

SINCE CONTROLLED MYCORRHIZATION







QUALITY



INNOVATION



SERVICE





ROBIN **Pépinières**

Christine ROBIN, Bruno ROBIN and Alexandra ROBIN

Part of the production team at the Saint Laurent du Cros (05) and Valernes (04) farms



Operating managers



Left: Artur BLASZCZAK (Valernes Site Production Manager (04)) Right:

Damian BLASZACK (St Laurent du Cros Site Production Manager (05))

The garden center in Saint Laurent du Cros



(Sales Consultant) Right: Vincent Deligny (Point of Sale . Manager)





Bruno CAPLIEZ (Delivery manager) Jean-Luc CONILH (Delivery manager) Joseph MARTIN (Delivery manager) Patrick VALENTIN (Truffle planting site manager) Marek MALKIEWICZ (Mechanical workshop manager) Mateusz PATKIEWICZ (Shipping platform manager)

SALES TEAM

ROBIN pépinières

COMMERCIAL TEAM

Our commercial team is at your service to :

- Answer all your questions concerning quotations and availabilities
- To advise you on your sites, the choice of species, origins, age, pruning and packaging the best adapted to your conditions
- To welcome you to our nurseries before the Autumn deliveries in order to show you our plant cultivation.
- To track your orders and answer your questions.



To welcome you, our administrative team at ROBIN Pépinières EARL: 1 chemin de la pépinière - 05500 Saint Laurent du Cros

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Administrative Manager for Traceability, Orders and Shipments Elisabeth INGIULLA: Commercial administrative manager Julie EBRARD: Accounts Receivable and Accounts Payable Nadine DEGRANGE: Accounts payable **Christine CABROL:** Quality Assurance Manager Soeli LOUIS: Executive secretary, telephone reception and sales assistance Fanny JULLIEN: Accounts receivable and sales support

CONTENTS

YEARS

ROBIN PÉPINIÈRES, our teams	Inside cover
Sales team	P. 1
History	P. 3
Quality and recovery guarantee	P. 8
MPS and HEV (High Environmental Value) environmental certification	P. 10
The controlled mycorrhization laboratory	P. 11
HIGH PERFORMANCE® PLANTS	P. 15
Our customers harvest - testimonials	P. 19
Practical guide to truffle farming, making a success of your truffle orchard	P. 21
ROBIN TRUFFLE PLANTS®	P. 30
ROBIN TRUFFLE PLANTS® mycorrhized with Tuber melanosporum,	
black truffle	P. 31
ROBIN TRUFFLE PLANTS® mycorrhized with Tuber aestivum var.uncinatum	
Burgundy truffle	P. 32
ROBIN TRUFFLE PLANTS® mycorrhized with Tuber aestivum,	
summer truffle	P. 33
WORLD FIRST: ROBIN® TRUFFLE PLANTS mycorrhized with Tuber magnatum,	
Italian white truffle	P. 34
ROBIN spore reseeding Inoculum®	P. 38
Soil and earth analysis	P. 40
	P. 43
ROBIN ANTI-CHIGNON® BUCKETS	P. 48
Education contract	P. 51
Robin plantations	P. 52
Robin protections	P. 53
Robin deliveries	P. 58
Terms and conditions of sale	P. 60

HISTORY

More than **75** years of experience at your service !

1948

• Creation of Pépinières Robin by Max ROBIN in Saint-Laurent du Cros in the Alpestre Valley of Champsaur. The nurseries cover an area spread between 1000 and 1350 meters altitude.

Given the geographical location of the operation and the local demand, Max Robin's first specialization was the production of plants for reforestation sites in the mountains.

• Originally production was carried out exclusively with young barerooted plants.



Max ROBIN

First production of plants in containers

1955

• First production of plants in containers to solve the recovery problems encountered during reforestation with bare-rooted plants planted in shallow soils, at higher altitudes and with shorter planting seasons compared with those of the valley.

• Plant containers permitted the planting period to be extended in the mountains and therefore improved the overall rate of recovery.



1960

• First trials with mycorrhization on Pin Cembro with Mr. PONCET from the CETEGREF in Grenoble (which became the CEMAGREF

- Public Institute for Agricultural and Environmental Research) and Mr. MOSER from the Research Centre for Reforestation at altitude and the IMST in Austria.

• Marriage to Ginette who was responsible for all the administration of the nursery from 1961 to 1992. She also actively participated in the work of the nursery.

Ginette ROBIN

1970

• Development of the first ROBIN ANTI-CHIGNON® container (Registered and patented design)

1975

• View of a square of Cedrus atlantica grown in the first ROBIN ANTI-CHIGNON® container on the nursery at Saint Laurent du Cros.





View of a square plot on our land at Valernes (04)



Our laboratory for controlled mycorrhization in Saint Laurent du Cros



1980

• Opening of the new centre for soil-less culture over 30 hectares in Valernes (04) to develop a larger range, and especially for the production of plants intended for reforestation in the Mediterranean region and on flat land, thanks to the much more favourable climate than in Saint Laurent du Cros.

• That year, Bruno ROBIN, Max's oldest son joined the company, his two daughters Cécile and Christine joined slightly later in 1985 and 1989.

1988

• Creation of laboratory for controlled mycorrhization in Saint Laurent du Cros, with the help of ANVAR (National Agency for the Economic Development of Research).

• Launch of several programmes for research and development in collaboration with INRA (National Institute for Agricultural Research), the CEMAGREF, French and foreign universities.

1996

• Acquisition of ISO 9002 certification for the production, sale and delivery of young forest and ornamental plants.

1998

Acquisition of ISO 9001 certification, Robin Nurseries become the first European company to be certified ISO 9001 for the production, sale and delivery of young forest and ornamental plants, Christmas trees and associated services, money back guarantee.
Robin Nurseries receive the award Prize for Life Science by the Jury Innovation, Recherche Entreprise (Innovation, Research and Development) presided over by the DRIRE (Regional Department for Industry, Research and the Environment) Languedoc Roussillon.



• ROBIN Pépinières, founded by Max ROBIN in 1948, is celebrating its 50th anniversary.

1999

• Opening of the ROBIN JARDINS BOTANIC garden centre in GAP (05).

• Bruno goes into partnership with Véronique, his younger sister, and Edgar, his brother-in-law, and opens the ROBIN JARDINS BOTANIC garden centre in **GAP**.

2000/2001

• Development of the new Robin Anti -Chignon R3L and R600 containers providing customers with products specifically adapted to different environments and usages.

2002

• Pépinières Robin obtains the certification ISO 9001 version 2000 for its high quality Management system. The 2000 version is the latest and the most complete version ISO norm.



Cedrus atlantica aged 3 years mycorrhized with Tuber melanosporum in GODET ROBIN ANTI-CHIGNON® R3L containe

HISTORY



2003/2004

• Launch of the new GODET ROBIN ANTI-CHIGNON® R1.5L container

• CHAMPIGNON® mushroom orchards, new culture launched by ROBIN Nurseries development and production of their first Carpophores.

2005

• The CHAMPION® truffle trees produced in exclusivity by ROBIN Nurseries and put in place since 2000, produce their first truffles.

• Opening of the Jardinerie Robin in **SISTERON**.

Success of the **VERCHAMP®** programme. More than 15 000 PLANT CHAMPIGNON® mushroom plants and ROBIN TRUFFLE PLANTS 68 VERGER A CHAMPIGNON® mushroom beds put in place with farmers in the Piedmont region (Italy) and in Provence Côte d'Azur, within the programme Intereg alcotra IIIA Franco-Italian between 2004 and 2007.

2006

• Opening of the Jardinerie ROBIN JARDINS BOTANIC in MANOSQUE (04).

2007

• A shower of medals for ROBIN Nurseries :

• On the 23rd September 2007 Bruno Robin was decorated with la croix d'Officier de l'Ordre du Mérite Agricole (the National Order of Merit for Agriculture awarded by the President of the French Republic).

• 6 medals of honour for work in agriculture for the employees of the company

Including : one of the echelon Grand Or (Gold) awarded to Joseph MARTIN for 40 years of work at ROBIN Nurseries, Echelon Vermeil for Gilles AMAR, 30 years with Pépinières ROBIN,

Echelon Argent (Silver) for Laurette FAUDRA-ROLE, Corinne ROCHE, Françoise ROCHE, Annick TOUCHE : 20 years at Pépinières ROBIN.

• Awarded the Trophée de l'Entreprise (Business Award) in the category for Innovation, Research and Diversification.

These trophies are organized by the Chamber of Commerce and Industry in the Hautes-Alpes in partnership with the Conseil Général (County Council) aim to reward business leaders in the Hautes-Alpes who have shown exceptional entrepreneurial spirit.





Genetic imprint of the Tuber magnatum mycorrhizae (photo INRA Clemont)

Quercus ilex mycorrhized with Tuber melanosporum aged 1 year, grown in a ROBIN bucket ANTI-CHIGNON® BUCKET R1,5L

Tuber magnatum mycorrhizae

MAX ROBIN the founder of Pépinières ROBIN, surrounded by 3 of his 4 children, Bruno, Cécile and Christine ROBIN, Mr. TRUPHEME, President of the Conseil Général and Mr. Maurice BRUN, President of the Chamber of Commerce and Industry in the Hautes-Alpes.







2008

• **Spring 2008**: the PLANT CHAMPIGNON® a Pépinières ROBIN exclusive mushroom plant, Wins the trophée d'Or 2008 (Golden Trophy) at the trophies for innovation organized by PROMOJARDIN (an interprofessional assocation for the promotion and improvement of The environment and life style).

• Autumn 2008 : Launch of the production of mycorrhized plants with white truffle (Tuber magnatum) according to the INRA ROBIN procedure under license and monitored by INRA. The INRA ROBIN procedure of mycorrhization by white truffle (Tuber

magnatum) of favourable plant species has been developed within the framework of a research contract signed with INRA, Clermont-Ferrand-Theix centre (Mr. Gérard CHEVALIER).

QUERCUS pubescens TRUFFIER ROBIN aged 1 year mycorrhized with a Tuber magnatum in GODET ROBIN ANTI-CHIGNON R430 container produced according to the INRA/ROBIN procedure, under licence and monitored by INRA.



Pépinières ROBIN, was made a Chevalier de la Légion d'Honneur, (National Order of the Legion of Honour) for his actions in favour of agricultural development.



60th anniversary of the nurseries





SAPIN GLACÉ ROBIN®

2009

• Creation of a workshop for spraying Christmas trees.

2010

• Development and launch of the fir tree GLACE ROBIN® registered trademark.

• Environmental certification MPS ABC (for sustainability). Our company received in July 2010 its 1st MPS qualification.

Robin nurseries were certified MPS A, which is the highest qualification from their first year of registration to this scheme encouraging sustainability.

By our engagement and adhesion to the norm MPS, we demonstrate, our will to protect the environment.

2011

• Following their participation in the 3rd ECOTROPHEES challange for quality of life organized by the Groupe J, Robin Nurseries won two Silver trophies , one in the Category of ECO MANAGEMENT, the second in the category of ECO PRODUIT.

Septembre 2011 : Opening of the Jardinerie ROBIN JARDINS BOTANIC garden-centre in **BARCELONNETTE** (Alpes de Hautes Provence).





Ecotrophies



History



2012

• Spring 2012, opening of the new ROBIN JARDINS BOTANIC garden centre in SISTERON (04).

2014

• Creation of the SAPIN DIAMANT ROBIN®.

Elected by women for women label for the SAPIN DIAMANT ROBIN®.

Following their participation in the 2014 living environment ecotrophies, the ROBIN Pépinières were rewarded for the 2nd time for their commitment as a living environment professional in terms of sustainable development.

2018

• Construction of new controlled-atmosphere greenhouses on the Valernes farm (04) for the production of ROBIN TRUFFLE PLANTS®.

2020

• Controlled production of Tuber magnatum (Italian white truffle): World first!



Plantation of ROBIN TRUFFLE PLANTS, which produced its first Tuber magnatum at the age of 4 years.



2022

• ROBIN nurseries won the innovative agriculture trophy during the innovative agriculture Hautes-Alpes trophies.

• Alexandra Robin, daughter of Bruno ROBIN and granddaughter of Max ROBIN, joins the company. And so the third generation arrives.

Today, Bruno ROBIN and Christine ROBIN, Max ROBIN's children, and his granddaughter Alexandra, run the company. Every day, they continue to do their utmost to bring you the best quality, the best service and the constant innovation that has characterised the company for 75 years.



SAPIN DIAMANT

RÖBIN

QUALITY MANAGEMENT



Our plant recovery guarantee grown and delivered in ROBIN ANTI-CHIGNON® BUCKETS.

Thanks to the quality of our young plants raised and delivered in **ROBIN ANTI-CHIGNON**® BUCKETS, we can now guarantee the recovery of the plants we deliver:

This is why we guarantee a minimum recovery rate of **90%** for our bucket plants.

See condition below.

THE ROBIN RECOVERY GUARANTEE

Plants grown and delivered in ROBIN ANTI-CHIGNON® containers are subject to a guarantee by the seller in case of a failure of recovery of above 10 % of the plantation of the delivered plants.

Under this guarantee, the seller is obliged to replace free of charge the defective plants which will be delivered to the buyer during the season following the one in which the seller acknowledges the failure of the plants.

We guarantee a rate of recovery minimum of 80%. In case of failure superior to 20% we are committed to replacing free of charge the dead plants in order to reach the minimum guarantee rate within the limit of 30% of the total number of plants delivered. For example :

- 90 % drate of recovery detected : no replacement of plants.

