MYRCAS GUIDE

Good practises in the rural scope

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- *The people and entities that work everyday so that the rural realm can be a better and more competitive environment, preserving its essence and exploiting its resources in a sustainable way.*

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Introduction

1.1. The Lifelong Learning Programme (LLP)

Education and Culture DG
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THE LIFELONG LEARNING PROGRAMME (LLP)

The **Lifelong Learning Programme (LLP)** is a Community Programme intended to create a common European area for collaboration in education and training.

As the flagship European Funding Programme in the fields of education and training, the Lifelong Learning Programme enables individuals at all stages of their lives (from childhood to old age) to pursue stimulating learning opportunities across Europe. It is an umbrella programme integrating various educational and training initiatives. The Lifelong Learning Programme is the successor to the Socrates, Leonardo da Vinci and ICT / Open & Distance Learning programmes and it will be working during the period 2007-2013.

The Programme aims to contribute through lifelong learning to the development of the EU as an advanced knowledge society, with sustainable economic development, more and better jobs and greater social cohesion. In particular, it aims to foster interchange, co-operation and mobility between education and training institutions and systems within the EU, so that they may become a world quality reference. In this way, it addresses the modernisation and adaptation of education and training systems in the participating countries, particularly in the context of the strategic Lisbon agenda goals, and brings European added value directly to individual citizens, participating in its mobility and other co-operation actions.

LLP is divided in four sectoral sub-programmes and four so called 'transversal' programmes.

The **sectoral sub-programmes** focus on different stages of education and training and continue previous programmes:

- **Comenius sub-programme**: Focused on early childhood, primary and secondary education.
- **Erasmus sub-programme**: Focused on formal higher education.
- **Leonardo da Vinci sub-programme**: Focused on vocational education and training.
- **Grundtvig sub-programme**: Focused on adult education.

The **transversal programmes** aim to complement the sectoral sub-programmes and to ensure that they achieve the best results possible. They aim to promote European cooperation in fields covering two or more of the sub-programmes. In addition they seek to promote quality and transparency of Member States' education and training systems.

Four key activities focus on:

- Policy cooperation and innovation.
- Languages.
- Information and communication technologies-ICT.
- Dissemination and exploitation of results.

The **Jean Monnet programme** also falls under the LLP umbrella; in addition to the sectoral and transversal programmes, this programme stimulates teaching, reflection and debate on the European integration process at higher education institutions.

THE LEONARDO DA VINCI PROGRAMME-VOCATIONAL EDUCATION AND TRAINING (LdV)

The Leonardo da Vinci programme links policy to practice in the field of vocational education and training (VET). Projects range from those giving individuals the chance to improve their competences, knowledge and skills through a period abroad, to Europe-wide co-operation between VET stakeholders in order to enhance the attractiveness, quality and performance of VET systems and practices.

Specific objectives of the Leonardo da Vinci Programme

- To support participants in training and further training activities in the acquisition and the use of knowledge, skills and qualifications to facilitate personal development.
- To support improvements in quality and innovation in vocational education and training systems, institutions and practices.
- To enhance the attractiveness of vocational education and training and mobility for employers and individuals and to facilitate the mobility of working trainees.

MULTILATERAL PROJECTS - TRANSFER OF INNOVATION

The aim of Leonardo da Vinci Multilateral Projects 'Transfer of Innovation' is to improve the quality and attractiveness of the European VET system by adapting and integrating innovative contents or results from previous Leonardo da Vinci Projects, or from other innovative projects, into public and/or private vocational training systems and companies at the national, local, regional, or sectoral level.

The process for transferring innovative training contents or results will include the following:

- Identifying and analysing targeted user requirements.
- Selecting and analysing innovative contents to meet these requirements and analysing the feasibility of transfer.
- Integrating (or certifying) them in European, national, regional, local and/or sectoral training systems and practices.

This implies:

- Adapting them to the training systems, culture, needs and requirements of targeted users (updating the product, etc.).
- Transferring them to new socio-cultural and linguistic contexts.
- Using them in new sectors or new target groups, including piloting them in public or private training structures.

1.2. The MYRCAS Project

The **MYRCAS** project: "*Myrcas: Transference and adaptation of the new training itineraries for the qualification in the rural realm*" is a Leonardo da Vinci - Transfer of Innovation project, developed within the framework of the Lifelong Learning Programme and with a total lifetime of 18 months.

It has intended to transfer the results of three previous projects that were developed as Pilot Projects within the previous Leonardo da Vinci Programme:

- **IRIS**: Organic agriculture: an innovative labour insertion.
- **MYKOS**: Fungi as a resource for employment, sustainable development and economical diversification in the rural realm.
- **CHESTNUT IN EUROPE–III MILLENNIUM**: Chestnut trees as a dynamisation tool.

The solutions presented by each one of these projects, represented innovative solutions in order to support the improvement of the vocational and professional capacities, to

create employment in the rural realm, being based upon new emergent job opportunities.

The main target groups of the project have been non-qualified young people of the rural areas, rural women, disadvantaged groups, immigrants and disabled people.

The following groups have been also considered beneficiaries: teachers, trainers, educational authorities, local actors of the tourism, agriculture and environment fields, training centres and enterprises, Local Action Groups, public entities, etc.

THE MAIN OBJECTIVES OF THE PROJECT HAVE BEEN:

- To improve the quality of the European VET system by adapting and integrating innovative results and contents.
- To transfer the results to rural groups in need of specific qualification related to endogenous resources.
- To select innovative contents (manuals, didactic units, pilot courses, etc...) so as to meet transfer requirements.
- To adapt contents and curricular designs, culture and needs, as well as to target user needs.
- To transfer the contents to new social, cultural and linguistic backgrounds.

OBTAINED RESULTS:

During the project lifetime different activities and actions have been carried out producing the main results of the project, which are briefly described below:

The Study on Training Needs.

One of the first actions developed within the MYRCAS project was a study on training needs that was carried out in every partnership action area. In this way, the partners were able to know which of the topics tackled within the project was/were more interesting in their areas. Once all the studies were carried out, a summary in English was elaborated, including the main data and conclusions of all those studies.

The Website of the project.

The website of the MYRCAS project (www.myrcas.com) shows a description of the project objectives, partnership, activities and results in the different languages of the partners and in English. It intends to be a "showcase" so that the general public can know the project and the activities developed within it.

The ADAM database.

The ADAM database is addressed to those beneficiaries of Leonardo da Vinci (LdV) projects that intend to show their products and to the people interested in consulting new innovative projects financed by the LdV programme. It is possible to consult the results obtained within the projects in many different formats, which makes possible a high dissemination across Europe. The information

about the MYRCAS project (as well as its main results and products), has been introduced in this database so that it can be consulted by the general public.

The Informative Brochure.

During the development of the project, the partners elaborated an informative brochure describing the objectives of the project, the partnership, the activities and the foreseen results. This brochure can be downloaded from the website of the project and is available in all the languages of the partners and in English. It is also available in the ADAM database.

The Informative Newsletters.

During the development of the MYRCAS project, the partners elaborated six informative newsletters describing the progresses of the project during its different phases. These newsletters can be downloaded from the website of the project and from the ADAM database. They are available in all the languages of the partners and in English.

The Transnational Seminars.

During the development of the MYRCAS project, the partners organised 4 transnational seminars in which all the partners participated. The seminars took place in Spain, Romania, Slovakia and Italy and during them, the partners agreed different points about the development of the project activities, about the results and other important questions for the achievement of the project objectives.

Dissemination activities and Collaboration Agreements between the partners and different national entities.

During the development of the MYRCAS project, the partners contacted different entities with the aim of obtaining their collaboration and support for the development of the foreseen activities. The information of the entities that collaborated is available both in the website of the project and in the corresponding section of the ADAM database.

The Pilot Courses.

Taking as a basis the contents of the three manuals created within the previous projects (MYCOS, CHESTNUT IN EUROPE-III MILLENNIUM and IRIS), different pilot courses were organised to increase the knowledge of the people interested in becoming professionals on the fields of mycology, chestnut tree growing and organic agriculture. The different partners of the project selected the thematic to tackle during the pilot courses according to the results obtained from their studies of training needs. All the courses were concluded successfully and the participants were satisfied with their development.

The Good Practices Guide.

Available in all the languages of the partners and in English, the present guide includes a brief introduction about the European

Lifelong Learning Programme, the MYRCAS project and the Transnational Association involved in this project.

Besides, it includes different good practises related to the topics tackled within the project (mycology, chestnut tree growing and organic agriculture). These good practises have been developed successfully in the different countries of the partners and they constitute good examples and models to be followed by other individuals or entities working in the same fields.

1.3. The Transnational Partnership

The transnacional cooperation has been the main pillar over which the project has been built. Otherwise, it would loose all its meaning.

The transnational association involved in the MYRCAS project has been constituted by 8 partners from 6 different European countries. The partnership was created to address the need for a wide cooperation framework that meets the expectations and needs of the project and its target groups.

Below, a brief description of the partners that have made possible the creation of this guide is given:

IRMA S.L. (Spain)

The Institute of Restoration and Environment is a Spanish SME dedicated to training activities and management of projects related to the rural development, natural heritage protection and sustainable exploitation of natural resources.

It has great experience in cooperation actions with many social actors, entities, enterprises and authorities related to the rural realm and it has worked in the following fields: environment, organic agriculture, ecological tourism, cultivation of chestnuts, fungi forestry and other associated activities.

ADESPER (Spain)

The Association for Sustainable Development and Promotion of Rural Employment is a Spanish non-profit organisation formed by several social agents in the scope of rural and local development.

It has a wide experience in the field of sustainable rural development; it deals with the latter from a double point of view: training and work creation. In this way, it fosters

employment generation as a way to avoid a rural depopulation and to improve social and economic conditions in the rural areas.

ADRAT (Portugal)

The Agency for the development of the Alto Tâmega region has experience in EU funds since its foundation in 1990, with the aim of promoting and spreading the region potentialities: promoting and supporting the regional interest, attending the enterprises actions and potential investments, stimulating cultural, social and defence actions of the regional heritage, fostering professional training actions, organizing colloquiums, conferences and seminars about subjects of regional interest, etc.

C.V.T. AEGEAS (Greece)

The Centre of Vocational Training "Aegeas" was established in 1993 and ever since has been providing mainly continuous vocational training to vulnerable social groups (the unemployed, single parent families, people faced with social discrimination, people with disabilities, etc.), but also tailor-made vocational training for professionals and civil servants.

C.V.T. AEGEAS is certified by the National Accreditation Centre for Continuing Vocational Training (EKEPIS) and implements on average 20.000 training hours/year. Its field of training expertise includes the following sectors: sustainable local development, environment, cultural heritage, health, traditional and alternative types of tourism, agriculture, mass media, etc.

CEDER (Romania)

The main aim of the **Regional Centre for Sustainable Rural Development** is to increase the social capital of the rural population, to strengthen the community spirit, to promote local actions based on the local citizen initiatives and to improve the life quality of the rural people. CEDER also intends to: provide similar opportunities for people in terms of social and personal development, increase the dynamics of rural territories by increasing the quality of human resources, and remake and sustain the natural heritage, traditions and culture.

AGROINSTITUT NITRA (Slovakia)

It is an educational institution with more than 40 years of tradition and it is involved in the development of continuing education strategies and projects, mainly in the sector of agriculture and rural development, both at national and international level.

The main strategic goals of the entity are:

- Development of effective continuing education system in agro-food sector.
- Support and advisory services.

This organisation offers lodging and catering, renting of conference and board facilities and library services.

AèVA (Italy)

The Agriculture is Life Appennino srl. is a company constituted by the Italian Farmers Confederation (CIA) of the Provinces of Lucca, Massa and Pistoia and it operates in the fields of vocational training, divulgation, consulting, counselling and technical advice in the agriculture scope. The statutory aims of Aèva are: to promote and stimulate social-cultural and civic development and vocational training and education of all the citizens, to whichever level and in all economic sectors (agricultural, industrial, services) including also the social field.

Good practises in the rural scope

In this section the guide intends to show good practice examples related to the main topics of the project, so that other people from all over Europe can have new ideas about the innovative activities that can be done in their action areas and with their own resources.

2.1. Good practises related to mycology

2.1.1. Mycorrhizae in nature

Reforestation with mycorrhized species (IRMA S.L.): *Reforestation with mycorrhized species in the U.P. 380 mount of Páramo del Sil.*

1. Context of the good practice (description of the area):

Páramo del Sil is a municipality and locality of Spain, situated in the territory of El Bierzo, in the province of León and in the Autonomous Community of Castilla y León. It has an extension of 191 km², with a population of 1527 inhabitants and a population density of 7.99 inhab/km².

The municipality is located on the bank of the Sil river, in the northern part of El Bierzo area (42:49ºN 6:29ºW). At North, it borders on Asturias, at East on Palacios del Sil, at South on Toreno, Fabero, Noceda del Bierzo and Igüeña and at West on Peranzanes.

It is located at an average altitude of around 862 meters and it is surrounded of high and sloped mountains such as Miro (1990 meters), which has a glacial lake called Cheiroso on its north face; or the close Catoute (2111 meters).

Map of Páramo del Sil. **Source**: *Gráficas ALSE.*

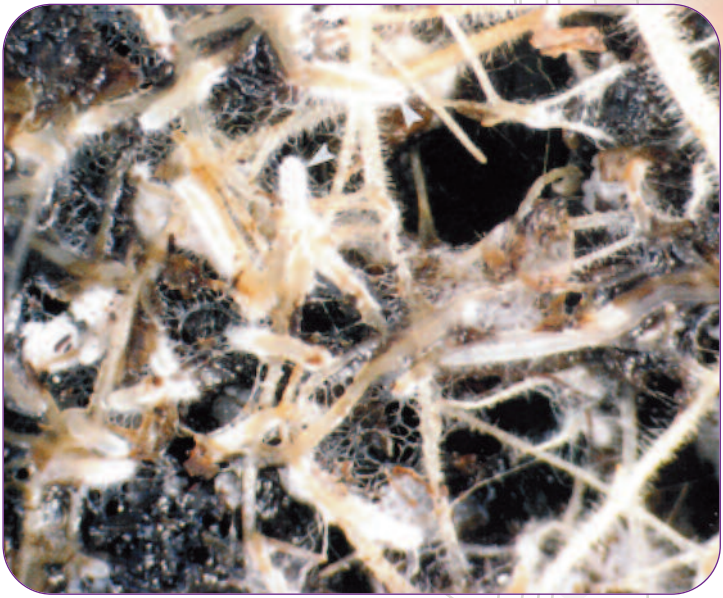
These mountains form a mountain chain that acts as a climatic barrier preventing the rest of El Bierzo territory (La Hoya) to undergo the Atlantic influence. In this area, the existing microclimate has more Mediterranean characteristics.

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called MYKOS, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of the good practise is "Mycorrhizae in nature" and the main objective is to carry out a reforestation process with mycorrhized plants, to show the advantageous effects of the arbuscular mycorrhizae on those plants.

3. Why is it considered a good practice?

The **mycorrhizae** are highly evolved and **symbiotic** associations between some soil fungi and the roots of some plants. The two members of this association belong to the fungi world (most of them *Basidiomycetes*, *Ascomycetes* and *Zygomycetes*) and to the plant world (most of them vascular plants).



Aspect of a mycorrhized root. **Source**: *IRTA.*

This association between fungi and plants benefits both of them and allows the plants to better exploit their environment resources and to be protected against pathogen attacks.

