametrit të llastarit. Kalemat merren 3-4 ditë përpara shartimit. Mjediset ku bëhet shartimi duhet të jenë të ngrohta me temperaturë 18- 20° C. Ashtu si në rastin e shartimit të hardhisë prioritet i jepet shartimit me gjuhëz, ku duhet mbajtur parasysh që trashësia e dy komponentëve nën e mbi shartesë duhet të përputhet.

Teknika e shartimit

Konsiston në prerjet tërthorazi që u bëhen të dy komponentëve, me thikë sa më të mprehtë, për të eliminuar plagosjet e shtresës së kambiumit. Prerja tërthorazi bëhet në një kënd 30-35° C në raport me vertikalen, në mënyrë që sipërfaqja e saj të jetë 1.5-2 herë më e madhe nga prerja vertikale. Në nënshartesë ajo bëhet 3-5 cm mbi qafën e rrënjës, ndërsa në mbishartesë 3-5 cm nën syth. Po në prerjen tangenciale në të dy komponentët bëhet edhe prerja për gjuhëzën, që fillon nga pjesa e sipërme, d.m.th në një të katërtën poshtë saj, në kënd të vogël me prerjen tangenciale deri në mes të saj. Pas kësaj komponentët bashkohen në mënyrë që gjuhëzat të futen në njëra tjetrën, dhe anët (pjesa e lëvores) e nënshartesës dhe e mbishartesës të korespondojnë plotësisht. Shartesat lidhen me rrafje si dhe izolohehen me parafinë të lëngët.

Trajtimi pas shartimit

Pas shartimit fidanët vendosen në arka, që hapen nga anash. Në fund të arkës vendoset një shtresë tallash i lagur 4-6 cm, pas saj vendoset një shtresë fidanash që mbulohehen me 2-3 cm tallash, duke vazhduar në këtë mënyrë deri në mbushjen e arkës. Radha e fundit e fidanëve të shartuar mbulohet përsëri me 4-6 cm shtresë, që është e domosdoshme për izolimin e shtresës ndërmjet fidanëve dhe faqeve të arkës.

Arkate vendosen në mjedise me temperaturë 26-30° C dhe me lagështirë të ajrit 90-95%. Në këto kushte parashikohet që kallusimi të ndodhë në 12-15 ditë. Për lehtësi dhe kursim fondesh mund të përdoren serat për prodhimin e fidanave të perimeve të cilat janë në gjendje pune nga fundi i shkurtit deri në fillim të prillit.

2. Shartimi me syth ne fidanishte

2.1. *Shartimi unazor*

Ky lloj shartimi konsiston në faktin që në dy komponentët nën e mbi shartesë realizohet prerje unazore me gjatësi 2.5 cm. Unaza e hequr nga nënshartesa zëvendësohet me atë që merret nga mbishartesa.

Baza materiale: Për të realizuar përputhje të elementeve kërkohet një thike e posacme me dy prerëse paralele, me distancë midis dy prerësve 2.5 cm me të cilën realizohet shartimi në forme unaze. Lidhjet realizohen me rrahje.

2.2. *Shartimi me copa drejtkëndëshe*

Metoda: Nga mbishartesa bëhet prerja në formë drejtkëndëshe e sythit me dimensione: gjatësi 2 cm dhe gjerësi 1.2 cm. Në të njëjtat përmasa bëhet një prerje në nëshartesë. Në vend të saj vihet pjesa e marrë nga kalemi. Lidhja bëhet e kujdeseshme.

Baza materiale: Për të patur korespondencë të pjesës së hequr me atë që vendoset, duhet të përgatitet thika me katër lama me përmasa 2*1.2 cm.

2.3 *Shartimi në formë T*

Për këtë lloj shartimi përdoret e njëjta teknologji që përdoret për shartimin e mollës, kumbullës e qershisë, gjerësisht të njohura nga skuadrat shartuese në fidanishte.

Baza materiale: Sikurse edhe për mënyrat e tjera të shartimit të përmenduar më lart, baza materiale përfshin kryesisht thikat e shartimit, kalemrat dhe nënshartesat.

5.1.3. Leaflet



Varietetet e arrarës

Në vendin tone janë rreth 230 000 rrënjë jëarre, por shpërndarja e tyre është jo-uniforme. Tropoja, Dibra, Librazhdi, Gjirokastra janë rrethet me mbi 10 000 rrënjë, ndërsa disa rrethe të tjerë si Bulqiza, Elbasani, Kolonja, Mirdita, Tirana, Vlorë Përmeti kanë nga 5000 deri 10 000 rrënjë. Tek ne ekzistojnë shumë varietete arrash që mund të përhapen në të gjithë zonat:

Arrae Martaneshit e cila ka kokërr të madhe dhe gujadë të hollë.