- 60 % rate of recovery detected : 30 % of plants replaced free of charge.

- 45 % rateof recovery detected : 30 % of plants replaced free of charge.

Outside this obligation of replacement, the present guarantee excludes all other compensation of any kind.

In addition, the guarantee is excluded if the defect is the result of caving-in, floods, gullies, landslides, snowfall or avalanches that have destroyed or swept away the plantation, fire, frost, heat or exceptional drought, attacks by predatory or parasitic animals or, more generally, any event independent of the quality of the plants delivered or resulting from a fault on the part of the purchaser or from a failure on the part of the purchaser to fulfil their obligation to maintain, treat and preserve the plants normally, to prepare the soil prior to planting, to plant in accordance with good practice, to water after planting or to clear the plants of herbaceous competition.

To exercise the right to this plant recovery guarantee, the buyer should notify the seller of the problem encountered on the plantation, by registered letter with acknowledgement of reception before the 15 th September following the delivery.

In the case however, when the reception of the plants by the buyer is carried out after the 15th July, the plant recovery guarantee would be prolonged until the 15th September of the following year.

For the implementation of the present clause, it is stated that the rate of recovery of plantations will be determined after the plants have been counted on 3% minimum of

planted lines, the number of the first line to be counted having been selected at random, the other lines are deduced automatically.

For sites where the number of plants is inferior to 10 000, the sample rate will be 10% which is one line in 10.

Note that :

For quantities inferior to 500 plants, and for ROBIN TRUFFLE plants and PLANT CHAMPIGNON®: mushroom plants: We ask you to return dead plants to us, with their respective labels stapled to the plants, in order to replace them in the same conditions as those previously formulated.

For the **ROBIN TRUFFLE PLANT** truffle plants and **PLANT CHAMPION®** mushroom plants the plant recovery guarantee goes up to 100% if the plants are protected after planting with a protective covering of the type « Climatic » and mulched with a tile of the type « HPK ROBIN » or a polythene film. In the case where the plants are not protected or mulched, the general plant recovery guarantee that

In the case where the plants are not protected or mulched, the general plant recovery guarantee that applies which is for a minimum recovery rate of 90%.

The present guarantee does not apply under any circumstances to plants already replaced by the seller under the execution of the present clause.

Quality Management

The main positive aspects of quality management for a company's customers are: *Customer Satisfaction Guarantee and Traceability*

Customer Satisfaction

Quality management guarantees customer satisfaction

All the activities of our nurseries are organised to give our customers a guarantee of satisfaction with the products and services we provide.

This is particularly true of our production and preparation of orders for **TRUFFLE PLANTS ROBIN®** and young plants raised and delivered in **ROBIN ANTI-CHIGNON®** BUCKETS.

Our quality management system covers:

- Our production methods, inoculum control, sowing methods, inoculation, production monitoring and predelivery mycorrhization control.
- Our order preparation methods.
- Controls and validations carried out at each stage.
- The procedures for carrying out all these stages are defined and rigorously applied.

The tools we use to monitor our processes and the regular audits we carry out ensure that we have an effective and proactive quality management system, which places customer satisfaction as the goal of our organisation.

One of the tools we use to measure the effectiveness of our quality system is a systematic customer satisfaction survey, which we carry out the day after each delivery. The results are close to 100% satisfaction every year.



Chantier AZF Toulouse :

Sorbus domestica endomycorrhized **HAUTE PERFORMANCE**® 4 years after planting. The plants are 1 year old in **Robin ANTI-CHIGNON**® containers and measuring 20 cm or more at the time of planting.

M Yves SCHUHL DG Chimie RETIA Groupe Total 92078 Paris La Défense :

"Actually, what we can say on this subject is that Pépinière Robin supplied Haute-Performance deciduous controlled mycorrhizal plants for the renaturalization of former industrial site in Toulouse. Our planting conditions are difficult and the mycorrhizal plants have been a very positive solution for our soil with noorganic material.

For example, the parcel « bw5 », the rates of recovery have been superior to 95%. In addition, the delivery in crates of Robin **ANTI-CHIGNON**® containers has facilitated storage on site.

We are globally very satisfied with the services of ROBIN Pépinières."

Traceability and identification

The job of a nurseryman consists in growing plants of many different species and origins over a period of several years, at different stages of cultivation, from seed to young tree.

The correct and complete identification of plants, and the safeguarding of this information throughout the cultivation process, known as "traceability", is essential to the proper management of a nursery.

ROBIN Pépinières has put in place very strict identification and traceability procedures for the batches of seeds and plants used.

The aim is to manage, over several years:

- Different plants, in terms of genus, species, variety,
- Different origins,
- Different types of packaging,
- Separate management of certain batches, such as cultivation contracts,
- Or even combinations with batches of different strains of fungi, in the case of HIGH PERFORMANCE® PLANTS, mycorrhized and controlled, and in particular TRUFFLE PLANTS ROBIN®.

Thus, each stage of production, from the receipt of seeds to the preparation of orders, is described in a detailed operating procedure that defines how batches are identified.

The main identification and traceability measures consist in fully labelling batches, recording the relevant information on registration documents, keeping nursery plans up to date and managing computerised stock. In addition to product identification, traced steps also include operator identification.

ROBIN PÉPINIÈRES AND RESPECT FOR THE ENVIRONMENT

Sustainable development has become a major concern for ROBIN Pépinières.

Our production methods have long been rationalised thanks to a Quality Management System, which prevents over-consumption and waste.

But we have decided to go even further in our respect for the environment, by committing ourselves to voluntary environmental certification schemes:

- MPs certification since 2010
- High Environmental Value (HEV) certification in 2023

MPS certification

This international label, specific to horticultural and nursery production, certifies a voluntary and reasoned approach to environmental impact.

The MPS approach commits us to sustainable development by gradually reducing the use of pesticides, fertilisers, energy and water, and by treating waste responsibly.

The method consists in a rigorous and continuous recording of the products used, monitored monthly by the certification body, and obliges us to reduce our consumption of pesticides, fertilisers and energy every year as part of a continuous improvement process.

We are awarded a letter grade (MPS-A, B or C) based on our performance against consumption standards set by the MPS organisation on the basis of all MPS members(1).

Please note: Since its first certification in 2010, our company has received the highest qualification, and has retained it ever since: MPS-A+ under number 802987

(1) MPS in figures for 2019:

World: 3,100 certified producers, 31,500 hectares France: 94 certified growers, 2,900 hectares of nursery and horticultural crops

HEV approach

High Environmental Value (HEV) is a voluntary certification scheme designed to promote good environmental practice.

It corresponds to the highest level of environmental certification for farms under French national regulations(2).

It guarantees that the farming practices used on all our farms preserve the natural ecosystem and reduce pressure on the environment to a minimum.

High Environmental Value certification is based on four themes:

- preserving biodiversity (insects, trees, hedges, grassy strips, flowers, etc.);
- plant health strategy;
- fertilisation management;
- irrigation management.

For each theme, it is based on different indicators measuring the farm's environmental performance.

To retain this label, farms are audited at least once every eighteen months by a certification body approved by the Ministry of Agriculture. This audit ensures that the thresholds for the environmental performance indicators are met throughout the period of validity of the certificate.

(2) At 1 January 2023, there were 36,225 HEV-certified farms, i.e. approximately 9.3% of French farms, covering at least 2.15 million hectares, i.e. approximately 8.0% of French agricultural land.

HEV certification complements the MPS approach: MPS refers to low input consumption. The rigorous recording of data for MPS makes it possible to measure some of the indicators required by HEV.

HEV is a more comprehensive description of good environmental practice.





THE CONTROLLED MYCORRHIZATION LABORATORY



Pierre CAMMALLETTI and Flavie CLARIOND, in charge of the controlled mycorrhization programme.



Marie Touche, the 3rd member of our laboratory team, who monitors and controls the production of truffle plants in the nursery.

Why controlled mycorrhization?

In truffle growing (as in fungiculture), mycorrhization is at the top of the list of important concepts to understand. Thanks to mycorrhization, it is now possible to grow truffles or mushrooms from forest plants (oak, hazelnut, cedar, pine or linden). But what exactly does this mysterious mycorrhization consist in? What's behind this technique? How does it work and what are the main benefits? This is what we'll be looking at together in this explanatory guide to controlled mycorrhization.

What exactly is mycorrhization?

Mycorrhization consists in bringing together the roots of a plant (a tree) with previously selected strains of fungi. The aim of this "marriage" is to generate a symbiosis between the plant and the fungi. The tree will benefit from the nutrients induced by the presence of the fungus (nitrogen or phosphorus, for example), while the fungus will feed on the sugars produced by the tree's photosynthesis.

As you can see, mycorrhization is a win/win "alliance" between a plant and fungal strains (mushrooms). The meeting between this fungus (from the Greek mukês) and a tree root (rhiza) gives rise to what is known as a mycorrhiza. As well as promoting the exchange of nutrients, mycorrhiza can offer plants greater protection against soil pollution. Indeed, the fungus is capable of filtering pollutants, which has the effect of protecting the surrounding roots and helping to supply the tree with water, thereby improving its resistance to drought.



Detail of an Ectomycorrhizal Root

The laboratory

Why use controlled mycorrhization?

Two distinct aims:

1/ Produce HIGH PERFORMANCE® controlled mycorrhizal plants.

As explained above, controlled mycorrhization can boost a plant or tree's nutrient intake without the need for chemical fertilisers. It also improves the tree's water supply, making it more resistant to drought. It also provides a real bulwark against the harmful effects of soil pollution on plants. This assisted symbiosis technique results in **improved recovery and growth performance of young plants used in planting**. Whether for reforestation or revegetation, and particularly on poor or difficult soils (farmland, industrial wasteland, quarries, areas ravaged by fire, etc.), using **HIGH PERFORMANCE®** controlled mycorrhization plants can achieve much better results than traditional forestry plants, especially in dry conditions.

2/ The second aim of controlled mycorrhization consists in producing plants mycorrhized with edible mushrooms, TRUFFLES, LACTARIUS or BOLETUS to create TRUFFLE ORCHARDS and MUSHROOM ORCHARDS®.

In practical terms, how does controlled mycorrhization work?



The aim of controlled mycorrhization is to reproduce, in a controlled manner, this association that nature itself generates randomly **i.e. to initiate and facilitate symbiosis between the roots of a young plant and fungi.**

To do this, the fungus or truffle is inoculated into a young plant raised under conditions close to sterility (its juvenility being the guarantee that it is not already in symbiosis with another fungus).

On paper, this operation looks easy, but it requires a number of preliminary steps:

- isolation of fungal or truffle strains

- selection of the fittest strains

- their cultivation to produce the mycorrhizal inoculum.

At this stage, nothing is certain and an initial quality control is required to ensure the viability of the inoculum obtained. If this control confirms the durability of the mycorrhizal inoculum, the young plants are inoculated in the nursery. During the months following inoculation, the plants are monitored and checked regularly to ensure that mycorrhization is effective and progressing positively.

A final check that the mycorrhization is correct is carried out before shipment.

Upon completion of this process, we therefore obtain a HIGH PERFORMANCE® controlled mycorrhization young plant, ready to be planted.

The laboratory

Endomycorrhiza \vee /s ectomycorrhiza, what are the differences between the two?

There are different types of mycorrhizae, but our work focuses more specifically on endomycorrhizae and ectomycorrhizae, whose characteristics and differences are described below:

- Ectomycorrhizae account for only 3 to 5% of terrestrial plant species, but they are of considerable forestry importance. Ectomycorrhizae are of interest for:
 - the production of edible mushrooms (milk-cap, boletus, amanita, chanterelle, Périgord black truffle, Burgundy truffle, summer white truffle and Italian white truffle).
 - forestry, applying to a wide range of coniferous and deciduous hosts: Pine (Pinus), Spruce (Picea), Fir (Abies), Oak (Quercus), Hazelnut (Corylus), Chestnut (Castanea),Linden (Tilia), Cedar (Cedrus), etc.
- Endomycorrhizae are the most widespread form of symbiosis, colonising over 90% of terrestrial plants. They particularly concern ornamental or fruit species, but are also associated with forest species such as Ash (Fraxinus), Maple (Acer), Walnut (Juglans) or Prunus.

What are the benefits of controlled mycorrhization?

Mycorrhizae (symbiotic associations between plant and fungus) occur naturally in traditional nurseries. In most cases, these are fungi of no interest to the subsequent development of the plants. Mycorrhizae are also abundant in forests, and are essential for good tree growth. But they disappear very quickly, only 1 to 2 years after a clear cut.



Ectomycorrhiza of laccaria bicolor on the root system.



Endomycorrhiza seen under the microscope after staining.

Mycorrhizae are totally absent, however, from older agricultural land and disturbed sites (roads, motorways, mines, quarries, industrial wasteland). Under these conditions, traditional plants show their limitations and can encounter enormous recovery and growth problems.

This is why ROBIN PÉPINIÈRES has developed controlled mycorrhization, under licence and supervision from INRAE, to improve the performance of young plants and significantly increase their recovery rates in difficult conditions.

The benefits and role of controlled mycorrhization are many and varied. You can find out more about them in the diagram below:



)BIN pépinières

As you will no doubt have realised, the main advantages of controlled mycorrhizal plants lie in:

- their higher recovery rate than conventional plants (significantly improving planting results),
- their more regular and rapid growth,
- their ability to cope with poor or difficult terrain,
- their better drought resistance

ROBIN Pépinières, the WORLD leader in controlled mycorrhization

Today, ROBIN Pépinières is a leader in mycorrhization research and innovation. Their work on the subject began in the 1960s and in 1998 they were awarded the Life Sciences Prize for their Research and Development work on controlled mycorrhization.