Mycorrhizae promote different positive effects on plants	Better growth
	Higher resistance against environmental factors
	Improvement of nutrition related to phosphate
	Promotion of nutrition related to nitrogen
	Higher resistance to calcium and micronutrients
	Increase of water absorption
	Increase the plant protection against parasites

4. Description of the entity involved in the good practice:

The **Institute of Restoration and Environment** (IRMA S.L.) is the entity in charge of the reforestation with mycorrhized species in the area MUP 380 of Páramo del Sil (León).

IRMA S.L. is a private entity devoted to the rural development, the protection of the natural heritage, the exploitation of the natural resources, the promotion of the organic agriculture, the chestnut cultivation, the mycology and other associated activities.

It participates in the preparation and implementation of Community Initiative projects and other European projects in collaboration with a high number of entities and bodies of different European countries.

5. Description of the good practice methodology:

First, four fungi gathering actions were carried out with fungi fructified in the study area of Páramo del Sil.

As a consequence of these actions, a total of 28 species were classified, although many of them presented fructifications that were repeated during the four sampling actions carried out.

Each species was dried and kept as *exicata* to control the carpophores gathered, to classify them and to carry out a taxonomic determination both at macroscopic and microscopic level.

Then, a species catalogue was elaborated, including data such as abundance, gathering date and potential spontaneous mycorrhizae. A list of species was also elaborated by grouping the individuals according to taxonomical criteria.

Amanita caesaria. **Source**: *Juan Antonio Sánchez.*

On the other hand, different root samples were obtained. The most important consideration to carry out this kind of sampling actions is that the roots that constitute the samples must be free of contaminations from other plants, and must be enough young to accept mycorrhizal associations. It is also important to check the amount of roots needed:

- The root systems of the plant species are extracted and the presence of thin roots within the samples must be assured.
- Different samples must be taken from different individuals belonging to the same species, to determine whether there are variations between them regarding the consistence and the degree of mycorrhizal colonisation.
- The plants must be precisely identified at species level, using standard taxonomic references.
- The samples must be cleaned and dyed using standard procedures. Mycorrhizal colonisations are quantified and the different association types are established through careful microscopic tests.

To carry out the mycorrhization process, natural *inocula* can be used, such as meiotic spores, *sclerotia*, rhizomorph fragments, mycelium or old mycorrhizae.

Mycelium (vegetative inoculum)	- Produced in peat and vermiculite matrix. - Included in polymerised alginate gel.
Spores: Obtained by crushing sporocarps in water.	

Once the needed amount of inoculum is obtained, it is used for the mycorrhization process.

Inoculation techniques in nurseries	
Soil disinfection	It can be done by heat or by fumigation techniques.
Inoculum application	By mixing the inoculum with the soil before the seedtime.
Cultivation tasks	Normally moderated fertilisation and phytosanitary treatments.

The mycorrhized plant must fulfil three conditions:

- Resistance to transplantation.
- Adaptation to the ecological conditions of the forest landlots.
- Competitiveness against the different soil organisms.

6. Description of the good practice products and results:

Nowadays, many important research initiatives (such as the one described) deal with the great existing potential to manipulate mycorrhizal associations with the aim of increasing the plant activity in the forestry field and establishing new plants during ecosystem recovery processes after serious alterations.

The functional diversity of the mycorrhizal fungi contributes to the ecosystem resistance and provides opportunities to select the fungi adapted to specific conditions regarding factors such as host plant/environmental conditions/soil, in order to optimise the tree growth in the planted plots.

Boletus pinophilus. **Source**: *Juan Antono Sánchez.*

The controlled mycorrhization in nurseries allows the reforestation with already mycorrhized plants.

The main aim of the controlled mycorrhization is to increase the forest production, and in some cases, to obtain fungi productions.

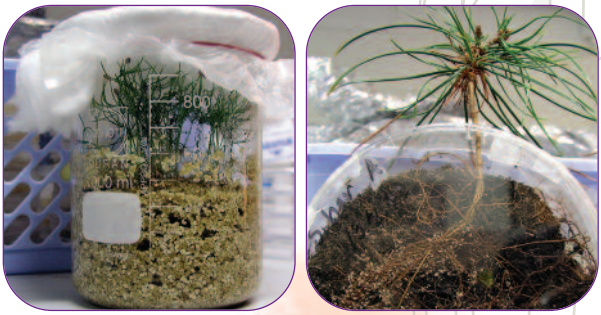
Mycorrhizae reduce the mortality of trees, decreasing the negative effects of transplanting the plants; besides, they accelerate the plant initial growth and the forest mass production.

Nowadays, and taking into account the current knowledge, it is not possible to lastingly and significantly modify the equilibrium between the mycorrhizal flora and the plant roots in forest adult populations. That is why, all these operations can and must be done during the initial life phase of the plants. This is the first and obligated step to implement the controlled mycorrizhation.

Examples of some of the main mycorrhizal fungi	
Ectomycorrhizal	**Endomycorrhizal**
Amanita	*Glomus*
Boletus	*Gigaspora*
Cortinarius	*Acaulospora*
Paxillus	*Sclerocystis*
Russula	*Marasmius*
Rhizopogon	*Fomes*
Phallus	*Coriolus*
Pisolithus	*Endogone*
Laccaria	*Armillaria*
Scleroderma	*Rhizoctonia*
Tuber	*Pezizela*
Suillus	*Sebacina*
Lactarius	*Corticium*

7. Description of the impact and employment created in relationship with the good practice:

The study of the mycorrhizal associations involves many scientific disciplines, including: mycology (fungal taxonomy, physiology, development), botany (physiology, mineral nutrition, morphology of mycorrhizal plants), soil sciences (soil nutrients, structure, biology), ecology (nutrient cycle, environmental quality, ecosystem reconstruction, biotic interactions), human sciences (economic, nutritional and medical values of fungi and associated plants) and other related disciplines (forestry, agriculture, plant pathology).



Mycorrhizae of Pinus sylvestris and Boletus pinophilus in Parkano (Finland). **Source**: *Fungi. Manual and Didactic Guide (Maryán Gallego).*

A great part of the current research activities are nowadays focused on the potential exploitation of mycorrhizal associations in the fields of forestry, agriculture, horticulture and on the production of new edible fungi.

2.1.2. Cultivation of editable and medicinal fungi

a) Cultivation and processing of mushrooms in the area of Western Slovakia (AGROINSTITUT NITRA): *Myjava Hill.*

1. Context of the good practice (description of the area):

This case study is focused on the area of Myjava Hill Land, which is located in a southwest part of the Trencin Region, in the geographical area of Western Slovakia, in a border area with the Czech Republic.

This area is distinguished by scattered settlements, so called "kopanice" and it is located in a zone of luvisols and brown soils. Although this area is drained by the Myjava river, its underground water reserves are poor. This area belongs to the moderately warm climatic zone, with mountain climate and little temperature inversion.

With reference to rainfall, it is a slightly damp area with an annual rainfall rate of 650-700 mm.

There has been a significant disruption of forest stands in this area. Deforested areas have been converted to agricultural lands on which crops (particularly corn, potatoes, beets and fruit trees) are cultivated.

Map of the area. **Source**: *Google maps.*

From a demographic perspective, there's a 1:1 male – female ratio. Almost 65% of the population belongs to the working age range; however, the evolution of the population has been declining over the last 10 years.

Contrary to the negative demographic conditions mentioned above, this area has a great potential for a sustainable cultural and economical development, mainly due to the positive natural conditions and to its well developed infrastructure.

Regarding the rural character of the landscape, there is a diversification possibility for some agricultural activities, which are not typical for this area: for instance implementing agro-tourism actions or carry out cultivation and processing activities related to some specific crops.

2. What kind of good practice is it?

This is a Good Practice related to the mushrooms cultivation activity.

Cultivation of agricultural crops (corn, potatoes and beet) and fruit trees is typical for the area of Myjava Hill Land. The positive natural conditions of this area (appropriate soils, enough rainfalls and suitable air temperatures) make also possible to focus on the cultivation of new crops, which are not typical of this area.

Despite the excessive deforestation of the Myjava Hill Land area and its conversion to agricultural land, where only small groups of trees have been conserved from the original forest stands, to cultivate some crops which require some specific conditions for their positive development, is possible in this area.

The current technologies make possible the creation of some positive conditions for the cultivation of relevant crops in closed spaces, and additionally, they make possible to reach a higher quality of crops and a higher fertility as well.

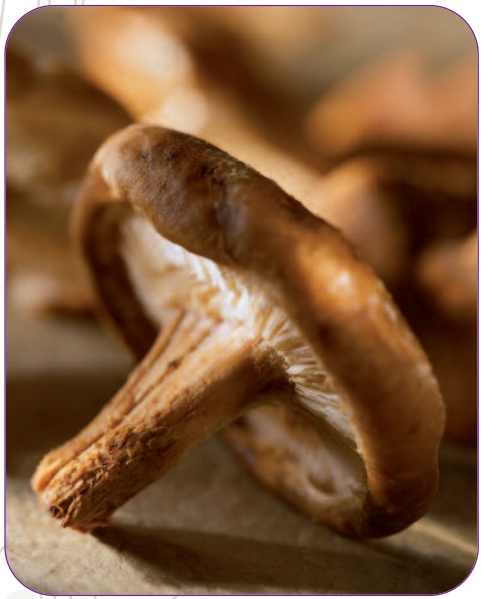
One of these new crops are mushrooms. Their artificial cultivation is widespread in Europe and achieved a high level.

Cultivation of mushrooms is not a simple affair, although the opposite seems to be truth. Different kinds of mushrooms require different temperatures and humidity and different cultivation procedures too.

Although in most of the cases mushrooms cultivation requires considerable equipment costs, long-term experiences and precise observance technology and hygiene measures, it might be a good diversification of activities, not only in agricultural cooperatives and farms. Business in this area can be profitable and finally it can contribute to the economical development of rural areas.

3. Why is it considered a good practice?

In a context of agriculture itself, this good practice represents a standard definition and implementation of compulsory requirements for environmental protection. It is a set of rules for fertilization, plant protection and soil and fodder conservation.



Shiitake. **Source**: *Jan Janos website.*

Their performance is recommended as the observance of minimum standards in agriculture. Besides, like all activities in agriculture, growing non-traditional crops such as mushrooms, requires adherence to good practices, especially regarding the food safety.

4. Description of the entity involved in the good practice:

Jan Janos Company was established in 1994. Originally, they cultivated oyster mushrooms and later they started to cultivate and process Shiitake, common mushrooms (champignons), Jelly Ear (*Auricularia auricula-judae*) and many forest mushrooms.

Currently, the company is the largest producer of dried wild and cultivated mushrooms in Slovakia. The company also provides its customers the possibility of buying wild mushrooms from the ecologically clean environment of the pine forests of the Záhorie

area. In addition to these activities, the company also provides production of substrates. Through the investment in new technologies, the company increased its production capacity and the quality of the substrates, particularly as regards the storage of dry straw.

With Slovakia's accession to the EU, the company opted for a major investment, which brought the site facilities above the level of service needed to answer to the demanding requirements of the European standards. This investment involved: a brand new store of dried mushrooms with ensuring storage conditions, new facilities for processing and packing mushrooms with microbial protection, upgraded cooling box, renovated bathroom and dressing room, new supporting technology of marketing, handling balance and also a truck with refrigerated bodywork needed for transport of fresh mushrooms. There was also a development recorded in the manufacturing section, because the production capacity of fresh mushrooms was increased through the purchase of new production facilities. All investments were made with respect to compliance the requirements regarding the cold chain and freshness of goods.

The company's products are also subjected to HACCP (Hazard Analysis Critical Control Point System) and the company meets the hygiene and quality of production requirements, according to the European standards.

Currently, the company is a major supplier of products to business networks and to large-scale European chains such as Tesco, Metro, Billa, Carrefour and others.

5. Description of the good practice methodology:

The company focuses on growing and processing of various types of mushrooms, but they also work on their purchase and distribution. These are the oyster mushrooms, Shiitake, common mushrooms (champignons), but also Jelly Ear (*Auricularia auricula-judae*) and various kinds of wild mushrooms.

Oyster mushrooms are cultivated:

- through the substrate (in bags in slightly pale, damp and cold places with a range of temperatures from 10°C to 18°C (ideally 13°C), not exposed to direct sunlight or in darkness);
- on the straw (in polyethylene bags filled in with dry, ground wheat, rye or rape straw);
- extensively on wood (live strains of deciduous trees or eventually their stumps).

Shiitake is cultivated through the substrate in bags placed in slightly bright and humid places with temperatures of 15-25°C, ideally 18°C.

Champignons. **Source**: *Jan Janos website.*

The preparation of the common mushrooms substrate and its cultivation are relatively difficult activities. The advantage of common mushrooms is that the development of fruiting bodies does not need light. The disadvantage is that unlike other cultivated mushrooms, fruiting bodies often suffer from diseases. The substrate is prepared from fresh manure, which is sprinkled with plaster and later with the covering soil.

6. Description of the good practice products and results:

The company provides various kinds of mushroom products: fresh or dried mushrooms, retail packaging, consumer large packaging, substrates and mushrooms for seed.

The fresh mushrooms are particularly oyster mushrooms and Shiitake; then there are also dried mushrooms like oyster, Shiitake, common mushrooms (champignons), Birch boletus (*Leccinum scabrum*), summer cep (*Boletus aestivalis or Boletus reticulatus*), Bay boletus (*Xerocomus badius*) and a mixture of forest mushrooms.

Concerning the substrates, oyster, Shiitake and common mushrooms substrates are offered.

These mushrooms are also offered for seed and in retail packaging and consumer large packaging options.

Dried Shiitake. **Source**: *Jan Janos website.*

Myjava region is mainly focused on industry and agriculture. The area is particularly characterized by the cultivation of crops such as corn, potatoes, beets and fruit trees. Cultivation of non-traditional crops, such as mushrooms, is not typical for the area; however, certain success has been already proved. The result is a positive impact on employment and a negligible contribution to rural economic development, too.

7. Description of the impact and employment created in relationship with the good practice:

Cultivation and processing of mushrooms is not typical for the area of Myjava Hill Land and even in the context of diversification of agricultural activities within the Slovak Republic it is rather an exception. Concerning the impact and influence on employment, we can therefore speak only about local level.

Mushroom warehouse. **Source**: *Jan Janos website.*

Jan Janos Company is located in Jablonka village, in the south part of Myjava Hill Land, where there is a positive influence of the company activities:

- *on the economical situation in the village and in the area* – through its positive economical results the company supports the economy of the village and the whole area;
- *on life quality in the area* – the company provides its customers high quality products through the meeting of good practice requirements and food safety requirements regarding the cultivation and processing of mushrooms and regarding the production of mushroom products. Since the customers of the company include large retail chains, in this case we can speak about an impact at national level;
- *on employment* in the village and the whole area – the company employs people from the village and neighbouring villages;
- *on rural development*.

Delicious and also attractive dishes can be prepared from mushrooms.
Source: *Jan Janos website.*

b) The soil for a good truffle cultivation (AèVA): *Analysis and processing of land as a condition.*

1. Context of the good practice (description of the area):

The good practise example is located in the north of Tuscany, on the border between the provinces of Lucca and Pistoia, along the ditch (stream) Montecarlo, which acts as a boundary between two municipalities: Montecarlo (Lucca) and Pescia (Pistoia), near the Tuscan Apennines.