Arrae Oqishtit ka gujadën e bardhë dhe shumë të hollë.

Arrae Nepravishites e cila si kokërrin ashtu edhe thelbin i kat ëmedha

Arrae SorentosDibra m e frutatë mëdha, gujadë të drunjëzuar me prodhimtari te lartë dhe të qëndrueshm e.

Arrae Policanit (GjirokastGjirokastëët) m e form a shumë të mira të frutit dhe të drurit.



Pak Histori

Arrat janë njohur prej kohësh si një nga drurët frutorë më të vjetër të njohur nga njeriu, duke datuar rreth 7000 p.e.s. E konsideruar u shqim për Zotat në kohët e hershme të Romës, arra u quajt "Juglans regia" për nder të Jupiterit. Tani ato zakonisht thirren me emrin "Arra angleze", duke iu referuar marines tregtare angleze e cila një here e një kohë transportonte produktet për tregti nëpër portet e gjithë botës. Historianët preferojnë emrin "Arra Persiane", duke iu referuar Persisë, si vendin djae arrës. Në vendin tone arra është e përhapur gjithandej, ajo gjendet nga ultësira bregdetare deri në 1200 m lartësi mbi nivelin e detit në tipe të ndryshme e tokshme me lagështirë të konsiderueshme. Rritet mire në zonën fito-klimatike të dushqeve dhe duron si temperaturat e larta në periudha të gjata thatësire, ashtu dhe ato të ftohta gjatë dimrit.

Vlerat mjekësore

Studim e të shumta kanë treguar se ekziston një lidhje e qartë mes dietave të pasura në ushqim e me origjinë bimore dhe reduktimit të rrezikut të prekjës nga sëmundjet e zemrës dhe kancerit. P.sh arrat zvogëlojnë rrezikun e prekjës nga sëmundjet koronare të zemrës me 11 përqind. N.q.s ju hani një grusht arra në ditë, ju do të ulni kolesterolin në gjak dhe në këtë mënyrë do të ulni rrezikun për sëmundje të ndryshme kardio-vaskulare.

Për më shumë informacion kontaktoni::

Dr. Haki Kola
Shoqata Kombëtare e Pyjeve
Komunale
Tel: 04 227186

Teknologjia e grumbullimit

Shtatori është fillimi i sezonit të grumbullimit të arrës. Sharku i gjelbër i arres hapet, një shenje kjo që tregon se arra është pjekur dhe është gati për tu grumbulluar. Për grumbullim mund të përdoren mjete mekanizuar ose mund të zbatohet grumbullimi me dorë. Pas heqjes së sharkut dhe larjes, arrat thahen (tharja ndihmon në mbajtjen e freskësisë për një kohë të gjatë). Arrat duhet të ruhen në vende të freskëta e të thata (preferohen frigoriferët), dhe larg ushqimeve me aroma te forta.

Vlerat ushqyese të frutit

Arra (*Juglans regia* L.) vlerësohet shumë për frutat të cilat janë ngrënëshme. Ajo është ndër llojet që ka shumë përbërës me vlera të larta ushqyese. Frutat e arrës mund të jenë zëven dësues për ushqimet proteinike me origjinë shtazore të cilat janë të pasura në yndyrna. Arra përfshihet në ato pak lloje drufutorë, frutat e të cilave kombinojnë vlerën e lartë energjike të yndyrave dhe proteinave. Fruti gjen përdorim në prodhimin e ëmbëlsirave si dhe për prodhimin e vajit të arrës dhe shumë vajrave të tjerë industriale.



Përbajtjam në lëndë ushqyese

Lëndët Ushqyese	Përbajtja (në 100 g)
Energi (kalori)	630.00 kcal
Proteina	14.10g
Lipide	68.00mg
Vitaminat në rryshme	2.4mg
Karbohidrate (totali)	3.20g
Fibra	9.70g
Hi	1.80g
Ujë	3.20g
Minerale të ndryshme	Rreth 1.3g

Sharku i gjelbër përmban 15-25% lëndë regjese. Tradicionalisht është përdorur për të lyer në të zezë mëndafshin dhe leshin si edhe në industrinë e regjies së lekurëve. Lulet e arrës janë mjaltëse.