As a result of this work, we are currently the only nursery in Europe capable of mastering all the stages involved in the production and control of plants mycorrhized with different fungi on a wide range of host species for different types of use (TRUFFLE ORCHARDS, MUSHROOM ORCHARDS[®], reforestation, planting in difficult environments, etc.).

When you call on ROBIN Pépinières, you benefit from:

- Advice and expertise from our production and laboratory teams
- The physicochemical analysis of your soil samples and the resulting advice
- Home delivery
- Guaranteed recovery

The Robin controlled mycorrhization laboratory

Since 1990, ROBIN PÉPINIÈRES has made the deliberate choice to develop controlled mycorrhization in-house, in our own laboratory. Research and development has been ongoing for many years, with a constant drive to innovate and improve the quality of our products.

The work of our controlled mycorrhization laboratory involves a number of stages, from the isolation of strains to the final inspection of mycorrhized plants prior to shipment.



It should be noted that controlled mycorrhization has been developed within the framework of European programmes, with the help of ANVAR and in collaboration with:

- INRAE
- CEMAGREF
- Nancy CNRS
- University of Diepenbeck (Belgium)
- University of Cologne (Germany)
- University of Krakow (Poland)
- University of Kiev (Ukraine)
- University of Budapest (Hungary)
- IPLA (Institute of the Italian Piedmont Region)



HIGH PERFORMANCE[®] ENDOMYCORRHIZAL PLANTS



Revegetation of the AZF factory site in Toulouse Planting on totally inert ground after heat treatment of the soil to remove pollution. **HIGH PERFORMANCE®** Endomycorrhizal Acer campestre, grown in **ROBIN ANTI-CHIGNON®** R400cm3 buckets, height 20 cm and over, aged 1 year at planting, result and photo 4 years later: mean height 200 to 250 cm, recovery rate > 95% (NB the protective sheaths measure 1.20m).

M. Yves SCHUHL Director of Chemistry RETIA Group Total 92078 Paris La Défense:

"Indeed, what we can say on this subject is that **ROBIN Pépinières** supplied the High-Performance mycorrhized deciduous plants for the revegetation of the former industrial site in Toulouse.

Our planting conditions are difficult and mycorrhized plants have been a very positive solution for soils with no organic matter.

For example, on plot bw5, recovery rates were over 95%.

What's more, delivery in **ROBIN ANTI-CHIGNON®** crates facilitates on-site handling and storage.

Overall, we are very satisfied with the services provided by ROBIN Pépinières. "

Endomycorrhized PRUNUS mahaleb roots: observation under a microscope at 200x magnification. We can note the presence of arbuscules and vesicles characteristic of endomycorrhizal colonisation by alomus.

ENDOMYCORRHIZAE

Endomycorrhizae are the most common type of mycorrhizal association in nature. Soil pH is an important factor in choosing the mycorrhizal species best adapted to the planting site.

The performance of mycorrhized plants will depend directly on the choice of mycorrhizal species.

In our laboratory, we produce a range of fungi adapted to different host species, different types of site conditions and soils in particular.

They are the most widespread type of mycorrhizal association found in nature.

The arbuscular endomycorrhizae like the Glomus intraradices that we have chosen in our laboratory, are interesting for many plants principally the deciduous species of tree and shrub ACER, JUGLANS, PRUNUS, CORNUS, FRAXINUS...

The principle of this association is simple: the microscopic fungi penetrates into the root cells of the host plant and multiply there, putting out (the arbuscules) or (vesicles) organs of resistance in fungi.

This fungi also develops outside in the form of filaments. These filaments have a double role. Firstly they represent the surface for exchange with the soil and they give birth to spores (reproductive organs of the fungi). These mulitiply in the soil and represent the base of the new inoculum able to colonize herbaceous species as well as ornamental species and trees.

These systems enable the rapid development of the process of renaturalization.

The presence of fungi in the heart of roots encourages the development of plants by multiplying the possibilities of exchange with the outside by making the nutritive elements in the soil more accessible to the plant. It also encourages the absorption of water by the plant.

A natural biological stimulant.

The fungus situated in the roots does not experience any stress during planting.

Since this fungus is a natural biological stimulant :

it limits the amount of complementary fertilizer required

Since the mycorrhizal plants are more robust they are less sensitive to pathogens.

The young HAUTE PERFORMANCE® endomycorrhizal plants enable an improvement in the rate of recovery and in the young arowth on sites with difficult conditions and in non forest soils such as :

- Quarries,
- Embankment land,
- Approaches to roads or motorways,
- Railway lines
- Agricultural land
- Industrial wasteland...



ES PLANTS HAUTE PERFORMANCE® **ECTOMYCORHIZIENS**

The Ectomycorrhizae that we cultivate :

Hebeloma crustuliniforme

The stock Hebeloma crustuliniforme ROBIN that we have selected in our laboratory enables us to obtain a significant improvement in the results of crops on chalky limestone land.

It withstands humid, slightly clayey ground quite well.

The principal controlled mycorrhized plants HAUTE PERFORMANCE® with Hebeloma crustuliniforme ROBIN which we propose :

Sylvestris

controlled HAUTE PERFORMANCE®

with Laccaria bicolor grown in ROBIN

Pinus

cm.

FAGUS sylvatica (European Beech)

PINUS halepensis (Aleppo pine)

QUERCUS ilex (Holly Oak)

PINUS pinea (Stone Pine)

- PINUS nigra austriaca (Austrian Pine) QUERCUS pubescens (Downy Oak)
- CEDRUS atlantica (Atlas Ceder)
- PINUS laricio Calabrica (Aleppo Pine)



Fructification in nurseries of Hebeloma crustuliniforme on Pinus halepensis in GODET ROBIN ANTI-CHIGNON® containers.



SGREG Vitrolles site Cistus albidus and Hebeloma crustuliniforme

Improvement in young growth of PINUS laricio corsicana 1+0 GR430 mycorrhized with LACCARIA bicolor. Measures 2 years after planting.



mycorrhized

Improvement of the percentage of survival of PINUS laricio corsicana 1+0 GR430 mycorrhized with LACCARIA

PERFORMANCE®

Laccaria bicolor Robin grown in



PINUS laricio corsicana. Crops on hostile soils (Verses de houillères) ONF Alès (30).

Growth of 60 cm during the 3rd growth season.



Mr. MEILLAND REY company SATMA department of the exploitation of quarries 38081 L'ISLE D'ABEAU

The use of controlled mycorrhhizal plants is particularly useful for the renaturalization of degraded sites like quarries. «The exploitation of quarries must be carried out seriously in order to guarantee the quality of production and to enable a perfectly coordinated redevelopment.

Our planting conditions, which are often difficult, have compelled us to search methods which are most adapted to guaranteeing rapid recovery and development. Our choice fell on controlled mycorrhized plants.

For many years we have made available either for direct purchase, or under a cultivation contract at ROBIN Nurseries different species in order to reforest our exploited sites.

Laccaria bicolor ROBIN

The controlled mycorrhized plants with a stock of Laccaria bicolor ROBIN chosen by our laboratory enable an improvement in results of crops planted in acidic or decarbonated soil.

Some of the Host Species available using controlled inoculated with LACCARIA bicolor ROBIN :

- FAGUS sylvatica (European Beech)
- QUERCUS borealis (Champion Oak)
- QUERCUS sessiliflora (Sessile Oak)
- CEDRUS atlantica (Atlas Ceder)

- LARIX decidua (European Larch)
- PINUS laricio corsicana
- PINUS nigra austriaca (Austrian Pine)
- PINUS pinea (Stone Pine)

Do not hesitate to consult us to receive a list of our young deciduous plants and resinous mycorrhized plants HAUTE PERFORMANCE®

ROBIN pépinières

Station at Gourette Altitude 1800/2000m

HAUTE

HAUTE PERFORMANCE® PLANTS



MYCOREM

Within the framework of the European contract MYCOREM **the Pépinières ROBIN** produce mycorrhized plants which are intended to be replanted on polluted sites. (natural pollution) (salt) or industrial pollution (heavy metals).

On these experimental plantations the recovery and development of plants is monitored by the respective scientific organizations in the different countries associated with the programme (Ukraine, Germany, Belgium, Poland, Holland...).

The goal of **MYCOREM** is to demonstrate the interest of mycorrhized plants with certain selected stocks, in phytorestauration in polluted areas.

In this programme, the two types of mycorrhizae used were endomycorrhizae and Ectomycorrhizae.



Summer 2002 annual meeting MYCOREM. Visit of experimental crops in France.

The first results obtained:

- **SUILLUS luteus** enabled a significant increase in the survival rate of Pinus

sylvestris on soils polluted with heavy metals (zinc, copper, cadmium) on a crop in

Belgium Dr. Jan Colpaert Belgium).

 SUILLUS luteus and HEBELOMA crustuliniforme have improved the survival rate of Sylvester pines on ground polluted by hydrocarbons and zinc CNRS Nancy (54).
 HEBELOMA crustuliniforme has shown some interest for the young growth of pines and decidious trees on soil polluted chemically by lindane. Ste. Triton,

Germany. - LACCARIA bicolor R inoculated with FAGUS sylvatica

enabled the introduction of a tolerance to sodium chloride at significant concentrations.

Experiment on plants in container (Dr. Ingrid Weissenhorn).

It seems that the selected stocks introduce a tolerance to heavy metals and the mycorrhized plants survive and grow on this ground, unlike ordinary plants.

We advise you to carry out a physicochemical analysis of your soil before planting any HAUTE PERFORMANCE® controlled mycorrhized plants.

From the results of this analysis and the description of the conditions of the location your ground, we can usefully advise on the stock of fungi and the host species that will give you the best results, on your site.

CONTROLLED MYCORHIZATION **DOUGLAS S238N® HAUTE PERFORMANCE®**

Douglas mycorrhizal plants douglas by LACCARIA bicolor sn38n under licence and monitored by INRAE.

These plants are inoculated with the ectomycorrhizal fungus LACCARIA bicolor \$238N chosen by the INRAE Centre in Nancy. Research has been carried out by INRAE in partnership with our nursery and that of our colleague. After several years of trials, this collaboration has culminated in commercial production. Which has enabled us to be able to offer you plants that offer a higher yield than traditional plants with just naturally occuring mycorrhiza, because natural mycorrhization in the nursery does not give an advantage to the plant. The following figure shows the results obtained over ten

years by INRAE in the network of comparative crops.



Licence and control The monitoring carried out in our nursery by INRAE guarantees a good level of mycorrhization by the inoculated stock in accordance with strict specifications. LACCARIA bicolor S238N is a stock originating in the open air of Douglas in the North West of the USA. It is particularly suited to the species for which it stimulates the initial growth for at least ten years.

The economy carrying out a clearing is a realistic objective taking into account the experimental results of INRAE.

Mycorrhizae are fragile organisms, sensitive to external conditions. The Mycorrhization is very fragile and rapidly disappears on contact with air. The container ROBIN ANTI-CHIGNON® allows the development of a beautiful root system and shelters mycorrhization from contaminants. The container preserves the root system and keeps the mycorrhizae in tact until the moment of planting thus conserving all the benefits of the controlled mycorrhization As the trial results show, the inoculated plants with a LACCARIA bicolor S238N stock should be placed in acidic soils : pH (water) optimum of the soil 5 to 5.5. We should avoid placing the plants in soils invaded with grasses.



Pseudotsuga douglasii mycorrhizal plant by Laccaria bicolor \$238N HAUTE PERFORMANCE® planted in Godet ROBIN ANTI-CHIGNON® container R400 cm3, aged 6 months. Olga is looking at the fruit bodies of laccaria bicolor \$238N on the block

Control is evidenced by a numbered vintage label affixed to each crate of seedlings.



Monitoring is carried out using a label dated and numbered placed on each crate of plants.

Mycorrhizae formed by the fungi LACCARIA bicolor \$238N with a Douglas root.

The mycorrhizae are mixed organisms root - fungus.

They are the site of a symbiosis which means an association of mutual benefit : the tree receives sugars and the fungus in return sends water and minerals towards the root, while protecting against certain pathogens and producing growth regulators.

The mycorrhizal fungi are numerous, but certain, like LACCARIA bicolor S238N, are more effective than others in stimulating tree growth.



Coforêt Site in Ronno (69) Pseudotsuga douglasii HAUTE PERFORMANCE® mycorrhizal with Laccaria Bicolor S238N planted in GODET ROBIN ANTI-CHIGNON® containers. R200 cm aged one year at a heiaht of 15 cm or more, photo taken 2 and a half years after planting average plants 150 to 180 com, rate of recovery 99%, only one clearing has been carried out





Roots of Douglas s238N® mycorrhized with Laccaria bicolor s238N®

OBIN pépinières

ROBIN TRUFFLE PLANTS®

CUSTOMER TESTIMONIALS



The Robin truffle inoculum is proving even more effective this year! Indeed, despite the heatwave and drought conditions in 2022, thanks to the Robin Truffle inoculum that I've been using regularly for the past 6 years, I've had an excellent harvest of Tuber melanosporum and the truffles are mainly to be found in the "truffle traps". Thanks to ROBIN Pépinières for the quality of their truffle plants and inoculum. The advisors are not the ones who pay, but in this case I would draw your attention to the results.