The estate is approximately 2500 m² and it is placed at 200 m above the sea level. The soil derived from sandy deposits of river-lacustrine origin has limestone characteristics, is sufficiently permeable and contains a discreet presence of moisture in the surface layers, but not in the driest months. It has low levels of phosphorus and nitrogen, is rich in potassium, with a pH of 7.2, and has also low levels of organic matter. It is wet thanks to the spring and summer rains, it is free of stagnation and has not too much inclination. The plant on which this good practice is focused was established in 1990, following the discovery of native truffles in the area. The proximity to the river and the presence of these truffles can lead to the assumption that the grounds of this area are optimal for the growth of truffles.

The truffle species selected is the most valuable one: *Tuber magnatum* Pico (white truffle). The mycorrhizal plants used (three hundred units) are species of oak (*Quercus robur*), mossy oak (*Quercus cerris*), seassile oak (*Quercus petraea*), downy oak (*Quercus pubescens*), linden *(Tilia platyphyllos*) and hazelnut-tree (*Corylus avellana*).

Sight of the current truffle culture area. **Source**: *Paolettoni Silvano.*

2. What kind of good practice is it?

Analysis of soil and climate

This good practice is related to the topic "cultivation of edible and medicinal fungi" and intends to give some information about important considerations regarding the analysis of climatic and soil conditions for the truffle cultivation.

The first thing to do for the creation of a truffle culture in a specific area is to study if it is compatible with the demands of those truffles. In this case, to do so, some soil samples were taken and subsequently analyzed, bearing in mind that the special features to find are:

- Presence of abundant calcite ($CaCO_3$).
- Sub-alkaline-alkaline pH (7.1 to 8.5).
- Medium soil mixture (not too heavy).
- Good amount of bones and rubble to ensure aeration of the soil.

According to the results obtained, the soil was sandy but not too much alkaline, most likely due to the physical nature of the land, which allows the removal of calcium salts.

In this case, the good practice suggested for the reasons described above was to make the soil slightly alkaline in order to obtain a better mycorrhization.

The analysis also showed that the soil was well drained due to the slope of the area.

Irrigation and fertilization

Especially in the first months it is necessary to irrigate the seedlings (3-4 litres/plant) and to do so it is recommended to use a spray irrigation system.

Irrigation will be also very useful during the fourth year to enlarge the area occupied by the fungal mycelium.

In this case, fertilization is not necessary, especially if the grassy rows are left. Of course the use of harsh chemicals is not recommended. In this case, to use lime as a soil amendment in the amount of 3 quintals was considered necessary and a preparation of crushed bones (superphosphate bones) in the amount of 3 quintals was also used. In addition, a drip irrigation system was implemented to keep the soil slightly moist.

3. Why is it considered a good practice?

This is considered a good practice because so prepared, the ground creates the optimal physical and chemical microenvironment for the development of the fungus: soft, airy and specially slightly limy.

Mycorrhizal plant. **Source**: *Paolettoni Silvano.*

4. Description of the entity involved in the good practice:

The main entities involved in the good practice are:

- Floratoscana, which is a nursery cooperative and a floriculture producer and also sells technical products;
- the University of Turin for mycorrhized plants (oak, lime and hazelnut-trees);
- and about 300 private businessmen.

5. Description of the good practice methodology:

The land in which the truffles should be grown underwent several processes that were intended to prepare the ground to facilitate the rooting of the host plants and the development and production of truffles. The year before to the planting activity the soil was tilled to mix the various layers and to lighten aerate and expose them to the action of the atmospheric agents. The plow or the harrow used had to operate to a depth of 20-30 cm and have facilitated the complete eradication of herbaceous vegetation and shrubs. At that moment, the lime and the crushed bones have been distributed on the ground. Shortly before the planting activity a further harrowing action was carried out to level the soil surface, to complete its crushing and to remove the vegetation that had appeared during the resting phase. Then, the planting lines have been traced with a gutter plough. These lines had a maximum depth of 15 cm. The holes were made with the following dimensions: 35-40 cm depth and 40-50 cm wide. The previous experiences of agricultural and forestry actions have suggested that plants must be planted during the months of March and April.

6. Description of the good practice products and results:

With the help of truffle dogs, some small white truffles have been found. This fact can make think about the future possibility of finding larger truffles, although the process seems to be slow.

His Majesty Tuber magnatum Pico. **Source**: *Internet Free.*

7. Description of the impact and employment created in relationship with the good practice:

The effect was to make a marginal land become productive and to provide a supplementary income to Silvano Paolettoni after his retirement, as he has been the person that has performed the whole action.

2.1.3. Myco-tourism: sustainability and development

Mycological guide and Expert in myco-gastronomy (IRMA S.L.): *Enterprise DEL MONTE DE TABUYO and related activities.*

1. Context of the good practice (description of the area):

Tabuyo del Monte is a locality belonging to the municipality of Luyego, in the historical territory of La Valduerna. It is a small locality of around 300 inhabitants, located in the hillside of the Teleno mount, in the province of León (Spain). This locality can be proud of having been able to eliminate the prefixes "un" and "de" from the terms "employment" and "population" in its area. This has been possible thanks to the efforts, the commitment and the coordination between all its inhabitants.

Map of Tabuyo del Monte.

Tabuyo has nowadays the first planting area of pines mycorrhized with milk caps (*Lactarius deliciosus*), addressed to the fungi production in Castilla y León.

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called MYKOS, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of the Good Practice is "Myco-tourism: Sustainability and Development".

The actions related to the sustainability concept and its integration in the myco-tourism field are:

- Moderate exploitation of the resource.
- Conservation of the habitat.
- Maintenance of the biodiversity.
- Planning.
- Support to the local economy.
- Participation of the local population.
- Professionalization of the sector.
- Tourism promotion.
- Fostering of research activities.

3. Why is it considered a good practice?

Nowadays the fungi gathering activities have a double aim: the commercialisation of the own fungi and the development of a new leisure activity. The mycological exploitation generates benefits that must revert directly to the rural society of the production area.

Gathering fungi in Tabuyo del Monte. **Source**: *Juan Antonio Sánchez.*

Each year the number of people that go to the rural areas with the aim of gathering fungi increases. Thus, in some regions and territories the myco-tourism has become a dynamisation axis of the rural realm, showing a great offer of services related to outdoor and gastronomy activities (routes and mycological workshops, specialised restaurants, myco-gastronomic and photographic contests…).

To favour the economical and rural development, the mycology-related activities must promote a responsible use of the natural resources, a suitable planning, as well as a reinforcement of the associated complementary activities, preserving at the same time the local culture identity.

The responsible exploitation of wild fungi allows:
The improvement of the rural community life quality.
The preservation of the mycological resources thanks to their sustainable use.
The revalorisation of the products in their own production territory.
The fulfilment of the consumer demands that ask the providers of tourism services for a higher sustainability degree.
The improvement of the local entrepreneurial and economical sectors.
The increase of the number of visitors.

4. Description of the entity involved in the good practice:

In a privileged area, in the hillside of the Teleno mount, 5 women of Tabuyo have created DEL MONTE DE TABUYO, an enterprise devoted to offer different products to the consumers using different distribution ways. All their products, cultivated or gathered, are obtained from their pine areas. Their main aim is to offer handicraft hand-made products such as canned goods and high quality food dishes. To achieve this, their work is based on the total control of their whole production process, being those women themselves, the ones that seed, cultivate, gather and cook all their products. In that way, they control the production since the seedtime until the packaging step or the moment in which the dishes are served.

The enterprise "Del Monte de Tabuyo" has two main sections:

- *Manufacturing and Packaging:* In this way, they offer delicious food dishes, elaborated with traditional recipes in their own homes.
- *Restaurant*: Their wonderful restaurant offers the possibility of tasting all their products in the production environment. They have a great variety of dishes that are made thanks to the combination of traditional recipes and research innovation actions. The results are spectacular.

5. Description of the good practice methodology:

The preservation, transformation and commercialisation of fungi in the gathering places allows the creation of new jobs, and also fosters that the added value of this activity can revert to the localities where the fungi are gathered. The commercialisation of fungal transformed products constitutes a very good publicity action that will show the production place to the consumers and will increase their interest for the local products.

Dish with fresh fungi. **Source**: *Juan Antonio Sánchez.*

Fostering this kind of activities allows the dynamisation of the tourism and mycological sectors. To show the local products within the market is very interesting and important, and must be done by enhancing their value with different labels such as: Quality Seals, Protected Designations of Origin labels, Ecological Certificates or even with labels that show the places where different dishes elaborated with those products are offered, as it is the case of the enterprise "Del Monte de Tabuyo". In this way, a distribution network for the promotion of the fungal products and their surrounding environments (landscape, culture, art...) can be created.

Activities that foster the myco-gastronomy:
Local gastronomy workshops.
Local festivities.
Gastronomic routes.
Specific labels: Quality seals, ecological certifications...
Tasting of traditional dishes.
Offers in different restaurants and hotels of the area.
Selling of traditional local products.
Organisation of territorial or regional markets.

6. Description of the good practice products and results:

The restaurant "Comedor del Monte" is a perfect place to taste "*in situ*" the delicious dishes elaborated with seasonal an autochthonous products. This restaurant has several fixed menus and some other variable menus, according to the season and the choices of the owners. This can assure the maximum freshness and flavour in all the dishes.

As a result of adapting some traditional recipes with the innovations resulting from research actions, we can highlight the following specialities:

- GAME MENU.
- MYCOLOGICAL MENU. Elaborated with mushrooms gathered in the local mounts or cultivated by the owners.
- TABUYO STEW.
- SEASONAL COOKING. It varies according to the vegetables available during each season.
- HOME-MADE DESSERTS. They constitute the best end for an excellent lunch or dinner, including also some coffee and home-made spirits.

Mushroom dish. Restaurant "Comedor del Monte".
Source: *Juan Antonio Sánchez.*

To foster the respect for nature, in some cases, the fruits and mushrooms used to elaborate their products are directly gathered from the surrounding mounts, and in other cases, they are cultivated in agriculture plantings where traditional and organic agriculture methods are used.

The products elaborated by the enterprise "Del Monte de Tabuyo" and successfully commercialised through their online shop, are fungi-based products obtained from the surrounding area, among which we can highlight:

- Natural *Boletus*.
- Butter biscuits with *Boletus* powder.
- Quince with *Chantharellus*.
- *Boletus* paté.
- Tomato sauce with *Boletus*.
- Raspberry and *Boletus* sweet and sour sauce.
- Mushrooms in olive oil.
- Fresh mushrooms.
- Caramelized mushrooms.
- Fungi sauce.
- Mushrooms and asparagus sauteed with eggs.
- Ratatouille with *Boletus* and *Pleurotus*.
- Mushrooms and wild asparagus mousse.
- Big beans with mushrooms.
- *Boletus* in olive oil.

7. Description of the impact and employment created in relationship with the good practice:

The commitment and respect of this enterprise for the environment is complete and absolute. This commitment was born thanks to the owners idea of living in and for their village and nowadays constitutes the basis of the enterprise.

The creation of an optimal environment for the commercial exchange, allows the creation of new entities that can be supplied with different products between them, and enhance the development of the territory, and why not, the development of the whole province. The economic growth caused by this development favours the employment creation and thus, the establishment of the population in areas that will be depopulated without this kind of innovative projects, due to the massive exodus of the people towards bigger populations. For the moment 5 direct jobs have been created, corresponding to 5 rural women of the village itself.

The raw material used by the enterprise is the environment itself: the mounts and the lands, especially the *Pinus sylvestris* forests. That is why its production process is supplied with renewable energy sources.

Mycological Interpretation Centre of Tabuyo del Monte.
Source: *Juan Antonio Sánchez.*

Biomass is clearly the most suitable way of obtaining energy, using the organic waste of wood and combustible materials resulting from the maintenance and cleaning of the mount areas. In this way, we can ecologically close an almost perfect cycle, as this maintenance favours the good state of the mounts and at the same time, the waste can be exploited and use for other purposes.

Besides this enterprise and restaurant that constitute the core of the good practice, we can highlight the MYCOLOGICAL INTERPRETATION CENTRE OF CASTILLA Y LEÓN, also placed in Tabuyo. This centre offers mycology courses every weekend in autumn and spring and offers other activities such as visits to the museum or guided routes leaded by mycological guides, to gather and determinate mushrooms. All these activities have also contributed to the employment creation, as new mycological guide jobs have been implemented and offered.

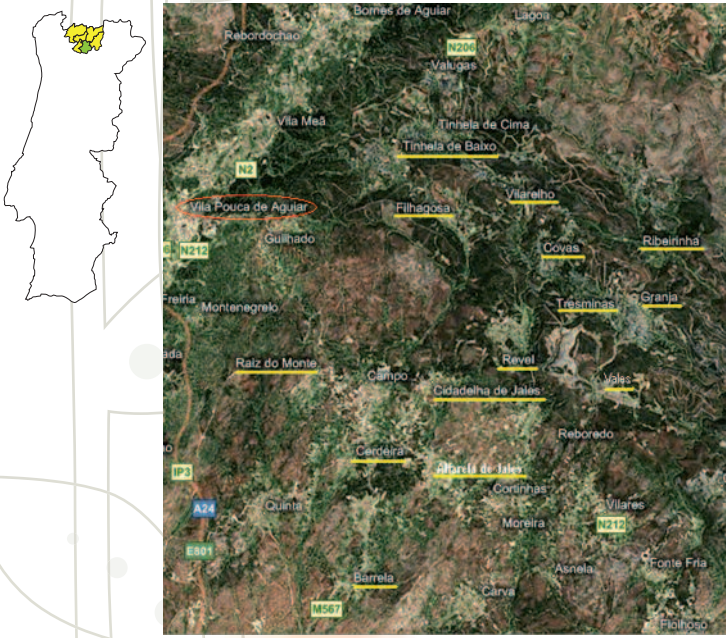
2.2. Good practises related to chestnut-tree cultivation

2.2.1. Chestnut-tree growing

Chestnut clone selection of the variety "Côta" (ADRAT): *Agro-food aptitude and gaining tolerance to cancer.*

1. Context of the good practice (description of the area):

The intervention area is located in Alto Tâmega, but is restricted to some villages of the Municipality of Vila Pouca de Aguiar, taking up on 14 villages in total: Granja, Ribeirinha, Revel, Covas, Filhagosa, Três Minas, Vales, Vilarelho, Raíz do Monte, Alfarela de Jales, Cidadelha de Jales, Cerdeira de Jales, Barrela, Tinhela de Baixo.



Geographic distribution of the project localities.
Source: *Adapted from http://natura2000.eea.europa.eu.*

2. What kind of good practice is it?

It is an example of improvement and conservation of a regional variety of chestnut fruit that simultaneously ensures the production of fruits with agro-food quality and the tolerance to cortical cancer disease.

3. Why is it considered a good practice?

This work integrates a wide improvement process of chestnut varieties that is being developed by UTAD (University of Trás-os-Montes and Alto Douro), in partnership with several other institutions of this economic sector. One of the partners is AGUIARFLORESTA, Forestry and Environmental Association of Vila Pouca de Aguiar.

In this case the subject variety is designated as "Côta", which had great importance in the past, but today is somehow abandoned and geographically very limited to the councils of Vila Pouca de Aguiar, Chaves and Valpaços.