Vlerat e drurit

Druri i arrës është i ngjeshur, elastik, resistent me texture fine dhe ka vlera të jashtëzakonshme. Përpunohet lehtë dhe nuk preket shume nga insektet dëmtues. Dërrasa është shumë e kërkuar për prodhimin e mobiljeve të cilësisë së lartë, prodhimin e rimesos, për gdhendje etj. Cungu dhe rrënjët japin një rimeso jashtëzakonisht dekorative.

5.2. Press releases

5.2.1. Daily newspaper "Standard". December 2, 2006





Shumëzimi vegjetativ i arrës (*Juglans regia L.*)

**Dr. H. HAKENÇA
DOKTOR ENDEVEZELLE**

Dr. H. HAKENÇA

Shumëzimi i arrës (Juglans regia L.) është një nga mënyrat më të shpeshta të shumëzimit të kësaj specie. Në kushte të natyres, arrët shpesh riprodhojnë vetë, por në kushte të kulturës, shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm. Në kushte të kulturës, shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm. Në kushte të kulturës, shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm.

Qëllimi

Qëllimi i kësaj studimi është të analizohet dhe të dokumentohet shumëzimi i arrës në kushte të kulturës. Studimi është i nevojshëm për të kuptuar më mirë mekanizmin e shumëzimit të arrës dhe për të përcaktuar më saktë kushtet e favorshme për shumëzimin e kësaj specie.

Shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm në kushte të kulturës. Në kushte të kulturës, shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm. Në kushte të kulturës, shumëzimi i arrës bëhet më i shpeshtë dhe më i kontrollueshëm.



Kurora e Gjelbër



Botim i Shoqatës Kombëtare të Pyjeve Komunale, Tiranë - (Viti i shtetit i botimit) Nr. 66 tetor 2006 Çmimi 29 lekë

“Unë heq një gur – aty lind një bimë”

shënime udhëtimi

nga GJON FIERZA



Ajo çfarë kishte bërë Prék Milla këto dy vitet e fundit e që e bënte ende më mjaft vullnet, ishte heqja e gurëve dhe vendosja e tyre në grumbuj ose, aty ku mundej, në mure të thatë. Por, dukej mjaft qartë se si kishte filluar të ripërtëritej pylli, kishin filluar të dilnin filizat e rinj dhe kishte filluar të jeshilonte bari.



Ngjitemi në Rapshë, ku menjëherë na bie në sy masivi me arra i Ndokë Shabit. Sapo shihnim arrat, Ndoka ia mbërriti. Një punë vërtetë e mirë. Arra të shëndetshme, megjithëse viti i parë i mbjelljes, kishin arritur lartësinë 2 m.

Page 5



...me shpirtin me
priete kryetar i
komunitës së Kas-
tavit Tomë Curi
dhe kryetari i
Shpirtërisë së Py-
jeve. Njëra e
problemeve dhe
mëshkëltye që
kërkojnë, i bën
nema e bisedës.

Drejtorë të
ecur u shprehën
duke u ndalur në
atë çka në shih-
nin që veçanta.

Një shtetë tjetër, që në mënyrën tjetër,
në grup punës i Prizrenit të Burimeve
Naturave, kryesuar nga drejtori, Nehat
Çollaku, mori murgën për në Shkodër
e Malin të Matit.

Njëherë në Prizren, ku mëshkëltye na
bilo në sy mëshkëltye me arin e Malit.
Sapo shprehim arin, tidozë ia ndërrim.
Një punë vërtetë e mirë. Arin të
shëndetshme, meqë tashmë.



nga GJON BERZA

...veçanta, ku
është ai që
manguri në
këtë arin. Ai
është i pakët
për njëherë e
për tjetër.
Në Prizren,
porë e doku-
tuam edhe
mëshkëltye e
ngritjes së të
lirimit, sipas
propozimit të
Shpirtërisë së
Pyjeve.



Për arin të ndalsh dhe një shtetë të
shkurtrë në pakën karantinë të Rrethit,
filozof të shpirtit. Tek po shprehim, në
Vitet, dikë në tërësi vërtetë. Diku
legjesh punë dikë që po punojnë në
një shtetërisë të mbetur me shtetë
qetë. Ndërmjet arin e shkurtrë punë
të. Për arin një malbur i shkurtrë në
mëshkëltye, që arin e pa, na për me njëherë

...shtetë tjetër ai, duke shprehur njëherë
shkurtrë për vendlin ku është lindur e
ka kaluar jetën.
Njëherë, faktori me Përk. Mijë qe
shkurtrë në e malit e të tjetër shtetërisë.
Shtetë tjetër në dritë të gjerë të veçantë
me Përk, tek punon i çj për punën.
Fotot e shkurtrë me Përk, me të tjetër
shtetë tjetër të veçantë, shkurtrë dhe