Jean-Francois COURSAUD 79000 Niort - France

I, the undersigned Piero Di Sabotino, legal representative of SOC.AGR. COOP. VALLE SUBEQUANA, have established a truffle cultivation over an area of 5 hectares, planted with downy oak, holm oak and hoary rock-rose (Cistus incanus) between 2013 and 2015, with plants from the Robin nursery, and this became productive after only four years.

To date, after approximately 8 to 10 years, I feel able to recommend the Robin nursery to anyone intending to plant species that encourage the growth of truffles as the results have been positive, and I am as a result more than satisfied with the choice I made a few years ago.

67024 Castelvecchio Subequo - Italy, 11/09/2023





Almost two years already!

My project was born in February 2021 and came to fruition in June of the same year. The plot soil analyses in hand are very important for the decision to plant truffle trees.

A visit to the Robin pépinières in Saint Laurent du Cros was a must, in the company of Mrs Christine Robin. After an overview of the history of the family business, the principle of mycorrhization and the cultivation of plants, we took a tour of the truffle-growing plot. The seriousness and rigour of the company and the quality of the plants convinced me.

Plants ordered in August 2021, planting in October 2021: Truffle Oak for Italian white truffles, Linden, Hazel and Hornbeam for Périgord and Burgundy black truffles.

Currently, there are 425 truffle trees growing in Normandy, in the Eure department. Only 5 plants failed to recover after a heatwave, cold spring weather and reduced rainfall (compensated by watering).

Very satisfied with the vigour of the plants and the support provided by Maison Robin and Mr Maxime Voisin, the local technician, for planting advice and follow-up, "It's an absolute guarantee of success for this great adventure".

Today, I can only advise anyone who wants to get started in this business to turn to Maison Robin Pépinières with complete confidence.

Rémi DUTRY 27000 Evreux - France



Pubescent oak mycorrhized with Tuber magnatum. Aged 1 year at planting, H: 25cm/+ in ROBIN ANTI-CHIGNON® BUCKET R430 cm3. Photo 18 months after planting, H: 1.20 m.

ROBIN TRUFFLE PLANTS® CUSTOMER TESTIMONIALS

Hello to the whole Robin team,

My English wife and I have lived in France for several decades, and she loves to cook. She was delighted to "discover" truffles...

Now "Retired", we decided - some ten years ago - to live in the Countryside in her country of origin. We wanted to take advantage of the climate - which was becoming milder - to plant Truffle Trees... Not a few dozen, but a few hundred, to finally - after about ten years of planting - have 2,200 truffle trees in England "scientifically mycorrhized" by Pépinières ROBIN.

After analysing our land, we decided to diversify our crops into three separate areas: Uncinatum, Melanosporum, then Magnatum, depending on the type of soil and Sun exposure.

It goes without saying that we have always had excellent advice from the ROBIN Company to support us in this new adventure, as well as for the followup of these plantations and the maintenance of the trees and the soil.

Over the last two years we have noticed many "burns" around our first plantations and we now need (for this new truffle season) a dog experienced in digging to help us pursue our passion.

We would like to thank the Robin family for the quality of their plants and for their support whenever we felt the need for professional advice.

The real adventure is about to begin and we hope that many people will dare to take up the challenge of growing truffles...

Congratulations on the 75th anniversary of the ROBIN company, which just goes to show that you reach a certain age because you want to, and because you deserve to!

Jean-Paul and Christina Vuillin - Midway Manor Farm / Bradford-on-Avon Witshire UK



For us, working with Pépinières Robin meant guaranteed professionalism, service and prompt responses. We are very pleased with the quality of the plants, as well as the before and after-sales process, with consistent, attentive and professional service. **Orfeo Balboa**

12200 Castellon Spain

200 QUERCUS PUBENSCENS MYCORRHIZED WITH TUBER MAGNATUM. PLANTATION CARRIED OUT ON A PLASTIC MULCH 1,50m wide. Mechanically unwound. 100% PLANTS ALIVE ONE SEASON AFTER PLANTATION..

I am Emiliano Pompei, a Dottore Forestale (degree-qualified professional forester) from San Benedetto del Tronto who has been working in the truffle-growing sector since 1998. I seeded my first truffle fields with fine black truffles in 2002 with mycorrhiza-bearing plants from the Robin nursery and had the first results already in the 4th year. Today I have a farm of about 10 hectares planted 80% with Quercus pubescens and the remaining 20% with Quercus ilex, all with plants from the Robin nursery and of staggered age. The farm is located in the Municipality of Venarotta in the Province of Ascoli Piceno in the Marches region in an area particularly suited to the production of Tuber melanosporum. Agronomic management is complex, and varies from site to site, but in particularly favourable climatic years, production has exceeded 100 kg/Ha. I will never cease to thank the Robin nursery for the quality of the plants supplied.

Dottore Emiliano Pompei 63074 San benedetto del Tronco (AP) Italy







CEDRUS ATLANTICA MYCORRHIZED WITH TUBER MELANOSPORUM.

7 YEARS AFTER PLANTATION.

ROBIN TRUFFLE PLANTS®

Practical guide to truffle-growing: Making a success of your truffle orchard



Specialists in the **production of truffle plants**, ROBIN Pépinières can help you, step by step, to create your own truffle plantation. From the choice of plants, plot selection, the planting method, the upkeep and pruning of truffle trees, etc. to digging up your very first truffles, find all our advice in this **practical guide to truffle growing**. It contains **everything you need to know to successfully establish a truffle plantation!**

In addition to this guide, our teams are on hand to advise you at every stage of setting up your truffle orchard, so you can get the best possible yield.

Essential conditions and success factors for growing truffles

The truffle is a fungus found naturally in various regions of France and Europe. However, growing this mycorrhizal fungus comes up against a number of constraints. Several conditions must be met to encourage its growth:

- Geographical location: ideally, the plot should be located on a plateau or have a slight slope. A south, southeast or south-west exposure is recommended to ensure plenty of sunlight. The soil must be sufficiently calcareous, well-drained and rich in organic matter.

- Climatic conditions are also important, both for the tree and the truffle. Although the seasons should preferably be marked, the climate should not be too harsh (drought, frost, etc.). And depending on the climate, the most adaptable truffle species should be chosen.

- The cultural precedent (and possible competition from other mycorrhizal fungi) also has a direct influence on the success of a truffle plantation project. In addition to these geographical, climatic and cultural criteria, a number of other factors must be taken into account to ensure the best chance of successfully setting up a truffle orchard. Thus, professional truffle farmers agree that 5 fundamental factors determine the success and sustainability of a truffle plantation project:

21

1. The quality of the truffle plants

2. The **quality of the land** (the suitability of the soil for truffle growing,

- its physical and chemical properties, etc.)
- 3. The **planting method** (soil preparation, plant protection, etc.)
- 4. The **possibility of irrigating** the truffle orchard.
- 5. The **maintenance** of the truffle plantation over time.

Flavie CLARIOND and Marie TOUCHE during quality control in a greenhouse where our truffle plants are grown.



ROBIN pépinières

Practical guide to truffle-growing

1. Choosing truffle plants:

Focus on the quality of the mycorrhized plants

As a general rule, choose tree species that are already naturally present in your region. Identify the deciduous (or coniferous) trees that already predominate in the woods and forests near your plots. Pubescent oak (Quercus pubescens) and evergreen oak (Quercus ilex) are still the best truffle trees, but other species can also produce truffles: hazel, linden, hornbeam, pine, cedar and beech.

Once you've taken the time to select the species that will acclimatise most easily to your territory, don't neglect the quality of the plants that will make up your truffle plantation. Choose ROBIN TRUFFLE PLANTS® with controlled mycorrhization, produced using rigorous methods.

Regarding the age and size of truffle plants, you can choose from young plants grown in buckets of varying volumes: from 0.43L to 3L. Just remember that by opting for plants grown in a larger volume bucket, you optimise the recovery of your trees and their growth in the years following planting.

And in a larger bucket: the root system is more developed. It has a greater number of root apices and therefore more mycorrhizae.

In the truffle-growing world, **ROBIN TRUFFLE PLANTS®** are recognised as the best and are the only ones to combine an **INRAE**-licensed and controlled production method and **HEV** (High Environmental Value) environmental certification. The icing on the cake is that the **ROBIN TRUFFLE PLANTS®** are raised in **ROBIN ANTI-CHIGNON®** BUCKETS and come with a recovery guarantee!







GR1.5 Litres

GR3 Litres

2. Climate and topography

favourable to the establishment of a truffle orchard:



Geographical location and climate are eminently important factors in the success of a truffle plantation. You may have chosen the best truffle plants, but if they are planted in an area where the climate is unfavourable to the development of truffles, your project is in trouble and your future harvests will be compromised...

Before you start growing truffles, you thus need to ensure that your geographical location (altitude, orientation, topography, etc.) and the associated climate are compatible with growing at least one species of truffle.

Each truffle species has its own preferred climate:

Black truffle (Tuber melanosporum)

Generally speaking, growing truffles requires a temperate climate. It will grow all the more easily if it benefits from the following conditions: a not too dry spring with no late frosts, a hot summer with dry spells limited to 3 weeks, a mild autumn with no early frosts and a winter without intense cold. Bear in mind that black truffles are harvested in winter, at shallow depths, and can therefore freeze... They also need soil that warms up well in spring, when mycelial activity begins.

Burgundy Truffle (Tuber aestivum var.uncinatum)

The Burgundy truffle is perfectly suited to gently sloping ground or plateaux at an altitude of 100 to 1300m, with a North, North-East or East exposure (and yes, Tuber uncinatum prefers shade, unlike Tuber melanosporum...). Tuber uncinatum plantations thrive in a variety of climates, from oceanic to continental. Unlike the Perigord black truffle, the Burgundy truffle is acclimatised to frost, though it cannot withstand long periods of extreme cold: by the time the first autumn frosts arrive, its growth is already complete, so it is possible to grow Tuber aestivum var. uncinatum right up to medium mountains.

Summer truffle (Tuber aestivum)

The summer truffle is grown in drier areas than its cousin Tuber Uncinatum, in Mediterranean or even oceanic climates. Its main climatic danger arises when a period of dry, hot weather quickly follows a spell of frost (which does not happen very often) ... In terms of topography and orientation, the emphasis is on plateaux and gentle slopes, all exposures combined, with a slight preference for the south-east, north-east and east.

Italian white truffle (Tuber magnatum)

Valley bottoms and gently sloping hillsides (less than 50%) are the best places for white truffles to grow. Altitude should not exceed 800 metres, with an optimum below 400 m. Daily or seasonal temperature variations should be low. Tuber magnatum thrives in dense vegetation where the soil is always shaded.

These conditions encourage constant soil moisture throughout the year, which is a key factor.



soli legend



Soils favourable to T.melanosporum and T.uncinatum: calcareous bedrock, pH > 7 and clay content < 35%

Soils favourable to T.uncinatum and sometimes T.melanosporum (if clay content < 45% and slope or high pebble load). Calcareous bedrock, pH > 7 and clay content < 35% to 60%.

Soils unfavourable to T.melanosporum and T.uncinatum: non-calcareous bedrock and/or pH < 7 and/or clay content > 60% and/or hydromorphic soils (poor drainage). Non-soil or no data

(ROBIN registered design map, reproduction prohibited.

3. Assess your soil's suitability for truffle growing

The properties of the soil (physical and chemical qualities) determine its suitability for truffle growing.

Its structure, pH, organic matter content and drainage capacity are just some of the characteristics that will confirm whether your soil is suitable for a truffle orchard.

This analysis will help you decide which truffle host species to consider and, above all, which truffle species is most promising depending on your soil type.

The importance of soil analysis

When a plot of land is selected for future truffle planting, it is essential to have a soil analysis carried out. The purpose of this analysis is to determine whether the soil on your plot is suitable for the species of truffle or mushroom you wish to grow.

The results are determined on the basis of the physical and chemical characteristics of your soil, in particular its acidity (pH), calcium content and organic matter.



Soil sampling for analysis.

To ensure the highest quality truffle tree production in France, ROBIN Pépinières will support you with a study of your planting site carried out by the sales manager for your region. We are committed to the success of your truffle orchard. A sample of your soil is taken as soon as we visit you. You can also send us your sample, taken according to the procedure on page 42.

The success of a plantation depends on the choice of soil, so these samples for your future truffle orchards are sent to the Teyssier laboratory, our partner specialising in soil analysis for truffle cultivation. Based on the results of the soil analysis, the laboratory will comment on whether or not it is possible to grow truffles in this soil and on the most suitable truffle species. ROBIN Pépinières can then advise you on the best choice of host species (oak, hazel, hornbeam, linden, pine, etc.) *

*See page 40 for full details of soil analysis for truffle growing.

Parcelle Surface Ha	Le Clos	du type T Echantillon reçu le	IGNCECP205				
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$\wedge \rangle$	Limons Fins 11.1 %	La texture de votre sol est du type		C/N Disconteger Testal DeOr 9/	9.3	I res bien	-
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	Limons Grossiers 9.3 %			Oxyde de potassian R20 mg/kg	122	Très bien	-
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Example of a soil sample analysis result

Practical guide to truffle-growing

Each truffle has its own preferred terrain

Black truffle (Tuber melanosporum)

This truffle requires calcareous, calcium-rich soil with an alkaline reaction. The optimum pH is between 7.5 and 8.5 with at least 8% total calcium carbonate. Favourable soils are generally shallow, 15 to 40 cm deep, on fissured rock with a lumpy or sandy structure. They must be well-balanced in terms of mineral elements and organic matter: the carbon/nitrogen (C/N) ratio must be close to 10. Avoid compact soils with an excessively clayey texture: 35 to 40% is the limit. The soil must have good drainage.