Chestnut fruits, "Côta" variety. **Source**: *AGUIARFLORESTA.*

This effort has the objective of recover and valorise the traditional varieties of chestnut, aiming the conservation of endogenous genetic resources of one of the main agriculture cultures of the region, reason why we consider this action a good practice to be promoted.

4. Description of the entity involved in the good practice:

AGUIARFLORESTA is a non-profit association created in 2003 in order to defend the interests of forest producers, to promote protection actions and the planning and valorisation of the forests of Vila Pouca de Aguiar Municipality.

It has been trying to give priority to professional and collective management of forests, having right now more than 500 associates. For that, it has promoted, within the national legislation, the implementation of Forestry Intervention Zones (FIZ).

5. Description of the good practice methodology:

The majority of the chestnut groves are concentrated in the North of Portugal, with more than 83% of them, both in terms of total area and in terms of chestnut production volume.

Given the growing demands of the market on high quality products and the need to preserve the national genetic heritage, demarcated areas with Protected Denomination Origin (PDO) were created at national level, for the valorisation of regional varieties of chestnut: Chestnut of Terra Fria, Chestnut of Padrela, Chestnut of Soutos da Lapa and Chestnut of Marvão.

Chestnut fruit. **Source**: *Marco Fachada.*

This work started with a selection and improvement programme, having in perspective the selection of trees that gather the best characteristics/potentialities for the production of chestnuts and that have a high tolerance against diseases.

Fruits from 42 trees were collected in 14 different villages (3 trees per village) in the Municipality of Vila Pouca de Aguiar.

These samples were submitted to laboratory tests (biometry analysis and chemical composition analysis) and the results obtained allowed to select the best clone of each village (origin). Afterwards, a sowing of the 14 selected clones was made, as well

as the collection of material for the grafts. This material will allow having enough clones for future propagation. The chestnut-tress grafted with the chosen varieties will produce more abundant fruits, with better taste quality and higher commercial value.

6. Description of the good practice products and results:

In an analysis by each Denomination of Origin, other studies[1] about regional varieties of chestnuts, concluded that a wide variability exists on the Northern regions, being the Chestnut of Padrela (included in this study), the one having a higher genetic variability.

In Trás-os-Montes region, different genotypes of the variety Côta were also identified. Taking into account this specific work, for the moment 14 different origins of the same variety have been already identified.

The photosynthetic productivity studies of the origins selected must be still undertaken, as well as the studies on the tolerance to the cortical cancer disease (*Cryphonectria parasítica* (Murr.) Barr.).

It is intended that in the end of the process, a group of clones of the variety Côta, with high tolerance to high temperatures and to the cancer disease will be identified and selected. As well, their fruits will present commercial/technological and agro-food added value qualities.

7. Description of the impact and employment created in relationship with the good practice:

In terms of economic and/or social impacts, it is too early to point out any direct effect. We are talking about a process whose perspectives are to safeguard the chestnut varieties that will increase the productive capacity of farmers, and that simultaneously will be tolerant to the diseases affecting this culture.

One of the impacts that we can already refer is the constitution of partnerships between local and regional entities, as well as the involvement of individual producers. This situation will give sustainability to the process, stimulating the owners to protect and valorise the traditional varieties, strengthening also the role of the agro-forestry organizations regarding their technical support to the production and transformation of a high quality product.

1 Costa, R. (Coord), Ribeiro, C., Valdiviesso, T., Afonso, S., Borges, O., Carvalho, J., Costa, H. Assunção, A., Fonseca, A., Augusta, C., Cruz, M., Salazar, M., Soares, F., Sequeira, J., Correia, P., Lima, M. (2008). *Projecto AGRO 448: Variedades de Castanha das Regiões Centro e Norte de Portugal.* Instituto Nacional dos Recursos Biológicos, I.P. (INRB, IP), Lisboa, 78 pp.

2.2.2. Processing and marketing

Processing and marketing of chestnut fruits (ADESPER): *CASTAÑAS RIBADA – Transformation or processing and chestnut industry.*

1. Context of the good practice (description of the area):

The project CASTAÑAS RIBADA is developed in Balboa, a municipality of the Bierzo territory, in the province of León (Spain). The main river of the municipality is the river Balboa, which gives its name to the valley and the village in which the City Hall is located (480 inhabitants). The Balboa valley is known for its "pallozas" (traditional thatched houses), its church and its castle. Here, the monumental heritage is mixed with the typical and traditional buildings and the beautiful landscape, which creates an incomparable environment.

Map of Balboa and Bierzo territory. **Source**: *Gráficas ALSE.*

The number of tourists that visit the villages located in the hillsides of the mounts is higher and higher. At North, this municipality borders on the National Reserve of Ancares and at Northeast it borders on the province of Lugo. The main activities of the inhabitants of this municipality are the agriculture and especially the cattle raising activities. Lately, with the arrival of the agro-tourism, the service sector has increased its importance.

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called CHESTNUT IN EUROPE-III MILLENNIUM, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of the Good Practice is "Transformation and marketing of chestnut fruits".

3. Why is it considered a good practice?

The action of transforming or processing the chestnuts allows a longer work process along the time, and allows the achievement of a higher number of consumers, thanks to the conservation processes. On the other hand, these actions provide the possibility of offering many different chestnut products, which increases again the diversity of possible consumers.

Chestnut transformation process. **Source**: *IRMA S.L.*

Chestnuts are a very important added value for this region and thus, the use of these transformation processes is fostered, so that a great diversity of products can be offered.

In order to achieve optimal results, the raw material used must have specific qualities or characteristics, among which we can highlight:

Suitable health status, that is, the number of spoiled or damaged fruits must be less than 8% during the transformation process, and of course, must be 0% during the latter packaging process.
The raw material must have good characteristics for its conservation, since the fruit is gathered, until the moment to start with the transformation process. This period can be of several months.
The number of fruits with internal *septa* must be low.
The maturation status of the fruits must be suitable, which will allow, among other things, a better peeling process and a better behaviour during the transformation process.
The size is another parameter that is taken into account by industry. Sizes corresponding to 80-100 fruits/kg are considered suitable sizes. The homogeneous aspect of the fruits is also important.

4. Description of the entity involved in the good practice:

Chestnuts need mild and humid climates to grow. The best chestnuts of the Bierzo territory are the ones that grow in the deepest areas of the valleys and in humid locations. Chestnut fruits have been the basis of the economy for many families, and nowadays, they are again exploited, being important in national and international markets.

CASTAÑAS RIBADA S.L. is a family enterprise located in the municipality of Balboa (Bierzo territory), which is devoted to the transformation and commercialisation of these important fruits.

5. Description of the good practice methodology:

These are some of the transformation products offered by the enterprise:

- *Natural chestnuts canned:* During this process, once peeled, the chestnuts are directly introduced in cans. Then a hot juice (70ºC) is introduced in the cans so that it covers the fruits. Afterwards, the cans are sterilised at 116ºC during 30-35 minutes.
- *Dry chestnuts:* The cans are filled out with chestnuts and immediately sealed and sterilised in partial vacuum conditions. Then they are kept at 116ºC during 1 hour and 30 minutes or at 100ºC during 3 hours.

Cans with chestnuts in sugar syrup. **Source**: *IRMA S.L.*

- *Vacuum packaged chestnuts:* In this case, fresh, frozen or partially thawed chestnuts can be used. They are introduced in transparent plastic bags or aluminium bags. The bags are closed under vacuum conditions and then they undergo a sterilisation process at 116ºC during 35 minutes. This process has no negative effects on the fruits and thus, it allows a good conservation status during at least 12 months.
- *Preserved sweet chestnuts:* Dry, boiled and peeled chestnuts are used. They are slowly impregnated with increasing concentrations of water and sugar solutions. Little by little, the chestnuts absorb the sweet liquid and store inside themselves an increasing sugar amount. For the canning process glass jars are used.
- *Chestnuts in alcohol:* First, the chestnuts undergo a decoction softening process. Then, they are introduced in recipients containing the alcohol chosen (wine, orujo (strong alcoholic liquor distilled from grape or herbs pressings), anise-flavoured brandy, cognac…). Afterwards, they undergo an alcoholic maceration process during a different period of time, depending on the chestnut type (between 6 and 12 months). For the canning process glass jars are used.
- *Chestnut cream:* All the chestnuts that have been broken during the transformation process, as well as the low quality fruits can be used (after being grinded) as marron glacé cream or as candied chestnut paté for desserts. To prepare

■ *Chestnut spirits.* **Source**: *IRMA S.L.*

the puree, 1% of salt and 2% of sugar are added and the amount of total sugar within the puree is increased up to 12%. Then, the puree is introduced in hot recipients that are sterilised during 1 hour and 15 minutes approximately. Afterwards, those recipients are tightly closed and are ready to be sold.

- *Chestnut flour:* To obtain chestnut flour, the chestnuts must undergo a drying process in drying areas especially prepared. In this case, the chestnuts that, due to their characteristics or size, are not suitable for other types of transformations can be used. The drying period must last until the moment in which the chestnuts achieve an humidity degree of 10%, so that the grinding process is facilitated. The flour is normally packaged under vacuum conditions, using plastic bags that can be labelled and directly sold. These plastic bags can be also introduced in carton boxes that will be also labelled. Using this flour, many pastry products can be elaborated: bread, pasta, and other derivate products such as muffins, pies, etc.

6. Description of the good practice products and results:

All the products offered by CASTAÑAS RIBADA are elaborated with chestnuts of the Ancares variety called "parede", being an artisanal elaboration without preservatives nor colouring products.

■ *Chestnuts of "parede" variety.* **Source**: *IRMA S.L.*

The chestnut muffins, cakes and pies are elaborated with chestnut flour, wheat flour, oil and baking powder.

Chestnuts in sugar syrup	Pickled chestnuts	Chestnut cream
Chestnut muffins	Chestnut pies	Chestnut cakes
"Hedgehog" chestnuts	Chestnut flour	Dried chestnuts

7. Description of the impact and employment created in relationship with the good practice:

Commercialisation is about selling a product to obtain an economic output. During the commercialisation process it must be taken into account that the selling price should be higher than the culture expenditures and besides, a profit margin must be also added.

In the case of chestnut-trees, the main problem is that, although the culture expenditures are minimum, in most of the cases this activity is not a primary or secondary income source, but a complement to the family economy.

To solve the problems of the chestnut commercialisation is not easy, because the current situation of the market is not good and besides, most of the times the producers does not have enough knowledge to take the most suitable decisions in order to defend the product from an economic point of view. This situation causes the big differences between the prices existing for the producers and the ones existing for the consumers.

CASTAÑAS RIBADA is an enterprise that has been highlighted in the national market thanks to its marketing strategy. Thanks to this strategy, the enterprise has achieved important market shares in a reasonable short time. This situation has contributed to the creation of new jobs and to the modernisation of the transformation and preservation techniques. These advantages have allowed the increase of consumption and the variety of derived products. Besides, the use of chestnuts to prepare many food modern and traditional dishes has been also increased.

Chestnut commercialisation.
Source: *IRMA S.L.*

2.2.3. Other activities related to chestnut-tree growing

a) Mushrooms as an activity related to the chestnut-tree growing (ADESPER): MICO-CASTANEA: *Biotechnologies and agro-ecological applications for the chestnut-tree production with ectomycorrhizal fungi.*

1. Context of the good practice (description of the area):

The project MICO-CASTANEA is developed in the Natural Area of Las Médulas, located in the western part of the province of León, in the border-line of the province of Ourense. In this point, the Mounts Aquilianos and the mountain range of Teleno (both included in the Natura Network 2000) converge with the Cabrera area, and the Bierzo depression leads to the Atlantic Ocean. With a small total extension (6.000 Ha) distributed among the municipalities of Borrenes, Carucedo and Puente de Domingo Flórez, the area contains a high number of conservation and international recognised mentions: SCI (Site of cultural Interest), BCA (Bird Conservation Area), (HCI) Heritage of Cultural Interest, Human Heritage and Natural Monument.

■ *Médulas map.* **Source**: *Gráficas ALSE.*

Within the 6.000 Ha, the chestnut woods are especially highlighted both for their importance in the conservation of the biodiversity and for their traditional uses recognised by the inclusion of the *Castanea sativa* woods (code 9260) within the list of priority habitats of the European Directive 92/43/CEE (Habitats Directive).

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called CHESTNUT IN EUROPE-III MILLENNIUM, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of the Good Practice is "Other activities associated to the chestnut-tree growing".

In this good practise, the main topic tackled is the production of chestnut-trees in symbiosis with ectomycorrhizal fungi. The main objective of implementing the techniques to inoculate ectomycorrhizal fungi in forest nurseries is to improve the quality of the plants addressed to reforestation.

Boletus edulis. **Source**: *Juan Antonio Sánchez.*

General objectives of the project:

1. Morphological and molecular assessment of the persistence achieved in symbiosis relationships of chestnut-trees inoculated with ectomycorrhizal fungi (*Laccaria bicolor* (Maire) Orton) to fight against ink disease (*Phytophtora cinnamomi* Rands and *Phytophtora cambivora* (Petri) Buissman).

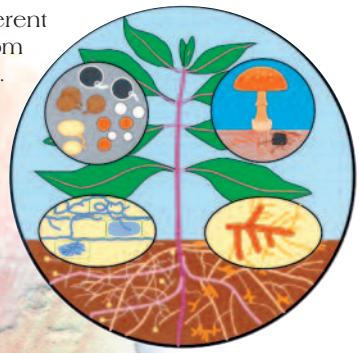
2. Controlled production of mycelia from ectomycorrhizal edible fungi associated to chestnut-trees (Use of *Boletus* species to mycorrhize chestnut plants in flowerpots and for its further merchandising).

Specific objectives of the project:

1. To produce mycelium from the fungi *Laccaria bicolor* (Maire) Orton and some other species of *Boletus* in the laboratory, using spores or hyphae extracted from wild carpophores.
2. To carry out some controlled mycorrhization tests to determine the best inoculation method to produce chestnut mycorrhized plants under the nursery specific conditions. Different fungal strains will be used to obtain the mycelium and the optimal inoculum doses for each inoculation method and each fungal selected species will be established.
3. To produce mycelium from *Boletus* species to carry out mycorrhization tests and trials to test the persistence of the mycorrhizae in cultivated chestnut plants.
4. Development of techniques to produce effective *inocula* from every fungal species. For instance: obtaining mycelium from fungi grown in substrates enriched with nutritive solutions, obtaining mycelium from fungi grown through encapsulation in alginate polymers, obtaining mycelium from spore suspensions obtained by using different solid and liquid culture mediums.
5. To carry out a characterization process of the fungal mycelium, using DNA molecular markers to allow the differentiation of species.
6. To create a work protocol to study the influence of the mycorrhizal fungi associated to chestnut-trees in the fight against the ink disease.

3. Why is it considered a good practice?

Nowadays there are different methods to produce mycelium from different fungal species. Nevertheless, to integrate the controlled mycorrhization within the production process carried out in nurseries where chestnut plants are cultivated, the industrialization of an achievable method to obtain mycelia at



Mycorrhizae can produce edible fungi.
Source: *Chestnut-trees. Manual and Didactic Guide.*

commercial scale is needed. This need is not currently solved, although interesting advances on this field have been recently done.

The implementation of the controlled mycorrhization techniques within the traditional chestnut plant nursery production processes will need the modification of all the processes involved, for instance: the selection of the substrates used for the plant growth, the irrigation and fertilisation processes and the phytosanitary treatments must be adapted not only to the plants but also to the fungi.