The Burgundy truffle (Tuber aestivum. var uncinatum) and **the summer truffle** (Tuber aestivum)

These truffles require calcareous soil: pH of 7 to 8. The organic matter content must be balanced. The C/N (carbon/nitrogen) ratio can be as high as 20. The clay content cannot be much higher than for Tuber melanosporum, up to a maximum of 40%. The soil must have good drainage.

The winter white truffle (Tuber magnatum)

From a chemical standpoint, the characteristics of Tuber magnatum soils are the same as those of Tuber melanosporum soils. From a physical standpoint, Tuber magnatum soils are very special (which explains the geographical location of this species). These soils are not shallow, not stony, with a sandy loam texture, very aerated, very good drainage and remain cool during the driest periods of the year.

Beware of previous crops

Vines, lavender, alfalfa and sainfoin are known to be good preparation for truffle plantations.

These plants do not harbour ectomycorrhizal fungi, which considerably limits the truffle's potential for competitive mycorrhizae.

On the other hand, it is not advisable to set up a truffle plantation on land recently cleared of ectomycorrhizal trees (less than 5 years previously). The risk of young plants being contaminated by the mycorrhizal strains naturally present on existing trees is very high, which will ultimately reduce the chances of truffle production. For the same reasons, it is also not advisable to plant near to or in a wood.

4. Planting truffle orchards: how do you go about it?

Truffle trees generally start producing truffles 5 to 8 years after planting. Provided, of course, that they are planted correctly, effectively protected against rodents and game and regularly maintained.

Soil preparation

The ideal preparation consists in ploughing the land to a depth of 20/30 cm, followed by fine harrowing, using a rotary harrow for example.

For small plots of less than 2,000 m, hole planting should be preferred. The soil should then be tilled over an area of 2 M^2 , and to a depth of 30 cm at the planting locations. If the soil is very stony, remove the stones from the planting hole, taking care to create a volume of loose soil of around 50 litres around the plant.











Storage of ROBIN TRUFFLE PLANTS® prior to planting.

Storage and preparation of truffle plants

Upon receipt, place the plants in an upright position, water them if necessary. Before planting, store them preferably outdoors on a clean floor (do not store them directly on the soil), away from frost, wind, and light.

Planting the truffle plants

Prepare the ground in advance and open the planting hole. Then remove the plastic casing from the **ROBIN ANTI-CHIGNON BUCKET®** before installing the root ball vertically without breaking it. Fill the planting hole with fine soil and cover



the top of the root ball with 2 cm of soil. Tamp lightly, forming a bowl around the plant (to collect irrigation and rain water). Finally, water with at least 15 litres of water per plant.

Regarding planting distance and density, the right compromise between earliness and longevity of production must be found.

- For Tuber melanosporum: The recommended spacing is 4 m along the row and 6 m between rows, i.e. approximately 400 plants per hectare. The rows should be oriented NORTH / SOUTH so that the sunlight reaches both sides of the hedge equally. Square planting, which is also very interesting, should be done with a distance

of 5 m by 5 m between each plant (i.e. 400 plants per hectare).

- In the case of Tuber uncinatum, densities of 800 to 1,000 plants/ha (i.e. 5 x 2.5 m or 4 x 2.5 m) are frequently adopted, as this truffle prefers to grow in cool, shady areas.

- For Tuber aestivum: plant at a density of 400 to 500 plants/ha (5 x 5 to 5 x 4 m) as for Tuber melanosporum.

- For Tuber magnatum: the recommended planting distances are identical to those for Tuber melanosporum, i.e. 400 plants/ha (4 x 6 m, or 5 x 5 m).



Mechanical laying of plastic mulch film on prepared ground: ploughing, harrowing and cultivator, before laying the film. The plantation should be fenced off with wire mesh.

Mulch

Once your plants are in place, we recommend that you mulch them.

Using mulch avoids the tedious chore of weeding at the foot of the plants for the first two years and reduces water evaporation (which helps maintain moisture at the roots of your young plants). Various types are available, the most effective of which are biodegradable plant felt mulch tiles measuring 75 x 75cm. For large-scale planting, you can use 80 micron plastic mulch, which is machine unrolled in strips. This will simplify future maintenance. This mulch should be removed between 3 and 4 years after planting.

Caution: We strongly advise against using organic mulches such as straw, wood shavings or grass clippings.

Practical guide to truffle-growing

Protecting your young truffle plants

It is essential to install individual nets to protect against rodents. To protect young plants from game, choose a climatic mesh (or windbreak mesh). As well as providing protection against game, this will provide shade during hot spells and serve as a windbreak during cold, windy spells, which dry out the plants. We recommend opting for protection with a height of H60 cm and a diameter of 20 cm against rabbits or hares, and H120 cm and a diameter of 30 cm against roe deer. Protective tubes are not recommended, as they are too narrow and the overheating inside can burn the plants in midsummer.

At present, the most effective protection against wild boar - and the cheapest and quickest to install - is double-row electric fencing.

For total protection of the plantation against game, rabbits, deer and wild boar, the most effective solution is to install a perimeter fence around the plantation using wire mesh (see *Protections pages*).

NB: ROBIN TRUFFLE PLANTS are guaranteed 90% recovery, and this guarantee is increased to 100% for plants protected by a windbreak sheath and a ROBIN HPK cork tile type mulch, or 80µ black plastic film (see application conditions on pages 52 to 55).



Mixed Mesh climatic sheath. Height 120cm and diameter 30cm on a truffle oak plantation. For excellent resistance, the sheath should be stapled to the stakes.

5. Truffle plantation maintenance: What needs to be done?

Once your truffle plants have been carefully planted, mulched and protected, it is the ongoing maintenance of your truffle plantation that will determine how it develops. Irrigation, tillage and pruning are all operations that need to be repeated regularly throughout the life of your truffle orchard.

Watering

Watering is essential from the first year onwards, to ensure that the plants take root, using a micro-sprinkler system (never a drip system) or manually by adding 20 to 30 litres of water/plant after planting and during periods of drought. To limit the need for watering in the three years following planting, we strongly advise installing mulch at the foot of the young truffle plants. Plant felt tiles are recommended.

- Between the 2nd and 5th years, watering is necessary, particularly in dry weather, and the frequency will be adapted to the climatic conditions and the type of soil, with an average of one watering per month in the absence of rain.



Micro-sprinkler watering system on the ground.



- From the 5th year onwards, watering will be adapted to meet the truffles' water requirements. It must always be adapted to each type of soil and rainfall. On average, we recommend watering approximately once every 3 weeks. Note that in the event of a heatwave or prolonged drought, it may be necessary to water much more frequently, up to every 8 to 10 days, especially on very stony or very sandy ground.

Bear in mind that irrigation carried out incorrectly can be useless or even harmful. Above all, never install a drip system.

Tillage

Tillage is necessary to obtain a quality plantation and early production. It is essential to start working the soil at the foot of the trees from the 1st year of planting over an area of 1 to $2 M^2$.

And to a depth of 15 to 25 cm, if no mulch has been laid and from the 3rd or 4th year after removing the mulch.



For small plots, the soil can be tilled manually, within a diameter of 2.50 to 3 metres around the tree.

Practical guide to truffle-growing



For large truffle plantations, the soil can be tilled using a harrow.

Tillage creates favourable water conditions and ensures a supply of organic matter, encouraging intense biological activity in the soil. Finally, this work aerates the soil.

Moreover, tilling the soil with a sharp-toothed tool also has a very important effect on the root system. When the soil is tilled, root pruning also occurs, and this has the effect of stimulating the growth and development of short roots and thus nurturing the development of mycorrhizae, which develop mainly on juvenile roots. Ideally, you should till the soil manually with a hoe or a mattock. For a plantation over a large area, mechanical tillage will be carried out, with a subsoiler, a vibration tiller or a harrow to a depth of at least 15 to 25 cm depending on the depth of the soil. Tillage should be performed once a year, in early spring at the end of March or beginning of April.

Pruning

Pruning ensures that the plant receives the right amount of sunlight and that the root system is stimulated. This involves pruning the head of the tree, in order to slow its height growth and to encourage the development of lateral branches, which makes it possible to obtain a

"parasol" shape and thus create shade that is increasingly necessary in truffle plantations, due to the high heat and long periods of drought. Note that plantations that are not irrigated benefit from not being pruned too much, at the bottom

in order to retain a little freshness, thanks to shading. The inner branches of the crown should be thinned out when it becomes too dense, to limit the risk of disease and pests.

Pruning is also recommended for truffle plantations with Tuber aestivum and Tuber magnatum, but also for Tuber aestivum var.uncinatum, for which the pruning will be gentler. The

Tuber melanosporum truffle orchard. Pruning is mechanised



Burgundy truffle is a woodland truffle, which requires more shade than other truffles. Pruning should be performed gradually from the 2nd or 3rd year after planting, depending on the growth of the truffle plants.

Spore reseeding

The ascospores present in truffles seem to have an important role in the cycle of sexual reproduction of truffles.

For all truffle species, spores should be added (or truffle beds reseeded with spores) to encourage production.

However, only use high-quality inoculum produced from truffles that have been individually checked for morphology and a second DNA check.

These inputs can be performed directly around the tree, in trenches or in the form of truffle traps, the latter technique appearing to be the most effective.

(*See page 38 for more information on our Robin spore reseeding inoculum)



The Robin truffle inoculum is proving even more effective this year! Mr Jean-François COURSAUD (See Testimonial letter on page 19)

Plant health treatment

Only use contact products. Above all, no systemic products! To combat powdery mildew: Bordeaux mixture or sulphur can be used alternately every 15 days between April and June. Contact insecticides only if necessary for curative purposes.

6. Truffle digging: When and how?

Burns may appear from the 3rd or 4th year, and production can begin under the first trees between 4 and 8 years approximately for *Tuber melanosporum*, and between 6 and 10 years for *Tuber uncinatum*. It will depend on maintenance, watering and reseeding.

Known as "hypogeal", truffles grow underground. Searching for them, known as "cavage", is therefore a tricky business. The nose of a trained dog, or even the observation of specific flies, can help you find them more easily, but the dog remains the surest means of searching for truffles.

The harvesting period depends on the variety of truffle produced. The Burgundy truffle and the Italian white truffle reach maturity in autumn, the black truffle is harvested in winter, while the summer truffle, as its name suggests, is picked in the summer months, between June and August.



7. What about the yield and profitability of a truffle plantation?

Investing in truffle-growing can be an attractive choice for good asset management. It can be a profitable, sustainable and environmentally beneficial investment. On average, a truffle tree starts to produce at around 5 to 8 years of age, depending on the species, planting density and care given to the orchard. During the 12th year, indicative production per hectare can vary from 20kg to 90kg, in the case of Tuber melanosporum, and in the case of well-adapted land, with controlled truffle plants of High Quality and with regular maintenance of the plantation and appropriate watering.

French truffle production has fallen precipitously over the last 100 years. From more than 1,000 tonnes at the beginning of the 20th century, it has fallen to an average of 30 tonnes per year between 1990 and 2020. Since the 1990s, over 90% of French truffle production has come from truffle plantations planted with truffle trees from controlled mycorrhization, many of which are ROBIN TRUFFLE PLANTS®.



ROBIN TRUFFLE PLANTS[®]

These are **superior quality plants** produced in our nursery using techniques developed as part of our quality system and licensed and controlled by **INRAE** (Institut national de recherche pour l'agriculture, l'alindenntation et l'environnement).

To meet the varied requirements of our customers, we offer a complete range of **ROBIN TRUFFLE PLANTS**®, licensed and controlled by INRAE, which guarantees the quality of the mycorrhization.

Our ROBIN TRUFFLE PLANTS[®] are grown in **ROBIN ANTI-CHIGNON**[®] BUCKETS of different volumes, R 430 cm3, R 600 cm3, R1.5 litres and 3 litre pot. These patented buckets ensure optimum root development, with an abundant root ball and no malformations, which is very important for the good growth of plants and mycorrhizae.

We offer truffle plants mycorrhized with the truffle best adapted to your region: **Tuber melanosporum**, **Tuber uncinatum**, **Tuber aestivum or Tuber magnatum**.

The natural geographical distribution of the two main truffle species (Tuber melanosporum and Tuber uncinatum) in France can be seen on the map of soil and climate zones potentially suitable for truffle growing (ROBIN registered model map, reproduction prohibited) on page 23.



Individual truffle checks by Flavie in our laboratory.

Checks at every stage for guaranteed quality:

Each truffle used to inoculate our **ROBIN TRUFFLE PLANTS**[®], is checked individually under a microscope to verify the characteristics of the spores, then by biomolecular analysis by **INRAE**. And before they are marketed, the **ROBIN TRUFFLE PLANTS**[®] are inspected by **INRAE**, which checks the quality of the mycorrhization in accordance with the control specifications.

INRAe



Mr Claude MURAT and Mr Cyrille BACH, Nancy INRAE (54) during the mycorrhization control of a batch of ROBIN TRUFFLE PLANTS in our St Laurent du Cros laboratory.



for growing black truffles (Tuber melanosporum)

Naturally, many forest species can live in symbiosis with the black truffle. The best-known trees are oak and hazelnut, but it is also possible to produce Périgord black truffles from many other species of tree, including hornbeam, pine and linden. In fact, each of these species responds favourably to controlled mycorrhization, so you can now **grow black truffles from controlled mycorrhizal plants**.

While the two most common host species for black truffles are truffle oak and truffle hazelnut, ROBIN Pépinières offers a much wider range of host species. This wide choice of **ROBIN TRUFFLE PLANTS**[®] allows you to adapt to the different constraints and conditions encountered in the field (climate, exposure, altitude, hygrometry, etc.).

ROBIN TRUFFLE PLANTS® mycorrhized with Tuber melanosporum in ROBIN ANTI-CHIGNON® BUCKETS							
Available species	GR430	GR600	GR1.5L	3L pot			
Turkey oak (quercus cerris)	√	√					
Kermes oak (quercus coccifera)	√	\checkmark					
Pedunculate oak (quercus pedonculata)	√	√	1	\checkmark			
Pubescent oak (quercus pubescens)	√	√	1	\checkmark			
Sessile oak (quercus sessiliflora)	√	√					
Evergreen oak (quercus ilex)	√	√	1	1			
Common hazel (corylus avellana)	√	√	1	1			
Byzantine hazel (corylus colurna)	√	√					
CHAMPION® Hazel (Tonda gentile Fruit Hazel)		√					
CHAMPION® Hazel (Tonda romana Fruit Hazel)		√					
CHAMPION® Hazel (Giffoni Fruit Hazel)		√					
CHAMPION® Hazel (Coultard Fertile Fruit Hazel)		√					
Atlas Cedar (cedrus atlantica)	√	√					
Common Hornbeam (Carpinus Betulus).	√	√	√	√			
East hornbeam (ostrya carpinifolia)	√	√					
Hoary rock-rose (cistus incanus)	√	√					
Aleppo pine (pinus halepensis)	√	√					
Austrian black pine (pinus nigra austriaca)	√	\checkmark					
Small-leaf linden (tilia cordata)	1	1	1	1			

TUBER MELANOSPORUM TRUFFLE PLANT LABEL

CROS

ontrôle et licence INRAE avant le 30 septembre 2024 05500 SAINT LAURENT DU CR Tél. (33) Ø4 92 50 43 16

ROBIN pépinières

INRAe

PLANT MYCORHIZÉ _{par} la **TRUFFE NOIRE** Tuber melanosporum



See current price list on our website or contact us by phone on +33 (0)4.92.50.43.16 or by email: info@ robinpepinieres.com

Thanks to their high level of performance, these plants allow you to produce your own black truffles. Note that depending on the age of the plant and the land chosen for planting, you will need to wait between 5 and 8 years to harvest your first black truffles.

Identification of tuber melanosporum



Amber to hazel brown mycorrhizae with light amber outer mycelium, more or less abundant depending on humidity conditions.





Tuber melanosporum spores

Tuber mycorrhizae are difficult to see on the outside of the root ball for the untrained eve.



Tuber melanosporum mycorrhizae

31





BIN pépinières



for growing Burgundy truffles

Naturally, many forest species can live in symbiosis with the Burgundy truffle. The best known are oak and hazel, but Tuber Uncinatum also grows well with hornbeam, cedar, pine and beech. Moreover, each of these species responds favourably to controlled mycorrhization, so you can now grow **Burgundy truffles from controlled mycorrhizal plants**.

While the two most common host species for black truffles are truffle oak and truffle hazelnut, ROBIN Pépinières offers a much wider range of host species. This wide choice of **ROBIN TRUFFLE PLANTS**® allows you to adapt to the different constraints and conditions encountered in the field (climate, exposure, altitude, hygrometry, etc.).



Mycorrhiza

More or less dark brown mycorrhizae forming unbranched, flexuous mycelial spikes on the sides of the bucket.

Corylus avellana mycorrhized with Tuber aestivum. var uncinatum, in ROBIN ANTI-CHIGNON® R600 cm3 buckets.

ROBIN TRUFFLE PLANTS® mycorrhized with Burgundy truffle are available in **ROBIN ANTI-CHIGNON®** buckets in 4 different formats: 0.43 L, 0.6L, 1.5L and 3L. These are superior quality plants produced in our nursery using techniques developed as part of our quality system and licensed and controlled by INRAE (Institut national de recherche pour l'agriculture, l'alindenntation et l'environnement). Continuous quality control in the nursery





Discover our range of truffle plants mycorrhized with Tuber aestivum var.uncinatum available for this season, along with our current prices on our website or contact us by phone at +33 (0)4.92.50.43.16 or by email at info@robinpepinieres.com.

Thanks to their high level of performance, these plants allow you to produce your own Burgundy truffles. Note that depending on the age of the plant, the soil chosen and the care given to your plantation, you will have to wait between 6 and 10 years to harvest your first Burgundy truffles.





ROBIN TRUFFLE PLANTS® licensed and controlled by INRAE mycorrhized with Tuber aestivum for summer truffle cultivation

ROBIN TRUFFLE PLANTS® mycorrhized with Tuber aestivum in ROBIN ANTI-CHIGNON® BUCKETS					
Available species	GR430				
Pubescent oak (quercus pubescens)	\checkmark				
Evergreen oak (quercus ilex)	\checkmark				
Common hazel (corylus avellana)	√				
Common Hornbeam (Carpinus Betulus).	\checkmark				
Hoary rock-rose (cistus incanus)	√				
Small-leaf linden (tilia cordata)	√				

Spontaneously, several species of forest tree can live in symbiosis with the summer truffle. The best-known tree is the oak, but it is also possible to produce summer truffles from other host species such as hazel, hornbeam or rock-rose. Indeed, each of these species responds favourably to controlled mycorrhization so that you now have the opportunity to **cultivate summer truffles from mycorrhized plants.**

While the host species most commonly used for growing summer truffles remains the truffle oak, **ROBIN Pépinières offers you a much wider range of host species**. This wide choice of **ROBIN TRUFFLE PLANTS®** allows you to adapt to the different constraints and conditions encountered in the field (climate, exposure, altitude, hygrometry, etc.).



Tuber aestivum spores.



Tuber aestivum mycorrhizae.

Quercus ilex mycorrhized with Tuber aestivum, in ROBIN ANTI-CHIGNON® R430 cm3 buckets.

ROBIN TRUFFLE PLANTS[®], mycorrhized and controlled with summer truffle, are available in 0.43-litre ROBIN ANTI-CHIGNON® BUCKETS. These are superior quality plants produced in our nursery using techniques developed as part of our quality system and licensed and controlled by INRAE (Institut national de recherche pour l'agriculture, l'alindenntation et l'environnement).





MYCORHIZÉ par la TI TUBER ÆSTIVUN

AINT LAUREN

ROBIN

Discover our range of truffle plants mycorrhized with Tuber aestivum available for this season, along with our current prices on our website or contact us by phone at +33 (0)4.92.50.43.16 or by email at info@robinpepinieres.com.

Thanks to their high level of performance, these plants allow you to produce your own summer truffles. Note that depending on the age of the plant, the soil chosen and the care given to your plantation, you will have to wait between 5 and 8 years to harvest your first summer truffles.



Tuber magnatum

Plant mycorrhization by the white truffle Tuber magnatum: **World first**

Particularly fond of damp ground, the white truffle naturally thrives beside watercourses, and grows near trees such as willows and poplars. For a long time, the white truffle was something of a mystery, so much so that all attempts to cultivate it in the 80s and 90s proved unsuccessful.

Since then things have changed and **it is now possible to grow the Italian white truffle** using truffle plants mycorrhized with Tuber magnatum. This innovation is the fruit of many years of joint research and development between **Pépinières ROBIN** and **INRAE**, which led to a world first in 2007: obtaining Tuber magnatum mycorrhizae on nursery-raised plants for the very first time.

Exclusive!

In 2007, ROBIN Pépinières obtained the first mycorrhizae from Tuber magnatum. on nursery-grown **ROBIN TRUFFLE PLANTS®**. **A world first!** Since autumn 2009, ROBIN Pépinières has been offering an exclusive range of **truffle oaks mycorrhized with Italian white truffles**. (Tuber magnatum) These plants are produced **under INRAE licence and control** using the **INRAE-ROBIN** process.

In a joint **INRAE/ROBIN Pépinières** research programme, five French plantations were studied. The first result was the discovery of the persistence in soil three to eight years after planting the white truffle for four plantations distributed in regions with different climates (Rhône-Alpes, Burgundy, Franche Comté and New Aquitaine). The main result of this work was the harvest in 2019 of three truffles and four in 2020 in the Nouvelle-Aquitaine plantation.

Production was then expanded. By autumn 2022, 17 out of 50 trees had already produced a truffle.

These truffles are thus the first to be harvested in a plantation outside the natural geographical range of this species.

In addition to pubescent oaks, we can also offer seedlings of pedunculate oak and common hornbeam suitable for producing white truffles.



Detail of a mycorrhiza



Detail of Tuber magnatum mycorrhiza obtained using the INRAE/ROBIN process



ROBIN TRUFFLE PLANTS® mycorrhized with Tuber magnatum in ROBIN ANTI-CHIGNON® BUCKETS

Available species	GR430	GR600	GR41.5L
Pubescent oak (quercus pubescens)	\checkmark	\checkmark	\checkmark
Pedunculate oak (quercus pedonculata)	\checkmark		
Common Hornbeam (Carpinus Betulus).	\checkmark		

Discover our range of truffle plants mycorrhized with Tuber magnatum available for this season and our current prices on our website: flash code for direct access to the website or contact us:

- by phone at +33 (0)4.92.50.43.16
- by email to info@robinpepinieres.com

ROBIN TRUFFLE PLANTS® mycorrhized with Tuber magnatum are available in ROBIN ANTI-CHIGNON® 0.43 litre, 0.6 litre or 1.5 litre buckets.



ROBIN truffle Quercus pubescens mycorrhized with Tuber magnatum, 1 year old, reared in ROBIN ANTI-CHIGNON® R430cm3 buckets



ROBIN Truffle Carpinus betulus mycorrhized with Tuber magnatum

ROBIN TRUFFLE PLANTS®

Tuber magnatum





NRAØ

PLANT MYCORHIZÉ par Tuber magnatum Sous contrôle et licence INRAE suivant le procédé INRAE-ROBIN



 ROBIN
 05500 SAINT LAURENT DU CROS

 pépinières
 Tél. (33) Ø4 92 50 43 16

ROBIN TRUFFLE PLANTS® mycorrhized with Tuber magnatum follow the INRAE/ROBIN process under INRAE license and control

Control of mycorrhization by INRAE: All of the plants sold have been individually checked.

Since 2008, ROBIN Pépinières has been selling trees mycorrhized with Tuber magnatum using the INRAE/ROBIN process **under INRAE licence and control.**

And all of the plants are individually checked before they are marketed.

First under a binocular magnifier by the ROBIN Pépinières technicians who check for the presence of the truffle on the root system by morphological characteristics. Then by experts from **INRAE** who, after observation under a binocular magnifier, take a sample of mycorrhizae from each plant controlled by ROBIN Pépinières to check the DNA by biomolecular analysis.

This double control guarantees our customers that ROBIN TRUFFLE PLANTS® are mycorrhized with Tuber magnatum to the exclusion of any other truffle species.



Sampling of mycorrhizae on a ROBIN TRUFFLE PLANT® mycorrhized with Tuber magnatum for DNA testing.





Tuber magnatum mycorrhizae viewed under a binocular magnifying glass.





Mycelial hyphae on the surface of a Tuber magnatum mycorrhizae seen under a microscope, magnification x400. You can see the jigsaw mantle and the mycelial hyphae branching out at right angles..

Tuber magnatum mycelium coculture on root



ROBIN TRUFFLE PLANTS®



Produced using the INRAE-robin process and under INRAE licence and control mycorrhized with Tuber magnatum

for growing Italian white truffle (Tuber magnatum)



Soils and climates ideal for growing white truffles (Tuber magnatum)

A symbiotic, subterranean fungus, the **white truffle** grows at depths of a few centimetres. It likes loose, sandy soil and needs a cool, damp atmosphere. This is why, in the wild, it is often found along watercourses, in association with deciduous trees (willow, poplar, linden, hazel, oak, etc.) in soils that are not too clayey.

Soils favourable to the growth of Tuber magnatum

Soils favourable to Tuber magnatum are relatively undeveloped, of the rendzina or brown limestone type. They are generally deep, moderately permeable, with few pebbles and rich in silt (although they may be sandy). Soils must be filtering, not asphyxiating, well-drained, therefore presenting a high porosity while allowing good humidity in all seasons. The soil in the area where the truffles grow must always be very porous, to ensure good air circulation in the soil and facilitate gas exchange between the soil and the atmosphere.

From a chemical point of view, the requirements of the white truffle are similar to those of Tuber melanosporum. Limestone is an essential element in the form of carbonates, but levels vary widely. Generally speaking, total lindenstone is greater than 10% and active lindenstone 2%. The pH should ideally be between 7.5 and 8.5. Organic matter should not be overly abundant (C/N ratio of 13 to 18).

In summary, the key points for choosing a suitable soil are as follows:

- no stones
- pH greater than 7.5 (presence of active lindenstone)
- good aeration (sufficient macro-porosity)
- good drainage
- constant presence of humidity (especially in summer) (e.g.: proximity to a stream)

In the truffle plantation created with ROBIN TRUFFLE PLANTS® mycorrhized with Tuber magnatum, which produced its first truffles at the age of 4, the environmental conditions are slightly different from those in the natural Tuber magnatum area:

- The plantation is located in a plain region.
- The trees are spaced out, planting distance 4 m x 6 m.
- Although the soil remains cool throughout the year, there is no running stream or spring.
- Throughout the year, the plantation is equipped with a microjet watering system that provides regular watering.