Besides the ecological importance of the mycorrhizal association it is necessary to bear in mind the high economic interest of a great number of fungi that produce benefits to their host plants, but also produce carpophores of high economic value due to their gastronomic properties. The value of the fungi production can be, in some cases, higher than the one corresponding to the wood production or to the chestnut production.

The project intends to establish a line of work addressed towards the search of techniques that allow the chestnut mycorrhization in nurseries. In the case of inoculating nursery plants, the work would be then to find the most suitable method taking into account the effectiveness of the mycorrhization, the technical and the economic aspects, so that the impact on the plant costs wont be too much high.

4. Description of the entity involved in the good practice:

The task of the **Research and Forest Experiences Department of Valonsadero** (DIEF) within the project is the production and control of the mycorrhized plants:

- Study of the mycorrhization produced in wild conditions and production of plants reproducing those conditions.
- *In vitro* mycorrhization of *Castanea sativa* and *Boletus pinophilus*.
- *In vivo* mycorrhization of *Castanea sativa* and *Laccaria bicolor*.
- Follow-up of the mycorrhizae persistence.

Laccaria bicolor. **Source**: *Juan Antonio Sánchez.*

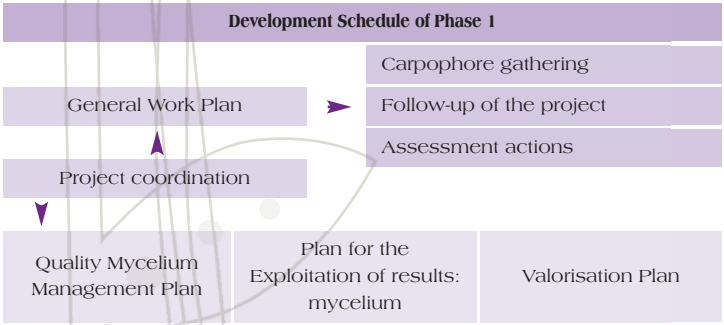
5. Description of the good practice methodology:

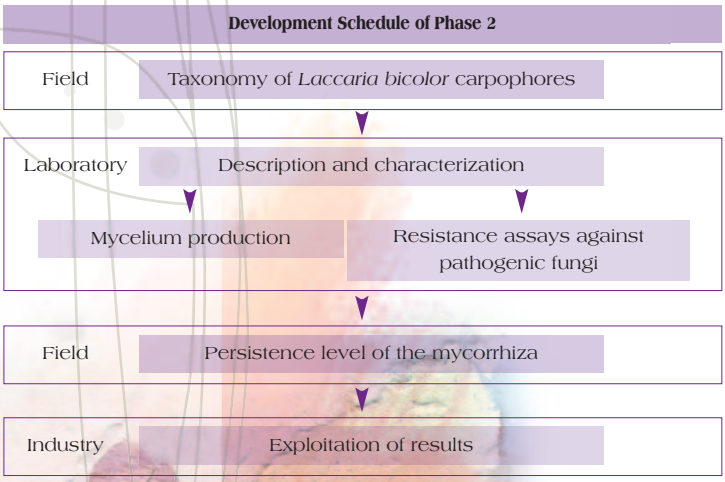
The project intends to characterise and assess the colonization level of the plants inoculated with ectomycorrhizal edible

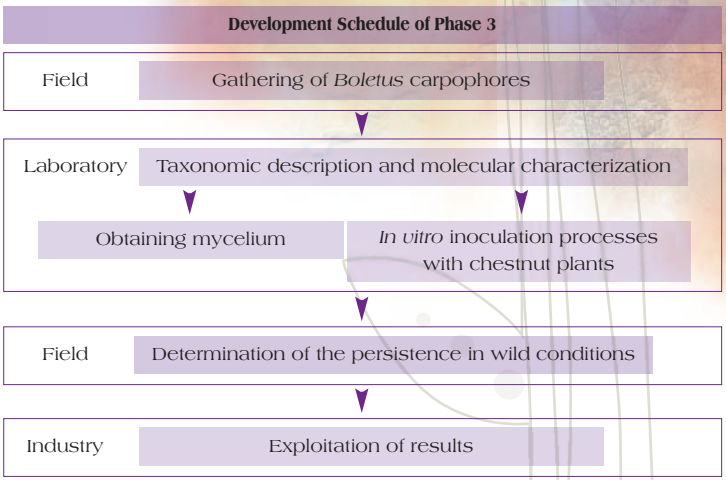
fungi, since the moment of the production and inoculation phases in the nursery until their settlement in wild conditions.

As in any other biotechnological research and development process, the obtaining, production and rational implementation of mycorrhizal fungi inocula **requires three main steps**:

- **PHASE 1:** Gathering carpophores of *Laccaria bicolor* and *Boletus* species.
- **PHASE 2:** Morphological and molecular assessment of the persistence achieved in symbiosis relationships of chestnut-trees inoculated with ectomycorrhizal fungi (*Laccaria bicolor* (Maire) Orton) to fight against ink disease (*Phytophtora cinnamomi* Rands. and *Phytophtora cambivora* (Petri) Buissman).
- **PHASE 3:** Controlled production of mycelia from ectomycorrhizal edible fungi associated to chestnut-trees (*Boletus*), for the mycorrhization of chestnut plants.







6. Description of the good practice products and results:

Among the advantages for the clients in comparison with other market offers we can highlight the following ones:

a) The use of chestnut mycorrhized plants improves their growth and development. This is possible because, thanks to the fungal hiphae, the plant is able to explore a broader soil volume that the volume normally achieved by its roots. Besides, the plant is able to capture more easily some elements (phosphor, nitrogen, calcium and potassium) and water from soil.

In the current market, no offers of chestnuts mycorrhized with mycelia from *Laccaria bicolor* (Maire) Orton and *Boletus* species are available.

b) Chestnut plants are more protected from environmental changes. The protection offered by the fungi allows a higher resistance of the plants against temperature changes and soil acidification processes promoted by the presence of sulphur, magnesium and aluminium.

c) Chestnut-trees show a higher resistance against parasite attacks. Some fungal physiological reactions can foster the activation of the plant roots during a longer time comparing to non-mycorrhization situations, as well as the excretion of antibiotic substances in presence of many parasites. This is a very important aspect to bear in mind in cases of chestnut ink disease.

d) Chestnut plants show a higher longevity. Indeed, it has been confirmed that some non-mycorrhized trees show survival problems after 2 years life.

e) The commercialisation of the chestnut mycorrhyzed plants offers new market possibilities and new economic alternatives, as it fosters the regeneration of this species, which in many places is undergoing a decrease process due to the different diseases that affect it.

Chestnut planting. **Source**: *IRMA S.L.*

f) Another aspect that we need to bear in mind is that **many ectomycorrhizal fungi have edible fruitbodies** that are very appraised and constitute an important complementary exploiting resource within the future chestnut populations.

Unlike the cultivated fungi, these ectomycorrhizal fungi can only be gathered in their natural habitat. The increase on their demand has fostered the study and development of the culture technologies in order to achieve a sustainable productivity within the natural forests.

Finally, it can be said that the modern chestnut cultivation field has to bear in mind the microbiological different aspects related to soil, as they are resources useful to maintain the production at economic sustainable levels. This can be achieved by implementing practises that take into account and profit the benefits of the fungi that are associated to the tree roots.

7. Description of the impact and employment created in relationship with the good practice:

By including the project within an industrialisation phase, a higher positive incidence on employment creation will be achieved. On one hand, some quantifiable employments will be created in direct relation with the project activities; and on the other hand, some other indirect non-quantifiable employments can be created in relation with the commercialisation of the project products (mycorrhized chestnut-trees).

The workforce in charge of the industrialisation must have a scientific and research background, as well as productive and commercial knowledge, so that the final product can be as broad and innovative as possible; being achieved through the development of biotechnological techniques to produce mycelium and to inoculate specific fungi in chestnut plants.

Taking into account the requirements related to the production and commercialisation processes, the following professional profiles will be needed:

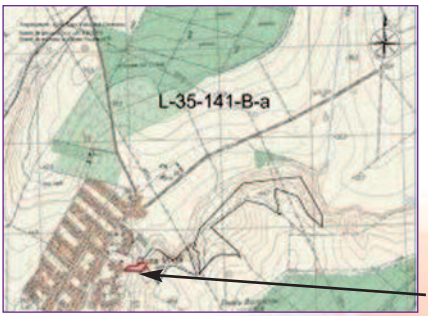
- A technician that carries out tasks related to the mycelium production department. Biologists, agronomists or people with accredited training or experience on this field are needed.
- A technician in charge of carrying out the culture and inoculation of chestnut-trees, in order to obtain quality plants. Biologists, agronomists, agriculture engineers, forest engineers or people with accredited training or experience on this field are needed.
- Four specialists in charge of producing chestnut plants and maintaining them once inoculated with the fungi. Forest engineers, agriculture engineers or people with accredited training or experience on this field are needed.
- A technician in charge of the commercial department and the technical assistance. Agriculture engineers, forest engineers or people with accredited training or experience on this field are needed.

b) Chestnut-trees growing in Dobrudja (CEDER): *Dobrudjan Chestnut-trees.*

1. Context of the good practice (description of the area):

On the grounds of The Zonal Development Association from Medgidia (ADZM), the woods cover only 0.3% of the entire surface of the territory. At the same time, this area is exposed to important droughts and strong aridity conditions.

Given these conditions, covering those areas with vegetation and implementing some integrated measures against droughts are actions included in the national strategy to combat these conditions.



Map representing the chestnut-tree culture. **Source**: *Forestry Department of Constanta.*

1 ha of land devoted to chestnut-tree cultivation.

Tacking into account the fact that chestnut-tree cultures may cause diverse derivate effects on the local microclimate of the area, but also the fact that chestnut fruits are known for their taste (in some of the regions they are considered a delicacy) and for their curative actions, the necessity of setting up and developing these plantations seems to be justified.

2. What kind of good practice is it?

This good practice is related to the topic "Chestnut-tree growing", which is one of the main thematics tackled within the MYRCAS project. This topic is closely related to the activities of the Zonal Development Association from Medgidia.

In the particular case of this good practice the main goal has been the foundation and preparation of a hectare of ground to produce edible chestnut fruits in the Cuza Voda area.

3. Why is it considered a good practice?

Given the geographical position of Cuza-Voda, the wind erosion appears quite often and it affects most of the sandy and dusty soils, as most of them are not covered with vegetation.

The sep-up of the new culture has increased the surface stability and has locked up the soil particles in stable structural aggregates.

The chestnut-tree culture has maintained and improved the ecological balance of the landscape; therefore, the promotion of the woody vegetation is based on the idea of reconstructing and preserving the biodiversity and the environmental conditions.

In Romania, the chestnut-tress producing edible chestnut fruits may be easily adapted to specialized fruit gardens, but also to the boundary or the central parts of the forests. In fruit gardens, these chestnut-trees may be cultivated not only in a monoculture area (only *Castanea sativa*), but also mixed-up with other fruit species, forming then mixed fruit gardens.

Chestnut-tree.
Source: *Forestry Department of Constanta.*

The direct effects of this culture implementation have been:

- Creation of protection areas or barriers.
- Ecological rebuilding of all the waste grounds.
- Improvement of the landscape quality.
- Reconstruction of the production skills of some grounds, which have lost them in the past due to the increase of actions related to relief modelling processes.
- Reconstruction of water erosion areas and areas where both water and air have caused erosion.
- Capitalization of wood and fruits.
- Production of chestnut honey.

4. Description of the entity involved in the good practice:

The Zonal Development Association from Medgidia (ADZM) was set up in 2005 by means of the association of seven close communities: Medgidia Municipality and the villages and townships of: Castelu, Mircea-Voda, Cuza Voda, Tortoman, Silistea and Pestera.

The association main missions are:

- Consolidation of local people social capitals.
- Consolidation of communities in order to promote the action spirit based on citizens motion.
- Improvement of life quality.

Its objectives or goals are:

- Increase of dynamic activities and change willing.
- Promotion of opportunities for all the people, regarding first of all their social and personal development.
- Fostering high quality of life for all the citizens, with a big emphasis on quality services.
- Reestablishment and assertion of the natural patrimony.

The association has the role of identifying all the waste grounds and all the approach priorities.

Additional roles are: evolving all the necessary documentation and adjudgement documentation for the public acquisition of grounds, coordinating all the financial resources and chasing the quality of work performance.

The Zonal Development Association from Medgidia has also evolved a rural development strategy 2007-2013 for all the communities involved in the association.

The association is based on a team, which consists of 4 experts having a five-year experience in the management of European projects; there are also trainers and advisors on professional skills specifically related to the natural resources. The team also includes 12 development agents.

5. Description of the good practice methodology:

The works have specially consisted of pruning and grass control actions in the specific chosen area.

The attendance is very important for the development of quality chestnut-trees producing edible chestnut fruits under good, productive and sanitary conditions.

Chestnut fruit. **Source**: *OSPA Constanta.*

Nowadays no chestnut fertilizers are normally used. In case of using them, it is important to choose one suitable for the soil features and the plant needs. Calcium for instance is a very important element, not only for the soil but also for the plant.

There is the possibility of using an animal fertilizer in some parcels and using other organic substances in other parcels.

Normally it is not necessary to use this kind of fertilizers every year. They can be used every 2 or 3 years, depending on the plant and soil conditions.

Regarding the chestnut-trees, their development in acid soils supposes a calcium problem, because the calcium seems to be either absent from soil, washed up or locked.

In order to improve the plant production, grafting activities can be implemented. Normally, the chestnut growers carry out these grafting actions by using only species considered appropriate to this process. Grafting may be also used when plants suffer from a certain disease, have suffered a basic degradation as a consequence of a beat or an animal bite, or have lesions produced by pathogen agents.

By cutting off the trees, the growth of the cut branches is favoured, and the way of cutting back the less healthy branches is marked, so that those branches can become broader and can produce fruits easily and quickly.

Chestnut culture. **Source**: *Forestry Department of Baia Mare.*

A gentle attendance generally leads to a much better fructification of the trees.

6. Description of the good practice products and results:

One of the chestnut-tree species producing edible chestnut fruits is the *Castanea sativa* sp., which is a very strong tree and may be found at altitudes between 100 and 1000 metres. If this species is planted through seeds, it wont be able to produce fruits until it is 13-14 years old. If it is grafted, it may take even 15 years for them produce flowers and fruits.

If all the conditions of climate, protection and humidity are favourable, these chestnut-trees will grow constantly, being very productive trees and having no "bad years". The fruits (chestnut fruits) have the same composition as the wheat and they represent a very important source of carbon hydrates, phosphorus, lecithin and vitamin C. They also include proteins, lipids, calcium, iron, magnesium, manganese, zinc and potassium, being their caloric value of 200 calories each 100 grams.

The chestnut fruits are tasty and they are used as distinguished ingredients by chocolate and delicacy producers, being often backed or fried.

The backing or the roasting processes may either use complete fruits or granular pieces of them, leading this last option to the production of chestnut flour, which is normally used to make chestnut puree.

The chestnut processing. **Source**: *OSPA Constanta.*

The chestnut puree is one of the very few products that may preserve in a quite big percentage all the vitamins of the fresh fruit, if it is prepared at heat.

There is also a Corsican type of corn (called "polenta"), which uses sweet flour derived from edible chestnut fruits as basic ingredient.

The wood of these trees is beautiful and durable and it is used to make furnitures, barrels, materials for fencing or even materials for balks used for house tops or for the roofs of different buildings.