• The first productions took place on very young trees, 4 years after planting.

For pedoclimatic conditions: these correspond to those of the natural harvesting areas of *Tuber magnatum*.



Plantation of pubescent oaks mycorrhized with Tuber magnatum, which started producing at the age of 4.

The importance of soil analysis:

When a plot is selected for a future truffle plantation with Tuber magnatum, it is essential to perform a physicochemical soil analysis.

If you wish, we can arrange to have this analysis carried out by a partner laboratory specialising in truffle crop soil analyses.

Soil preparation:

As with any truffle orchard, and in particular the truffle orchard that produced its first Tuber magnatum at the age of 4, we recommend that the soil be carefully prepared before planting:

- Provide mechanical preparation if the plot is large enough, with full ploughing to 25 cm and harrowing.

- Prepare individual seed spots for smaller-scale plantings by tilling the soil to a depth of 30 cm over an area of 1.50 to 2 m².

Planting distances:

For Tuber magnatum, the recommended planting distances are identical to those for Tuber melanosporum: 4m x 6m or 5m x 5m.

Plant protection and mulching:

In order to optimise recovery and growth, we recommend protecting your **ROBIN TRUFFLE PLANTS®** truffle plants with a 60 cm high climatic mesh sheath to protect against rodents, and the climatic sheath will also have a windbreak and shade effect for the plant.

Mulching is recommended. Its primary purpose is to maintain humidity at the base of the plants, which promotes the recovery of young plants, while allowing the development of soil micro-fauna: earthworms and insects which have an important role in the soil aeration.

Mulching also prevents competing vegetation and thus avoids weeding chores during the first years.

Mulching can be achieved by fitting a plastic film over the entire planting line for large-scale plantations of 100 plants or more, it must then be removed after 2 to 3 years. For smaller plantations, an individual mulch sheet made from 100% natural plant felt or cork, or 80 micron plastic mulch can be used.

Do not hesitate to contact us for any advice on providing these protections.

Our **ROBIN TRUFFLE PLANTS**[®] come with an 90% recovery guarantee, and when protected by a climatic sheath and cork, felt or plastic mulching, the guarantee is increased to 100%.



Plantation on plastic mulch, width 1.50 m, thickness 80μ with a protective windbreak sheath H. 60cm Ø20cm.



Micro sprinkler watering system.

Watering and water requirements for white truffles

In its natural range, Tuber magnatum thrives in variable climates, from sub-continental to sub-Mediterranean, where average annual rainfall is usually high (600-850mm, sometimes up to 1200mm), with average monthly rainfall in excess of 40mm. The most favourable micro-climates are characterised by an absence of dry summer periods. The rains in July and August are very heavy.

ROBIN Inoculum[®]

for controlled spore reseeding:

How to proceed?

Once the truffle-harvesting period is over, it's time to reseed the truffle trees. This technique consists in (re)stimulating mycelial life around truffle plants by adding spore inoculum.

When, how and for what purpose? That's what we're going to look at together in this focus devoted to **reseeding truffle trees with controlled spore reseeding inoculum**.

When, how and why to reseed truffle trees?

Genetic analyses of truffle populations have shown that spores play an important role in the truffle life cycle through their involvement in sexual reproduction. Seeding control could reveal that this practice plays at least as important a role as pollination in horticulture.

Reseeding consists in introducing controlled truffle spores into the soil at the foot of the truffle trees. As they germinate, these spores will accelerate mycelial development and thus increase the level of mycorrhization. This operation has a number of concurrent objectives:

- To activate young truffle trees to come into production,
- To improve the performance of producing trees,
- To maximise the production potential of each tree,
- To have a positive influence on sterile trees.

How does it work?

1st point:

The addition of spores or spore reseeding in truffle plantations plays a role in locating truffle production in nests or traps, allowing better control of water requirements and protecting the truffles against the vagaries of the weather and attacks by pests.

2nd point:

Truffles are fungi that reproduce sexually, so two genotypes must come together:

- The maternal genotype is found in the roots in the form of ectomycorrhizae.
- The so-called paternal genotype, the second partner, is very rarely observed in mycorrhizae.

The search for the paternal genotype has been the subject of several studies, which have shown that in most cases it involves spores germinating in the soil, with the mycelia thus formed meeting maternal mycelia linked to the root systems via ectomycorrhizae to initiate sexual reproduction.

Why reseed your truffle orchard?

Reseeding with controlled spores contributes to the development of mycorrhizae in truffle plants. It is not a question of adding fertiliser or even spreading it to make poor soil fertile. Rather, the aim is to recreate the specific conditions for the development of mycelium, an essential prerequisite for the formation of young truffles. In addition to tilling the soil, reseeding is therefore an operation that ensures the survival of mycorrhizae and the fructification of a truffle plantation.

When should truffle plantations be reseeded?

Reseeding with controlled inoculum takes place once the harvesting period is over and the soil has been tilled (in early spring, after the last frosts). Note, however, that reseeding does not only take place on truffle plantations that are already producing. It is perfectly possible (and recommended) to carry out the first spore applications in the vicinity of young plants planted only 2 or 3 years previously. This "pre-production" reseeding will make it easier for young truffle trees to come into production. In both cases, care should be taken to use only controlled inoculum.

How are truffle trees reseeded?

There are several ways of reseeding a truffle plot (all of which are described in more detail on the next page). They consist in bringing a surplus of truffle spores to the soil, in the immediate vicinity of the roots of truffle trees, in burnt areas. This can be achieved by using ready-to-use products that must be controlled.

Some truffle farmers still make their own inoculum recipes, without any controls. You need to be aware that in this case, the major risk is of contaminating your truffle trees with an undesirable species of truffle.

Robin spore reseeding inoculum and its variations

ROBIN Pépinières offers a range of controlled inocula. Our reseeding inocula consist of vermiculite enriched with spores from carefully selected truffles, each of which is checked twice: 1st check under microscope and 2nd

check by biomolecular analysis carried out by INRAE. This double check guarantees that the spores are of the desired species, and avoids the risk of contamination by undesirable truffles. This truffle-growing substrate is readyto-use. It encourages truffle fruiting. Our inoculum is available in 5 or 25 litre bags containing a high concentration of Tuber melanosporum, Tuber magnatum or Tuber aestivum var. uncinatum spores.

How is a truffle plantation reseeded?

The best way to boost mycelial life around your truffle plants and enhance the growth of new truffles is to **increase the density of truffle spores present in your soil**. You have two options:

- Do not dig up all your truffles and leave some of your harvest in the ground.
- Add controlled truffle spores at the foot of your truffle trees using a specific controlled spore reseeding inoculum.

Reseeding should be carried out in early spring, after the soil has been tilled, under trees in production and even under young trees in the year following planting.

Several spore reseeding methods:

Diffuse reseeding

This technique consists in spreading truffle inoculum over the entire surface of the burnt area, at a rate of 2.5 litres per tree. It is then buried to a depth of 15 to 20 cm using a tool or a cultivator.

Furrow reseeding

A second technique consists in digging furrows 5 to 15 cm deep near the truffle plants (50 to 80 cm from the trunk). The inoculum is then poured into these furrows before filling. Regardless of the reseeding technique used, it is strongly recommended to water immediately after adding inoculum by sprinkling. or micro-sprinkling.

Truffle trap reseeding

This technique consists in placing the spores in 3 or 4 holes dug beforehand (with a spade or auger) around the truffle plant (at a distance of approximately 40 to 50 centimetres from the trunk, depending on the size of the tree). Each hole, 20 to 25 cm in diameter and 25 to 30 cm deep, then receives a large handful of inoculum (0.3 to 0.5 litres) before being filled in with a mixture of soil and inoculum.

This latter method appears to be the most effective.



Furrow reseeding.



Truffle trap reseeding.

What is the effect of spore reseeding?

If the inoculum used is of good quality, and the conditions are right (supple soil, humidity, etc.), this reseeding will produce new truffles, generally within two years of application. While this principle works for all varieties of truffle (Périgord black truffle, Italian white truffle, Burgundy truffle, etc.), its effect wears off after a few years. It is therefore a good idea to dig a new set of truffle traps every two or three years, gradually moving them further away from the trunk as the tree grows.

Find the right spore reseeding inoculum for your truffle plantation:

ROBIN CONTROLLED SPORE RESEED	ING INOCULUM®	
Packaging	5L bag	25L bag
ROBIN spore reseeding inoculum® Tuber melanosporum	√	1
ROBIN spore reseeding inoculum® Tuber aestivum var.uncinatum	√	1
ROBIN spore reseeding inoculum® Tuber magnatum	√	1

SOIL and EARTH ANALYSIS for truffle-growing

Soil analysis for truffle/mushroom farming: What does it consist of?

Wanting to grow truffles or edible mushrooms is one thing, being able to do so is quite another. As you no doubt already know, truffles, boletus and even milk caps are demanding fungi in terms of climate, exposure and humidity, but above all in terms of soil composition. That's why any serious truffle or mushroom planting project should start with a **soil analysis**. This preliminary study has two major objectives:

• To confirm that your land is "compatible" with the development of the truffle or edible mushrooms you want to grow.

• To identify which variety of truffle (or mushroom) is best suited to your plot.

But how do you actually carry out such a soil analysis, what can you expect from it and how do you interpret the results? That's what we're going to look at together in this guide devoted to **soil analysis** in truffle and mushroom-growing.

When and why do a soil analysis?

Like any other crop, truffle and mushroom-growing rely on production techniques (tillage, planting, irrigation, weeding, pruning, harvesting, etc.). But this method, however meticulous, will only produce edible truffles or mushrooms on one condition: that the nature of the soil is compatible with the cultivation and development of the truffles or mushrooms you wish to grow.

If the physical and chemical characteristics of your plots do not resemble the natural environment that encourages the appearance and growth of truffles, then all your efforts will be in vain. You may be the most passionate of truffle growers, the most attentive to the maintenance and growth of your plants, **if the biotope of the truffle or mushrooms is not respected**, **your orchards will produce** little or no fungi.

To avoid this kind of disillusionment, it's best to carry out a **soil study and analysis of your plots of land** that will soon be home to a TRUFFLE OR MUSHROOM ORCHARD[®].

Why launch such a study?

Quite simply, and above all, to validate your project. If your soil analysis confirms that it is 'compatible' with the development of truffles or mushrooms, then your project is on track. Conversely, if the study reveals that there is anything unsuitable for truffle/mushroom growing, you will probably have to review your plans and choose another, more suitable, site for your plantation.

When should the **soil analysis** be carried out?

The sooner the better. There's no point waiting until you've planted a hundred or so truffle plants before carrying out a soil analysis. It would be a bit like deciding the fate of your orchard on the flip of a coin... Do things in the right order and give yourself the best chance of success by starting any new TRUFFLE ORCHARD or MUSHROOM ORCHARD[®] project by taking samples and examining the characteristics of your soil.

How to carry out a soil survey with a view to setting up a truffle plantation

When a plot of land is earmarked for the establishment of a future TRUFFLE ORCHARD or MUSHROOM ORCHARD[®], it is essential to have a soil analysis carried out. The purpose of this in-depth examination of the soil is to determine whether your land has the physicochemical characteristics suitable for the species of truffle or mushroom you are planning to grow.

This analysis is carried out in three stages:

- sampling in the field
- laboratory analysis
- obtaining analysis results and our recommendations

Earth sampling for soil analysis

If your soil is homogeneous, according to the sampling instructions below, send us a sample of approximately 300g of soil, taken from a depth of 20 cm. If your land is uneven or hilly, send us several clearly labelled 300g samples of soil, taken from different parts of the land at a depth of 20 cm. (See sampling procedure below)

Laboratory analysis of soil composition

Your soil samples will be sent to an independent laboratory specialising in soil analysis for truffle tree planting. They will be studied in depth both physically (structural assessment, particle size, water retention capacity, etc.) and chemically (acidity, pH, total nitrogen and C/N, limestone and clay content, phosphorus, potassium, magnesium, calcium, sodium, etc.). All the parameters conducive or detrimental to the production of truffles or mushrooms will be researched and quantified.

The analysis report and the Robin recommendations

A full report will be sent to you on receipt of the test results. Our recommendations will depend on the physical and chemical characteristics of your soil, in particular its acidity (pH), calcium and organic matter content, as well as its clay, sand and silt texture, etc.

Sampling for soil analysis: Procedure

You would like to submit a sample of your soil for soil analysis. Please follow the steps below. Send us your direct debit by post and we'll take care of the rest!

Tips Sampling step-by-step...

1/ Take homogeneous samples: Each sample must correspond to a homogeneous zone. Do not mix soil from heterogeneous areas.

3/ Take the sample from a depth of 20 cm: This can be done by core sampling or simply by taking samples using an auger or spade.





2/ Exclude specific areas: Do not take samples from paths, field margins, old hedges, areas where animals pass, etc.



4 Sample by sector if necessary: In each sector, take at least 15 samples, disaggregate them and mix them in a clean bucket.

Bag the sample: Place 300 to 500 g of the sampled soil in a bag on which the exact location of the sample will be noted.

Fill out the analysis request form: The appended form can be downloaded from our website: www.robinpepinieres.com, printed and filled out.