The chestnut wood has the tendency to break and get profoundly curved throughout the years, reason why its use for big constructions has been limited.

The chestnuts bark also represents a great source of tannins, whose medicament action is nowadays well known. The seeds are processed in order to get the chestnut extract, which is normally sold as capsules used for treatments against blood pressure problems, and especially against chronic venous insufficiency problems.

It is also worth to mention the fact that the chestnut-tree bark is used as infusion as well, as it has the property of reducing the temperature.

The leaves of these chestnut-trees develop themselves a tranquilizer action when their aroma is breathed and that is why they are used as infusions in treatments against bronchitis.

The chestnut honey is rich in mineral substances (it is used as a curative agent against anaemia, germs and as a source of minerals as well), being recommended for stomach diseases, enteric diseases and renal diseases. It also encourages blood circulation and is used in bones disease cases.

In the world of cosmetics, the masks of **chestnut fruit and honey** have great importance for all kinds of skins, due to all their properties against inflammations and their capacity to reduce the capillary friability and to protect against UV irradiation.

Thus, these cosmetic masks protect the skin and avoid the secretion of sebaceous glands.

7. Description of the impact and employment created in relationship with the good practice:

These chestnut-tree plantations have been established to achieve favourable ecological conditions. The arrangement of some grounds undergoing soil erosion phenomena, and their exploitation to produce fruits and other cultures is considered an activity of national interest, which is meant to protect the environment.

Chestnuts.
Source: *Forestry Department of Baia Mare.*

The creation of this chestnut-tree culture in Medgidia (Cuza-Voda area) has been also justified by taking into account the curative actions of the chestnut fruits and also their delicious taste.

The long production cycles brought not only economical satisfactions (by means of products, wood and fruit quantity and quality and reduction of recovery expenses) but also social satisfactions too, by means of the effects and the influence upon the adjacent areas.

Besides the light ecological impact that the culture has, it is worth to mention the high economical impact too: The related investments have created working places and have contributed to the social and economical development of the area.

The new working places and job offers will be assured for the high school graduates who will have the possibility of practising the acquired knowledge, and also the possibility of promoting the technology of the chestnut cultivation.

The chestnut culture will also contribute to the foundation of some truffle shops, by means of a symbiosis between plants and mushrooms.

This action will also produce intermediate and long effects, which contribute to the improvement of the environment quality and also to the landscape amelioration.

Considering the curative benefits and the delicious taste of chestnut fruits, the implementation of *Castanea sativa* sp. culture

have brought and will continue bringing a healthy input not only for the consumers but also for the producers.

c) Chestnut and mushroom cultivation in Kastania (C.V.T. AEGEAS): *A symbiotic relationship of two local products.*

1. Context of the good practice (description of the area):

Kastania is a small traditional village, found in the Municipality of Itamos, which belongs to the Prefecture of Karditsa. The Prefecture of Karditsa belongs geographically and administratively to the Region of Thessaly, in Central Greece. The village can be reached quickly from Karditsa, as it is only 25 km away from it.

The picturesque village of Kastania itself is built at an altitude of 800 m and has approximately 370 permanent residents. It is a very attractive mountainous village, which can be found on the slope of the peak Tsouka of Mt Itamos. Due to its location and the thick vegetation of the area, the village has been transformed into a tourist destination both during the summer and winter months.

The village can also boast of a long standing history, as the location of its castle has been identified as the location of the ancient city Menelais and Roman influenced graves have been found in the area.

Map of the Prefecture of Karditsa. **Source**: *Website of the Prefecture.*

The majority of the people living in the village engage in the provision of services to visitors (running of guesthouses and restaurants) and agricultural activities, which the village is ideal for, due to its rich vegetation. For the purpose of this case study, it must be mentioned that the name of the village itself in Greek ("kastania") means "chestnut-tree".

2. What kind of good practice is it?

The good practice presented does not fall in the category of biological agriculture only, but it wishes rather to demonstrate the utilization of one type of cultivation (as is in this case the chestnut-tree, which abounds in the region) in order to facilitate the growing of another type of equally useful and highly marketable product, which is none other than the mushroom. For the moment, chestnut-tree cultivation has not been utilized to its maximum potential, due to the labour intensity needed in order to yield good quality products. This is why individuals from the area started focusing on the alternative of mushroom cultivation, which are exceptional quality products and can be promoted to larger markets at longer term.

This good practice wishes to show the interrelation between two different types of cultures and how there is a symbiotic relation between both of them, which can be used for commercial purposes.

3. Why is it considered a good practice?

Despite the fact that the village has been particularly known for the abundance of chestnut-trees in its surrounding region -hence its name-, unfortunately, due to abandonment or cessation of systematic cultivation of the chestnut-trees, the production has been significantly reduced and the majority of the village inhabitants have become involved in the provision of tourist services to visitors. Despite the fact that the chestnuts produced in the village and its surrounding region are completely biological and cultivated in a traditional way (without the use of pesticides), the diseases that can affect the trees, the low price of the final product and the unfavourable financial benefits and non existing incentives have led to a gradual decrease of cultivated trees.

Old chestnut-tree.
Source: *Stelios Papaefthymiou.*

Given that the logs of chestnut-trees are particularly suitable for the cultivation of popular

types of mushrooms, an alternative has been initiated by a small group of individuals from the region, who have decided to use the log sections and inoculate them with spawn, growing mushrooms as an alternative. Through this approach, they aim at producing a qualitative product that is initially promoted to local tourist attractions and restaurants of the region and subsequently, will be produced at larger scale.

4. Description of the entity involved in the good practice:

The good practice presented is in a quite early stage of implementation; even though, it has been undertaken by a non-organized group of persons, who accepted to implement this methodology for the potential value of mushroom production, since it is related with the existence of chestnut-trees: their involvement has been happening namely through their participation in open days organized by the Local Development Agency.

This group of individuals has also furthered its knowledge through personal research and embarked on an effort to produce an alternative, qualitative product.

This informal group consists of 5 people, all of them owners of chestnut-trees in the region.

5. Description of the good practice methodology:

Mushrooms lend themselves to many different growing systems, from relatively simple and inexpensive to highly expensive and specialised. The said group of individuals have chosen a very simple method of cultivating them, i.e. through the "sandwich" inoculation method, which utilizes freshly cut logs from healthy chestnut-trees (approximately 40-50 cm long and 15 cm thick), and cuts them lengthwise. The openings are then inoculated with spawn (a starter mix of fungal mycelium and sawdust or grain), covering them entirely and then the two parts of the log are brought back together forming a "sandwich". Finally, they are tied closely together with a string.

The inoculated logs are subsequently put in ample plastic bags, which are then loosely closed. The logs are transferred to basements and the spawn will spread to the logs in two months, if the surrounding temperature is between 20-30 degrees.

The location selected must be shady and protected from the wind. The logs are then removed from the plastic bags and placed horizontally on the ground, with the incisions facing upwards. If the logs and the soil are maintained moist, more mushrooms are produced. Harvest of mushrooms through this method can be ensured for the following three years. The inoculated logs yield mushrooms after a period of 3-6 months.

Pleurotus mushrooms growing on a log. **Source**: *Stelios Papaefthymiou.*

6. Description of the good practice products and results:

Commercial mushroom production requires high levels of management input and skills and a common mistake that many new growers make, is to believe that growing mushrooms is easy. Sometimes, the new producers fail to realize how competitive the mushroom market is and that each species requires specialized treatments in order to produce consistent yields of high-quality marketable mushrooms.

The group of producers, who have been active in the production of mushrooms for the last 3 years, have decided to start at small scale and to expand slowly, taking into consideration the output. For this reason, they have engaged with the cultivation of the two following types of mushrooms, which are ideally used with chestnut-tree logs:

- Shii-take (*Lentinus edodes*)
- Orelana (*Pleurotus osteratus*)

So far, qualitative mushrooms of the above types have been produced, which were initially promoted to the local tourist

Shiitake mushrooms, harvested and dried. **Source**: *Stelios Papaefthymiou.*

establishments (restaurants and shops selling traditional products from the region) and have been utilized in local traditional cooking, with excellent results.

The producers exercise particular caution in order to not incur any liability risks (such as the existence of micro-organisms, to which mushrooms are particularly susceptible to), by making sure that the substrates they are using are free of pesticides and other toxins, by using only high quality, commercially grown spawn and by maintaining hygienic conditions and production records.

Despite the fact that the application of this good practice is at a relatively early stage, the groups of growers contemplate to establish a small enterprise and to become involved in a more active and professional promotion and processing procedure, in order to obtain the credibility of their products in a more expanded potential market.

7. Description of the impact and employment created in relationship with the good practice:

The initiative of mushroom cultivation in relation to the pre-existence of chestnut-trees comes as an effort of a group of individuals to utilize local resources and proceed with a minimally invasive methodology, in order to produce a final end product with the potential of being marketed at a larger scale. The initiative comes from individuals who would like to remain living in the rural setting, yet are looking for viable alternatives in order to be able to support themselves.

In a heavily centralized country such as Greece, it is quite difficult to come up with a sustainable idea that could keep people living in the countryside instead of the large metropolitan centres.

The individuals involved are all self-employed, examining the potential of turning mushroom cultivation in a full time, sustainable economic activity. At the same time, they support the local economy by cooperating with local small enterprises, providing them with local, particularly qualitative traditional products.

2.3. Good practises related to organic agriculture

2.3.1. Basic techniques in organic agriculture

a) Basic techniques in ecological agriculture in Stepa - Stupina Farm (CEDER): *ERCHESEC – cracked soil.*

1. Context of the good practice (description of the area):

The Stupina village is situated in the Constanta County, in the central part of Dobrogea, on a steppe soil with slopes between 1-4%. The soil of this area is affected by the process of erosion, is weakly supplied with nitrogen and moderately rich in sodium and potassium. It is also poor in mud, being approximately 2% of the surface arranged for watering.

Constanta map. **Source**: *www.constanta-harta.ro.*

The old name of this village (Erchesec, cracked soil) is representative for the climate of the area, poor in rainfalls, being the multi-yearly rain average around 400 litres/m². Moreover, during the last three years these rainfalls have not even reached the 300 litres/m² per year. Summers in this region (from May to July) are very hot, with periods of 3-5 days in which the relative moisture of the air is very low. On the other hand, winters are very cold, with strong winds and generally poor rainfalls.

In the village area no pollution sources are found, as the specific agriculture ground is situated at approximately 700 metres away from the national road. Thus, pollution and its factors influence are very reduced and besides, this agriculture ground is surrounded by protection barriers since 2003.

2. What kind of good practice is it?

This good practice is related to the topic "Basic techniques in ecological agriculture (especially permaculture)", which is one of the main thematics tackled within the MYRCAS project.

The ecological system of this area is structured in order to sustain all the aspects of a human community in a natural environment: It is intended to create a human environment, an ecological place of living and also a natural way of producing food.

In this ecological or organic system called **Permaculture**, the ecological cultures design the environment in a way that allow them to sustain themselves. They are based on some ecological and biological principles, using, most of the times, models that already appear in the natural environment, in order to increase the positive effects and to decrease the work. Thus, permaculture has as main objective the creation of stable and productive systems, able to answer all the human requirements and also able to make people get along with their natural environment.

The ecological processes of plants, animals and feeding cycles, the climate factors and the meteorological cycles are all taken into account.

The inhabitant needs are assured by means of new technologies used for the production of food, energy, places to live and suitable infrastructures.

3. Why is it considered a good practice?

This ecological culture is considered a good practice because within this system, human communities build up and develop themselves getting along with the natural environment and imitating the forms and the way of socializing within the microclimate in which they live.

This kind of practices minimizes the human impact on the environment, making sure that the agriculture system operates as naturally as possible.

The specific advantages of the ecological agriculture are:

- Inversion of cultures as a premise for the efficient use of the farm's resources.
- Very strict limits regarding the use of pesticides, synthetic

and chemical pesticides, as well as fertilizers.

- The use of organisms that have been genetically modified is completely forbidden.
- Use of resources that already exist, such as the use of the garbage from animals and of all the fodder from the farm.
- Selection of some strong species of plants particularly resistant against diseases and pests (the plants must be adapted to the local conditions).

4. Description of the entity involved in the good practice:

Mr. Nicolae Alexe (agronomist engineer with 38 years of seniority in this field) is the administrator of S.A. Stupina Veld.

Starting in the year 2000, the society involved in this good practise reached the ecological agriculture practice, and the same year was certified by a certification organism from Holland (by a Dutch certification organism named Skal), as at that time any of these ecological certification organisms could be found in Romania.

The managing board initiated this procedure and also paid all the costs implied in such activities.


ASOCIAŢIA ROMÂNĂ PENTRU AGRICULTURĂ DURABILĂ
1998 – 2008
10 ANI ÎN SLUJBA AGRICULTURII DURABILE
DIPLOMA DE EXCELENŢĂ
Se acordă:
Domnului NICOLAE ALEXE
Pentru contribuţia adusă la promovarea agriculturii durabile în România.
Preşedinte,
Dr. ing. Ion TONCEA
ARAD

Certificate of excellence for promoting sustainable agriculture in Romania.
Source: *S.A. STUPINA Veld.*

Nowadays, the ecological cultures practiced by S.A. Stupina Veld are wheat, sunflowers, mustard and other plants with medical use, such as coriander, fenugreek, saffron and cameline.

5. Description of the good practice methodology:

From 1st January 2007, EU politics oriented towards the valorisation of some agricultural practices intended to protect the

environment (called extensive practices) have been set up in Romania, contributing to the achievement of some "clean food products".

These extensive practices intend to continue all the traditional practices, contributing to the conservation of biodiversity and to the maintenance of the rural landscape. At the same time, they are considered as advantages for the farmers and the rural communities as well. In this sense, S.A. Stupina Veld represents the pioneer of the ecological agriculture in Dobrogea.

S.A. Stupina Veld achieved the conversion of 300 hectares of ground to be used for ecological cultures. The society created has been supported by the state and thanks to that it has been able to acquired equipment and watering installations.

The certification of the ecological culture imposes at least three years of ground conversion, period of time, in which the reminiscence of all the synthesis pesticides and chemical fertilizers used before is decreased under the maximum limits required by the labour legislation, which is meant to control the production of the ecological products.

The drafting and the implementation of the foreseen ecological module has been based on the yearly cultural drafts and plans. Besides, an important research programme that has been finished three years ago and has been focused on the durable agriculture field, has been also taken into account.

As a work methodology, all the agricultural requests have been borne in mind: tillages of 20 cm, surface punching and organic and mineral fertilization based on compounds allowed within the ecological agriculture field. For instance, the green lucerne (*Medicago sativa*) is also used as fertilizer.

The biological material has been purchased from producers of the country and from those from the European Union as well.

This last year, the production of ecological wheat has been of 5 tones/ha. The same quantity has been also registered for

Producing of natural fertilizers. **Source**: *S.A. STUPINA Veld.*

the sunflower production and the ecological bean has also registered a very good production in 2010.

In ecological agriculture the use of medical plants is being more and more claimed. These plants need very special attentions and cares, not only in the production process but also in the harvest, storage and preparation processes.

From the medical plants which have been cultivated in big quantities and whose impact has been very important, it is worth to mention the coriander, the fenugreek, the saffron, the cameline and the seed-pumpkins without hull (biotype of *Cucurbita pepo* L. Convar obtained through genetic modification).

Agricultural equipment. **Source**: *S.A. STUPINA Veld.*

6. Description of the good practice products and results:

The most successful products of S.A. Stupina Veld are the cameline and the seed-pumpkins without hull.

The cameline (*Camelina sativa*) is the new revelation of the field. In Europe, this plant has been growing from 3500 years. It is a specific plant for the dry areas and it is used in well-known locations. The vegetation period is brief and it does not imply specific damaging factors. The blossoming period is in May-June and the seeds ripen in August, having very small size.

Cameline. **Source**: *S.A. STUPINA Veld.*

In this good practical case, the cameline seed has been brought from Germany and it respects all the standards imposed by the skilful bodies concerning the ecological agriculture.

From cameline cameline oil can be obtained. This oil is used in the cosmetics industry (for the production of soap) and for other small-scale purposes.

In the last years, the cameline plant has become a "wonder-culture" to produce biological fuel, as it is considered a clean energy source.

The cameline is made-up from omega 3 fat acids, which are known for their capacity of reducing the blood pressure, the cholesterol levels and the heart diseases. After getting the oil from the seeds, the rests are used as fodder for the cattle, birds and fishes. An example in this way would be the swine foods that contain cameline.

Another example is the use of those rests for the production of brooms.

The seed-pumpkin without hull (biotype of *Cucurbita pepo* L. Convar obtained through genetic modification) has become a plant which seems to get along with the climate of Dobrogea region.

During all these years people have been taught that the pumpkin is very good and it has a lot of therapy virtues. From its seeds a very tasty and healthy oil can be obtained. The pumpkin oil does not contain cholesterol and it is recommended to all those who have nutrition problems or liver and gall problems.

Seed-pumpkin without hull. **Source**: *S.A. STUPINA Veld.*

Pumpkin seeds are also a medicine against prostate problems and cancer, they improve the bladder function, alleviate the breakdown symptoms, forewarn the bones diseases, reduce inflammations, forewarn the kidney gravels and are a source of magnesium.

7. Description of the impact and employment created in relationship with the good practice:

The implementation of the agriculture practices based on the most advanced scientific knowledge of the technological field (especially the application of those ecological viable practices), represents a major request for the promotion of the durable agriculture.

The ensemble of all scientific and technical knowledge, acquired during the last years by S.A. Stupina Veld, has been put at disposal for the agriculture producers and farmers, so that these techniques can be also implemented by them. Being assimilated and correctly implemented by each agriculture producer, the agriculture practices under discussion may contribute to get some superior and profitable qualitative productions, and can also contribute to the conservation of the appropriate environment as well.

Mr. Alexe, the administrator of the society involved in the good practise, is well-known thanks to his research activities, and he has been required to cooperate with ICPA Bucharest (National Institute of Research and Development in Soil Science, Agrochemistry and

Environment) and with the Superior Education Institute from Constanta. He has also cooperated with a research programme on durable agriculture, and has worked together with this Institute in order to finish the programme above mentioned.

Besides the good products obtained, one of the most remarkable results is represented by the increase of the humus percentage from 2.1% (existing amount when the society assumed all the grounds from Stupina Cape) up to 2.5%, which is the nowadays percentage.

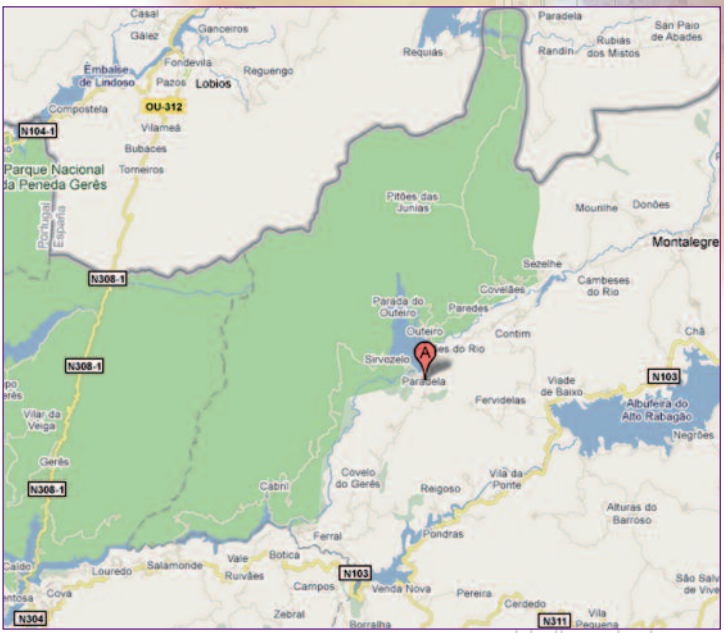
The last acquisition of the society is represented by the seeds' packing equipment. Thus, all the products obtained will be from now commercialized by the producer, which will lead to the recognition of all these products on the market. The products are nowadays exported by ECOTER from Bucharest to Holland and other places.

■ *Seed packing machine.* **Source**: *S.A. STUPINA Veld.*

b) Honey production in organic production way (ADRAT): *Barros e Fortunas Lda.*

1. Context of the good practice (description of the area):

The founders of the enterprise Barros e Fortunas Lda come from several villages of the Municipality of Montalegre, Alto Trás-os-Montes, in the North of Portugal. The enterprise's headquarters is in Montalegre and it distributes its production among several villages, with a special stand for the village of Paradela do Rio, which is integrated in the National Park Peneda-Gêres (PNPG).



Location of the company. **Source**: *Google Maps 2010.*

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called IRIS, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of the good practise is "Basic techniques in organic agriculture".

3. Why is it considered a good practice?

This good practice is based on a traditional product of the region (honey), which is closely associated to the natural and mountain landscapes. It is considered a good practice since it uses modern processes (organic way), promotes the region image (exportation) and integrates other local products (dry fruits).

Besides, the entity involved is a private micro-enterprise with headquarters in a region with depopulation and aging problems. This honey production facilitates the creation of local employments and enhances the regional products.

4. Description of the entity involved in the good practice:

This is a SME has been created by two apicultures who were previously involved in the apiculture activity in an informal way. They decided to create their own business to offer a product economically profitable and competitive for its commercialisation in the honey market.

5. Description of the good practice methodology:

The honey production (nowadays transformed into an organic production process owing the Protected Origin Denomination "Barroso Honey") is carried out in several areas where there are many heathers (*Erica australis*, *Calluna vulgaris* and *Erica umbellata*), besides many other bushes and wild flowers with medical properties.

In order to obtain a broader variety regarding the production characteristics, there are other places where the beehives are placed, being also in those cases the vegetation dominated by bunches species that also possess a high apiculture interest.

One of the innovative aspects of the process is the marketing policy image: the enterprise won a contest and was awarded with the best honey label during the III National Apiculture Forum (2007), an initiative undertaken by the National Portuguese Apiculture Association. Besides this, this enterprise has its own web page, where the several available products can be consulted and the products can be also ordered:
http://www.barrosefortunas.com.

The enterprise is also founding partner of an organic production cooperative, where its products are available.

6. Description of the good practice products and results:

The main product of the company is honey (around 6 tons/year) of several types: rosemary honey, orange-tree honey, eucalyptus honey, chestnut-tree honey and multi-flora honey.

■ *Types of products.* **Source**: *www.barrosefortunas.com.*

Other products that result from this activity are pollen and a set of honey dry fruits. To obtain these products, the company collects different dry fruits in the region. Moreover, these traditional products have a gourmet line already available.

Honey with dry fruits, Gourmet line. **Source**: *www.barrosefortunas.com.*

The several products available are in the national market and are also exported to Spain and France. Nowadays, there are also other countries interested, namely the U.S.A.

7. Description of the impact and employment created in relationship with the good practice:

Besides the occupation for the 2 founders of the enterprise, the initiative has began to provide some local work (namely women from the village where the production is concentrated) to develop actions such as decorating the jars of honey or breaking dry fruits for the honey, although some of this hand-work is still temporary.

The enterprise has participated in several national contests, being awarded with several prizes. It has also appeared in the local and national media, bringing this way visibility to the project and region.

c) Organic farming and Agro–tourism (ADRAT): *Quinta d'Alagoa Farm.*

1. Context of the good practice (description of the area):

The Quinta d'Alagoa is placed near Carrazedo de Montenegro, in the municipality of Valpaços, at 650 m high and close to Padrela Mountain, in the region of Alto Trás-os-Montes, in Portugal. It has over 70 hectares of farmland, mainly covered by groves for the production of chestnuts and olive oil and by vineyards. All the productions are certified as Organic Farm products.

Location of the company. **Source**: *Google Earth 2010.*

In the centre of the property there is a settlement with historical and cultural value, representing the popular rural architecture. These are ancient houses and farm facilities, which have been restored and adapted to be used as agro-tourism.

2. What kind of good practice is it?

It is a good practice related to organic farming, based on the production of regional cultures.

3. Why is it considered a good practice?

Besides the organic farm orientation, this enterprise has also an important intervention on the tourism valorisation of the agro-forest space of the farm.

4. Description of the entity involved in the good practice:

The Casa Agrícola da Alagoa is a private commercial society that works on a quote regime.

5. Description of the good practice methodology:

It is an extensive use farm that follows an integral organic way of production since 2001, having around 140 hectares in 2 properties (Alagoa and Ferradosa). It is based on chestnut-trees (40

hectares), olive groves (15 hectares), vineyards (3 hectares) and water meadows (10 hectares). The cattle are fed with natural silage and are maintained in closed green pastures.

Chestnut fruit. **Source**: *Marco Fachada.*

The farm sells the production in the agro-tourism settlement because the plantations are new. On the other hand, Internet (through the website www.alagoa.net) is the main channel to promote the lodging possibilities.

It has the support of research and education entities (UTAD – University of Trás-os-Montes and Alto Douro and ESAC – Agrarian Superior School of Coimbra), both regarding ecology and biodiversity perspectives and the agro-industry perspective.

Nowadays a room for drying and transformation is being prepared, which will allow the offer of different transformed products. Besides, some students of ESAC have already developed some pilot-projects concerning the transformation of the products obtained on this farm, as chestnuts and wild mushrooms.

6. Description of the good practice products and results:

The main products are olive oil, wine and meat. The farm also produces fresh fruits and chestnut jam, being all these products certified as Organic Production products.

Besides these, there is a great variety of regional fruits (apples, oranges, pears, grapes, blackberries, quinces and figs), other dry fruits (almonds, walnuts...) and vegetables (beans, garlic, onions, tomatoes, marrows, cabbages...) that are also offered.

All these products can be purchased at the grocery of the farm or, if requested, on the company's office in the city of Oporto.

7. Description of the impact and employment created in relationship with the good practice:

Until now, the farm has had little incorporation of labour force. Regarding employments, it ensures 3 permanent jobs and 3 temporary jobs.

The employed workers have a low academic qualification level, but they have training support to achieve a correct preparation for different situations that they face when developing their tasks.

The impact of this farm in the villages of Santa Maria de Émeres or Carrazedo de Montenegro is quite positive, being also the study visits of secondary schools from several seaside cities of the country very frequent.

The clients of the agro-tourism also foster the local economy, mainly regarding the restaurants. As curiosity we can refer that foreign clients highly appreciate the fact that they have complete meals with products of the farm itself.

Casa da Alagoa. **Source**: *www.panoramio.com*

There are also some impacts at cooperation level: the farm has a composting centre that used to have a deficit on functioning. With the technical support of the Agrarian Professional School of Fermil some tests with different methods and types of wastes are being now developed.

2.3.2. Organic stockbreeding

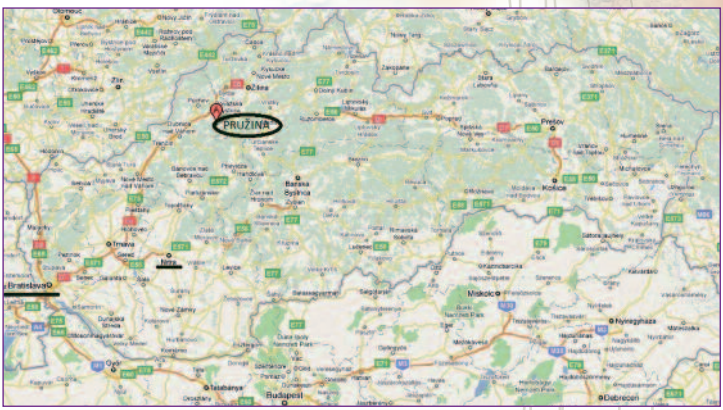
Organic sheep breeding (AGROINSTITUT NITRA): *Pružina Farm.*

1. Context of the good practice (description of the area):

The farm is located at an altitude of 450 meters and is situated in the picturesque valley of the Strážovské Mountains, where grazing sheep with sheep bells can be surely found.

Within its neighbourhood there are plenty of streams, water sources and quiet spots with amazing flora and fauna. The

Protected Landscape Area of Strážovské Vrchy is located in Central Slovakia. We find here interesting gorges, protected plant species and more than 220 discovered caves; for example Kortmanka, Dúpna and many natural rock formations. The most beautiful tourist experience in this area is crossing around the Strážov waterfalls.



Map of Pružina farm. **Source**: *Google maps.*

2. What kind of good practice is it?

It is an organic farming devoted to sheep production, which also includes the subsequent processing and sale of bio-products. Sheep is the only species of livestock that keeps an adequate rate of population when talking about farm animals in Slovakia. Moreover every year a noticeable increase is observed and the positive comparison with the neighbouring countries is also noticeable. This cannot be compared with the alarming situation of cattle or pigs.

3. Why is it considered a good practice?

The farm owner, Olga Apoleníková, became a farmer in 1991, when she rented a farm with 180 heads of cattle, which was on the verge of bankruptcy. In the following two years, she managed to increase the amount of leased land, livestock and machinery. In addition, she managed to improve the animal welfare and the enclosed sheds were changed to open ones, which together with better feeding doses led to a threefold higher milk production in 2005.

The market conditions had then forced the owner to replace cattle with sheep. She started producing sheep's milk and cheese using traditional methods and selling the product directly to the consumers; finally she opened her own shop for the farm products.

Sheep stable at the farm. **Source**: *Pružina farm website.*

Her company has received the Certificate of Organic Production and has obtained the "Label of Quality SK". Besides, it has been awarded with a prize as "Best producer of fresh cheese and Slovak sheep cheese". In addition, the owner plans to rebuild some of the remaining buildings and to convert them into guest rooms with a wellness centre for those people who desire a return to nature.

4. Description of the entity involved in the good practice:

Pružina farm was established in 1991, being devoted to cattle breeding aimed at producing milk, pig farming, mechanical production and crop production.

In 1996 a mixing machine of compound feed was purchased. Nowadays this machine is used for the company own consumption. Since 2005, the company has been involved in an organic farming system with Bio-product Certificate and in the year 2006 the farm has refocused the cattle production into sheep production aimed at milk and cheese production.

5. Description of the good practice methodology:

As it has been already mentioned, since 2005, the farm is involved in an organic farming system.

The farm is engaged in crop production, mechanical production, production of feed mixtures for their own consumption, livestock consisting of sheep and pig breeding, production of Easter lamb and seasonal production of sheep milk, with subsequent production of sheep's cheese. Milk is obtained by milking sheep in their own milk house.

Farm facilities. **Source**: *Pružina farm website.*

Milked and filtered milk is then processed to produce cheese that is produced according to strict standards. In order to achieve a sheep cheese production of excellent quality and taste, the production techniques must comply with all the required criteria and these are mainly the following ones:

- health sheep population that is regularly checked,
- soil quality,
- as well as hygiene during the milking process at the milk house and also directly during the production of sheep cheese.

The hygiene standards at Pružina farm are incomparably higher than the ones used by the competing producers. The sheep's cheese produced is sold in its own shop, which is part of the farm area. The shop has been rebuilt in a period style cottage house and in a trend highlighting the return to old traditions.

Since the land is located in a scenic foothills area next to wild nature, the farm produce for its own consumption quality hay, grass silage from its own pasturelands and organic wheat that is cultivated on arable lands.

6. Description of the good practice products and results:

The farm has received certificates for the following organic products**:**

- BIO meadow hay.
- BIO alfalfa (*Medicago sativa*).
- BIO summer and winter wheat.
- Organic Sheep Cheese - 13 kinds.

Organic agriculture logo.
Source: *Pružina farm website.*

- Organic sheep milk.
- Organic hay.
- BIO sheep.
- BIO lambs for meat.
- Organic wool.

Sheep's cheese is a popular delicacy. Sheep's milk contains up to twice more the calcium than cow's milk. It also contains a natural substance (conjugated linoleic acid, CLA), through which the body degrades fats. Normally, this substance is added to the weight loss pills, and in weight loss processes it prevents the yo-yo effect and helps in shaping the human body. The researchers found that it has anti-cancer and anti-diabetic effects through the stimulation of the immune system. In the future it might be significantly helpful in the treatment of cancer.

Catalogue of products from Pružina farm. **Source**: *Pružina farm website.*

7. Description of the impact and employment created in relationship with the good practice:

In 1991, when Olga Apolenikova (the owner of the farm) rented a farm with 180 heads of cattle, she managed to increase milk production from 2300 to 8000 litres. Later, she decided to leave pig and cattle productions. The reason of that was partly a difficult market situation, partly legislation. For example, with cows' milk the situation was no longer sustainable.

■ *Cheese assortment.* **Source**: *Pružina farm website.*

The producers were forced to constantly push down the milk price, and moreover, the milk could not be sold directly from the farms anymore.

Today the farm owner has fields, farm buildings, seven hundred and twenty sheep and it permanent employs eleven local people. During summer period, the farm also recruits additional temporary workers.

The farm offers a wide spectrum of bio-quality certified products, for instance organic wheat or hay or delicious Easter lamb, which nowadays is ending up at the tables of gourmets in Italy.

The global economic crisis reduced the purchasing power of the population in the given region, and therefore the farm had to start delivering products to other parts of Slovakia. This year 2010, the farm has attended an international exhibition on ecology, which, as they believe, will help them to expand to the EU market and other markets too.

■ *Bio-product quality label.* **Source**: *Pružina farm website.*

2.3.3. Organic food

a) Ecological food: quality brand, conservation and transformation (C.V.T. AEGEAS): *Yiam: Traditional Delicatessen Products' Workshop.*

1. Context of the good practice (description of the area):

The traditional Delicatessen Products´ Workshop "Yiam" can be found in Agia, a small town situated 37.5 km away from the capitol of the Region of Thessaly, Larissa, at an altitude of approximately 200 m. It is also the seat of the Municipality of Agia, which consists of 8 Municipal Departments, which stretch from Mt Kissavos to Mt Mavrovouni. The seat of the Municipality is built at the foot of Mt

Kissavos, approximately 18 km away from the sea. Agia has approximately 4500 permanent residents and most of them are engaged in agriculture and trade activities. The modern town was probably built during the early years of the Turkish occupation (15th century) and it peaked in the 17th and 18th centuries, through the exports of cocoons and threads. The mansions and churches of the city testify its former prosperity.

The surrounding region is particularly fertile and provides the ideal environment to cultivate several things, especially fruits. The apples produced in the region are known for their quality throughout Greece.

■ *Map of Agia and the surrounding region.*
Source: *Website of Municipality of Agia.*

2. What kind of good practice is it?

The good practice presented does not fall in the strict category of biological agriculture only, as it constitutes a successful model for the processing of edible items made of pure, biological raw materials that abound in the region, but also other regions in Greece. The raw materials for the goods sold by the enterprise (fruit, vegetables, dairy, herbs, etc.) come from the surrounding region and most of them are the result of traditional cultivation methods. The processing of the goods does not burden the environment and does not lead to the creation of additional wastes.

3. Why is it considered a good practice?

The delicatessen workshop Yiam creates a large variety of traditional edible products, both savoury and sweet, packaged in little attractive glass jars.

Based on pure raw materials, some local and other imported from other regions of Greece, the enterprise produces edible products without any artificial colourings or preservatives. Besides, It uses a minimum amount of energy, as the entire process is done by hand and by using a regular kitchen equipment, where the local raw qualitative products are used and processed. By purchasing the edible products in this specific workshop, the buyers have the opportunity to choose products that have absolutely nothing in common with the mass marketed commercial products, which are often accompanied by harmful or allergy related conservatives and preservatives.

Most of the enterprise products are made of local, traditionally grown products, but the owner has recently expanded the appeal of her products by introducing a biological certified line of products to be further expanded in the future.

A conventional product from the Yiam line. **Source**: *Website of the enterprise.*

4. Description of the entity involved in the good practice:

Yiam is a small home made business, established in 2002 by Mrs. Avra Panousopoulou, originally from Athens, who has decided to live a more alternative lifestyle close to nature. Gradually and due to the exceptional quality and originality of the produced edible items, the products became well known among gourmands all over Greece and today, she sells her products through the Internet and in a large number of ecologically oriented shops and delis all over Greece. One of the best endorsements for an edible product is to be listed on the menu of the top chefs and Yiam products have

made their appearance in the menus of several 5 star hotels in Athens; and Christoforos Peskias, one of the most famous Greek chefs, sells them in his deli style restaurant in Athens.

Yiam includes 160 different gourmet products, with quantities of each deliberately kept to a minimum of 1000 jars or packets. Mrs. Panousopoulou refuses to use commercial sized jars, because she is reluctant to lose the homemade quality of her products.

Mrs. Avra Panousopoulou. **Source**: *Website of the enterprise.*

5. Description of the good practice methodology:

The raw materials used for the production of the biological certified products come from both local producers and also producers from other Greek regions, who apply biological methods of cultivation in their fields and have been certified to this purpose. The fruit subsequently arrives to the workshop of Mrs. Panousopoulou, who does an initial quality control and proceeds with the processing of the fruit in a traditional way, meaning that the end products are cooked in normal and not industrial pots and pans, without the use of any preservatives or potentially harmful food additives. The packages are then sealed air tight and labelled, bearing the distinctive "Bio Hellas" logo on the packaging. The owner of the enterprise is currently considering the expansion of her biological products, taking into consideration the added value of those biological products and the potential of addressing more specialized outlets for their distribution.

In addition to being certified as biological, all the products coming from the workshop are also certified for their quality by TUV Austria Hellas, with the quality assurance system for food hygiene and safety ISO 22000:2005, meaning that all standards of hygiene in the preparation of edible items are respected during the entire processing cycle.

6. Description of the good practice products and results:

The Yiam workshop currently produces around 160 different types of edible items, indicatively presented below:

- Traditional Greek semolina pasta.
- Marmalades with unprocessed sugars, sugar free marmalades.
- Pickled mushrooms and vegetables.
- Vegetable spreads.
- Various types of cooking sauces.
- Traditional salads in jars.
- Traditional spoon sweets.
- Honey, etc.

Mrs. Panousopolou has recently expanded the range of her products in order to include 4 types of biological certified products, i.e. walnut spoon sweet, apple spoon sweet with raisins, apple jam with prunes and unprocessed sugar and fig jam with unprocessed sugar. The products are certified by one of the main Greek certifying entities for biological products, "Bio Hellas" and they bear the distinctive logo on the packaging of the products. Being labelled as biological products, it means that they have been examined initially and approved and that they will be open to yearly scheduled tests, random tests likely to happen anytime and sampling.

Having the products certified as biological opens an entirely new market to the Yiam products, as they can now address buyers who are looking after qualitative, preservative and pesticide free products.

A biological product from the Yiam line.
Source: *Website of the enterprise.*

7. Description of the impact and employment created in relationship with the good practice:

The enterprise is relatively small and started within the framework of self-sufficiency, with most of the produced items originally tested by the family of Mrs. Panousopoulou. The workshop came as a solution in a search for an occupation that would support the family income, providing also the owner with the joy and satisfaction of creation through what nature offers. Currently, Yiam cooperates with 3 other local women.

By making the question of employment opportunities somewhat wider, the workshop operates through the rationale of favouring local

products and raw materials, which are cultivated or processed keeping the most traditional, eco-friendly approach and in this way, it supports in an indirect way people living and working in the countryside, respecting simultaneously the environment.

Mrs. Panousopoulou in her kitchen with two other cooperating women.
Source: *Enet, website of the newspaper Eleftherotypia, 2/10/2010.*

b) Organic horticulture: Distribution (AèVA): *The case of the short chain of a social and agriculture cooperative.*

1. Context of the good practice (description of the area):

The agriculture site of the social cooperative "La Foglia del Te" (The Tea Leaf) is located on the first hill of Massa, close to a woodland with a surface of 1 ha.

The crops are focused on the production of organic certified vegetables and small fruits, which the cooperative partially transforms and resells to Solidarity Purchasing Groups (SPG) of the Massa Carrara territory (SPG of Massa, Carrara and Montignoso).

The cooperative is part of a network of organic producers that sell their products to specific and critic consumers that normally do not buy in big establishments.

The producer-consumer relationship is considered within the short chain projects (direct sales and short distribution chain), characterised by the name "Zero Km".

The cooperative is a founding member of an association developed in the province, in which organic producers, purchasing groups and consumer organizations are involved and cooperate to achieve a provincial district project based on a sustainable economy.

View of the Laboratory-Company. **Source**: *La Foglia del Te.*

2. What kind of good practice is it?

This good practise is related to one of the fields tackled by the pilot project called IRIS, carried out within the Leonardo da Vinci programme and whose contents are being transferred and disseminated during the development of the present MYRCAS project. The thematic selected for the development of this good practise is "Organic food and products".

In the case of this good practice, the products are certified as organic products by ICEA, the national Italian audit entity.

The choice of an organic production has as main goal the use of production methods quite different from the conventional ones and also different from other agriculture production methods with low environmental impact. In this case, the distinctive elements are related to the concept of sustainability and refer not only to the method of production, but to the entire chain, "from farm to table".

In this project the agro-ecological approach is promoted, and thus, appropriate techniques for the conservation of soil fertility are adopted, focusing on techniques of preventive defence and making an effective use of the traditional technical resources at risk.

The price of products reflects the social cost actually incurred in order to increase the competitiveness of the organic products.

The association of producers and consumers work on an environmental sustainability project that fosters biodiversity,

seasons as innovation opportunities, the nutritional values and the organoleptic characteristics of the products.

3. Why is it considered a good practice?

This project is considered a good practice because is based on actions that are fully respectful with environmental sustainability, health, natural cycles and soils, and intends to promote the recovery and development of the biodiversity heritage.

The associative project that brings together organic producers and consumers develops a common understanding about food choices, knowledge of the agriculture world, the irreparable damage to the environment that practices involving pollution of soils and water cause, the waste of natural resources and the compromise of sensitive ecosystems. That is, the project works towards a non-impact production.

Preparation of cultures. **Source**: *La Foglia del Te.*

4. Description of the entity involved in the good practice:

The project involves the Massa-Carrara Province Department of Agriculture, the city of Massa for the implementation of a short chain market in Massa, the city of Carrara for the organisation of a short chain market of organic and typical products in Carrara and the Solidarity Purchasing Groups of Massa Carrara (SPG of Massa, Carrara and Montignoso).

5. Description of the good practice methodology:

The network established between producers, consumers and producers, producers and consumers and other institutions, is one of the best practices carried out, due to the reduction of the distribution chain that allows the assessment of the production quality at any time with an excellent value for money rate.

The network is managed through meetings between the institutions and the producers and consumers, and through the association established between organic producers and purchasing groups, as well as the customer-consumer association.

Farmer's market of Massa. **Source**: *La Foglia del Te.*

6. Description of the good practice products and results:

The project has led to the following results:

- Customer loyalty through their participation in the project and through the company visits.
- Creation of training opportunities on food and environmental education at all categories (citizens, producers, consumers, technicians). This has been possible through dissemination actions within the short chain sites, through conventions, through the organization of events in which the municipalities are involved...
- The relationship between technicians and producers has led to a better acquisition of knowledge on organic production techniques, to a mutual support for the joint purchasing of

agriculture supplies and to the use of laboratories for the processing of the organic products that do not exist in the area, so that the costs for the consumers can be lower.
- Developing of an economic small system for the organic producers that are involved in the network and have assured opportunities within the local markets.
- Awareness of people and institutions on the projects focused on sustainable and inclusive economy.

7. Description of the impact and employment created in relationship with the good practice:

The laboratory-farm is located in the former forest nursery of the province of Massa Carrara, situated in the locality of Capannelle, Massa.

This land had not been used for many years and have finally been loaned to "La Foglia del Te" (The Tea Leaf) cooperative in the framework of an Horizon EU project undertaken in 1999, which has also involved other four territories in Tuscany: Arezzo, Livorno, Grosseto, Pistoia.

Through the Horizon project this area has been recovered for the agriculture use and 10 persons have been trained on organic farming.

About four years ago, an experimental project on growing and harvesting of small fruits (specifically blackberries and raspberries) has been initiated. These fruits are grown using organic methods and are directly used by the staff of the cooperative for the production of jam.

The cooperative feels to have reached an important goal with the acquisition of the organic label for the products and the jam.

This objective has been achieved through a challenging process with several steps:

- the conversion of the land,
- the staff training on biological techniques,
- the training on HACCP (Hazard Analysis Critical Control Point System),
- the search of a suitable laboratory for the processing process following the requirements of the national reference standards,
- and finally obtaining the certification by the independent entity ICEA in 2003.

This process was difficult and also expensive in terms of resources, but this is a project in which the cooperative has always believed and that expresses some of the fundamental principles of the social philosophy followed by "La Foglia del Te".

The Management Board of the cooperative believes that the improvement of the life quality is also achieved through work, because work is vital for the recovery of physical and mental health conditions of people.

Specifically, agriculture activities allow people to recover balance and health through their contact with earth and nature. Being outdoors, the production of healthy products, the acquisition of concepts such as eco-sustainability... all these elements enhance the feeling of welfare.

This belief is also supported by the existing synergy with other actors: the associations of organic producers, which organize awareness actions, the consumers association with which consumer education at schools is also organised, the schools themselves...Some other relationships have been also established with joint buying groups, i.e. groups of families that have come together to make collective purchases of healthy food produced in accordance with the environment and people.

In the biological laboratory six people are currently employed: the foreman, who works in the cooperative since 1997, manages and controls the organization and registration of the agriculture activities every day; he has attended the HACCP courses and he also manages directly the production of jam.

Five disadvantaged operators are also working in this laboratory.

Organic vegetables. **Source**: *La Foglia del Te.*

The agriculture activities are planned and coordinated by the vice-president of the "La Foglia del Te" with the help of an agronomist, consultant of the cooperative, who travels regularly to the laboratory and provides the necessary information and training to staff.

In the laboratory, the appropriate agriculture equipment is available and is also subjected to regular inspections and maintenance activities.

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