SOI ANALYSIS information sheet

Robin pépinières Le Village 05500 Saint Laurent du Cros - France Tel.: (33) Ø4 92 50 43 16 - Fax.: (33) Ø4 92 50 47 57 E-mail: info@robinpepinieres.com				ormati oil Ar FLE G	on Shee nalysis ROWI	n G	Soil Subsoil
CONTACT DETAILS OF CUS	STOMER	Р	RESCRIP	TION/	INVOICI	NG	
SURNAME, First name: Address: Postcode, Town:Fax.:	Organization : EARL ROBIN Pépinières CP & Commune 05000 SAINT LAURENT DU CROS Tel.: (33) Ø4 92 50 43 16 – Fax.: (33) Ø4 92 50 47 57						
Collected by : Sample code :Date	Campaign N°	RESULTS: c INVOICE: c	ustomer: [ustomer: [] Techn] Orgar	Technicien: Organisation:		
INFO SOIL & PARCE	L	INFO	CULTUR	ES AND) FERTILIZ	ZATION	
N° SURNAME. Town. County. GPS coordinates. GPS coordinates. Sample SOILfromcm. SUB SOIL fromcmto. Type of soil. Type of soil. Soil code Depth of soil (to source rock). Soil Properties/ Characteristics of Humid: Difficult to Drained: Irrigated:	Inis year Last year CultureYieldYiel			ved nities/Ha kg/Ha kg/Ha r used:			
of stones			Organic improvements				
Exact value if measured on site	÷%	This y Product . Quantity .	/ear		Freque	ency of	use:
INFOR	MATION ABOUT	THE TRUFFLE C	ORCHAR	D			
Is it - a productive truffle orchard - a truffle orchard having ceas) sed production (- a truffle a	orchard t ment of	that ha a new	s never p truffle orc	oroduce chard	ed D
In the case of an existing truffle orchard:	Natural tru Date of pl	lanting (mon	Ple (h/year	anted :	fruffle be	ed ∐	
Trees present: Oak (specify spe	cies)	•••••	Haz	el 🗆	Lime 🗆	Pine	
Type of truffle expected: Tub Tub	JM D Tuber uncinatum D Tuber aestivum D						
ANALYSIS & ADVICE REQUESTED			Grair	n size (at previo	ous and	alysis)
T1 Analysis for maintenance pH water, organic matter, total azote and	C/N, phosphorous Joret F	lébert, potassium,	A	LF	LG	SF	SG
magnesium, calcium, sodium XI T2 Analysis for plantation*							
 F2 Analysis for particular for analysis of particular partin particular particular particular particular particular par							
Other:			Order confirmation				
Fertilization advice	yes 🗌 no		Compul	sory Sign	ature	*Defa	ult option

Please enclose in your parcel:

- The soil sample(s).
- The attached sample and land information sheet, or download it from our website and print it out. NB: An information sheet is required for each soil sample
- Payment: 98€ for each soil sample, has to be done by bank transfert.



Quick overview of growing edible mushrooms

There are two families of cultivable mushrooms:

- Saprophytic species (button mushrooms, oyster mushrooms, shiitake mushrooms, etc.) which grow on organic matter made up of dead plants (compost, wood, bark, straw, etc.). The basic principle of cultivation therefore consists in creating a productive nutrient medium with which to obtain the full life cycle of the fungus as quickly as possible, in an air-conditioned environment.

- **Mycorrhizal species that live and grow in close association with the roots of certain trees**. This association is known as symbiosis: The fungus receives most of its energy from the tree and supplies it with mineral elements (phosphorus, nitrogen, etc.). Cultivation therefore requires this combination to be carried out under controlled conditions in order to obtain MUSHROOM PLANTS®.

It's now possible to grow wild mushrooms such as the yellow boletus or the saffron milk cap, which will be planted to create a MUSHROOM ORCHARD®.

How to successfully plant a MUSHROOM ORCHARD®?

As specialists in controlled mycorrhization applied to truffle growing and mushroom cultivation, ROBIN Pépinières will be happy to guide you, step by step, through the creation of your MUSHROOM ORCHARD®.

From choosing the plants, selecting the plot, the planting method, maintaining and pruning the mushroom trees... to harvesting your first yellow boletus or milk caps, find all our advice in this practical guide to growing mycorrhizal fungi. It contains everything you need to know about planting a MUSHROOM ORCHARD®. Please note that in addition to this guide, our teams are available to advise you every step of the way.







SUILLUS luteus. (Photo J. Guinberteau . INRA)



5-year-old MUSHROOM ORCHARD®

Several conditions must be met to encourage the development of fungi in an orchard:

• geographical location and climatic conditions inevitably influence the yield of a MUSHROOM ORCHARD® (periods of frost, wind, accumulated rainfall are all factors to be taken into consideration) • the previous crop (and possible competition from other mycorrhizal fungi) also have a direct impact on the success of a MUSHROOM PLANT® planting project.

In addition to these geographical, climatic and cultivation criteria, there are other factors to take into account if you want to maximise your chances of setting up a MUSHROOM ORCHARD[®]. Professional mushroom farmers agree that there are 5 fundamental



factors that determine the success and longevity of a project to grow edible mushrooms in the open ground:

1/ The quality of the mycorrhized plants

2/ The quality of the soil (its suitability for fungiculture, its physical and chemical qualities, etc.).

3/ The planting method (soil preparation, plant protection, etc.)

4/ The possibility of irrigating the MUSHROOM ORCHARD®.

5/ Taking care of the plantation over time

1. The choice of MUSHROOM $PLANT^{\mathbb{R}}$:

Rely on the quality of controlled mycorrhized plants.

As a general rule, choose tree species that are already naturally present in your region. Identify the conifers already growing in the woods and forests near your plots. While Scots pine (Pinus sylvestris) and maritime pine (Pinus pinaster) remain the best candidates for growing mycorrhizal fungi, other pine species are also suitable for producing edible fungi: Austrian black pine and umbrella pine.

Once you've taken the time to select the species that will acclimatise most readily to your territory, don't neglect the quality of the plants that will make up your orchard. Opt for plants with controlled mycorrhization produced using rigorous methods.



Angelika presents a 1 year old PINUS nigra mycorrhized with LACTARIUS deliciosus (saffron milk cap) grown in ROBIN ANTI-CHIGNON® GR430 cm3 bucket.



system of a 2-year-old Saffron milk cap fruiting on a 1-yearmycorrhized PINUS sylvestris with LACTARIUS deliciosus (saffron ROBIN

old mycorrhized Austrian pine in orange-coloured ANTI-CHIGNON® R430 BUCKET.

Root

milk

short roots

cap)

mycorrhizae can be seen along the

ROBIN MUSHROOM PLANTS®



Lactarius deliciosus fruiting in the nursery on 2-year-old PINUS sylvestris IN ROBIN ANTI-CHIGNON® R1.5 litre BUCKET.

For MUSHROOM PLANTS[®] you can choose between young plants grown in a 0.430 L or 0.6 L ROBIN ANTI-CHIGNON[®] BUCKET. Just remember that by opting for plants raised in a larger volume bucket, you optimise the chances of recovery and growth after planting. (A seedling raised in a 0.6 litre bucket will have a more developed root system than one raised in a 0.430 litre bucket, so its ability to recover and grow after planting will be greater).

ROBIN MUSHROOM PLANTS[®] are recognised as the best and are the only ones to combine a production method under INRAE licence and control, as well as MPS A and HEV (High Environmental Value) certification. ROBIN MUSHROOM PLANTS[®] also come with a recovery guarantee!

2. Climate and topography favourable to the establishment of a MUSHROOM ORCHARD[®]

Geographical location and climate are eminently important factors in the success of a MUSHROOM ORCHARD®. You may have chosen the best mycorrhized plants, but if they are planted in an area where the climate is not conducive to the development of fungi, your project is in trouble and your future harvests are in jeopardy... Before you start growing mushrooms, you need to make sure that your geographical location (altitude, orientation, topography, etc.) and the associated climate are compatible with growing at least one variety of edible mushroom.

Ideal climate for growing mushrooms

Generally speaking, growing milk caps and boletus requires a temperate climate. It needs a sufficient, but not excessive, alternation of seasons, during which rainfall, temperature and sunshine are evenly distributed.

Preferred altitude for boletus and milk caps

Depending on local conditions, yellow boletus, saffron milk caps and bloody milk caps can grow up to 1300 or 1400 m, but the vast majority of MUSHROOM ORCHARDS[®] are generally found at lower altitudes, between approximately 500 and 900 metres.

Preferred topography for boletus and milk caps

Lactarius deliciosus and Lactarius sanguifluus generally grow in acid soils, but they can also be found in neutral or even alkaline but decarbonated soils. The yellow boletus (Suillus luteus) is more adaptable with respect to



the soil. It can be found in acidic sandy soils as well as on substrates with a neutral or even alkaline pH, though these must be decarbonated.

Rainfall is also an important factor to consider, as fungi are sensitive to humidity levels. High natural humidity is an optional criterion, but it greatly increases the chances of success.

The chosen site must have good drainage: it must not be subject to surface water accumulation in spring or during heavy rainfall.

3. Assess your soil's suitability for growing mushrooms



The importance of soil analysis

When a plot of land is selected for future mushroom planting, it is essential to have a soil analysis carried out. The aim of this analysis is to determine which species - host (tree) and, above all, fungi - are best adapted to your soil. These depend on the physical and chemical characteristics of your soil, in particular its acidity (pH), calcium content and organic matter.

We advise you to have a physicochemical analysis of your soil carried out before planting any MUSHROOM PLANTS[®]. Based on the results of this analysis and a description of the site conditions at your planting site, we can

advise you on the species of mushroom and host tree best suited to your situation. Find out more about soil analysis on page 40.

ROBIN MUSHROOM PLANTS[®]

Every edible mushroom has its preferred area

Yellow boletus:

Suillus luteus is indifferent to the pH of the soil, and can be found on acidic sandy soils as well as on neutral or even alkaline but decarbonated substrates.

Milk caps:

Lactarius deliciosus and Lactarius sanguifluus generally grow in acid soils, but they can also be found in neutral or even alkaline but decarbonated soils.



Beware of previous crops

It is well-known that heathland or grassland, in particular alfalfa and sainfoin, prepares the orchard. These plants do not harbour ectomycorrhizal fungi, which considerably limits the potential for competitive mycorrhizae from boletus and other milk caps. On the other hand, a MUSHROOM ORCHARD® should not be planted on a recent clearing or deforestation (less than 5 years old). This is because there is a high risk of young plants being contaminated by the mycorrhizal strains naturally present on existing trees, which will ultimately reduce the chances of producing edible mushrooms. For the same reasons, it is also not advisable to plant near to or in a wood.

4. Planting of MUSHROOM ORCHARDS[®]: how do you go about it?

Mycorrhized and controlled MUSHROOM PLANTS® generally start producing mushrooms 3 to 4 years after planting. Provided, of course, that they are planted correctly and effectively protected against rodents and game.

Site preparation

If the terrain allows, the ideal preparation consists in ploughing the soil to a depth of 25 to 30 cm. If the surface or configuration of the land does not allow ploughing, the soil should be prepared for 1 m square and 30 cm deep hole planting.

If the soil is very stony, remove the large blocks to create a volume of loose soil of approximately 50 litres. This method is particularly suitable for planting small areas.

It should be noted that it is not advisable to plant MUSHROOM PLANTS® if the land is planted with trees, because even if the trees are cut back and as many roots as possible removed, the risk of contamination of the mycorrhized seedlings by the mycorrhizal strains present on the existing trees is too great and production results could be seriously compromised.



MUSHROOM PLANT® storage and preparation

Upon receipt, place the plants in an upright position, water them if necessary. Before planting, store them preferably outdoors on a clean floor (do not store them directly on the soil), away from frost, wind, and light.

Planting MUSHROOM PLANTS®

Open the ROBIN ANTI-CHIGNON® BUCKET to install the root ball without breaking it, making sure to cover it with 2 to 3 cm of soil.

In terms of planting distance and density, plants can be planted every 3m x 3m (1,100 plants per hectare) and up to 4m x 4m (625 plants per hectare).

Mulch

Once your plants are in place, they can be mulched. Mulching with a 100% biodegradable 75x75cm tile of plant felt will prevent weeding while keeping moisture at the foot of the young plants for the first 2 or 3 years, which are crucial to the plantation's subsequent performance.

Protecting your young MUSHROOM PLANTS[®]

A protective windbreak sheath will protect your young plants from game (60 cm sleeve for protection against rabbits and 120 cm sleeve against roe deer).

5. Maintenance of a MUSHROOM ORCHARD[®]: What needs to be done?

Once your MUSHROOM PLANTS® have been carefully planted, mulched and protected, maintenance is limited to tilling the soil to eliminate competing vegetation. Note that individual mulching eliminates the need for maintenance at the foot of the plants, thereby reducing the risk of injury to the plant.

6. When and how should you harvest mushrooms from your orchard?



Harvesting milk caps:

Milk caps bear fruit in autumn, when the night-time temperature begins to drop to between 5 and 10°C, in conjunction with the arrival of the first rains, which are necessary to induce fruiting.

Harvesting yellow boletus:

The fruiting period for the yellow boletus extends from early summer to late autumn. While harvesting generally starts after the first heavy summer rains, it can vary from region to region depending on weather conditions. Yellow boletus mushrooms are harvested between mid-July and the last days of November.

7. Yield and profitability of a MUSHROOM ORCHARD®.

Yield of ROBIN MUSHROOM PLANTS mycorrhized and controlled with milk cap: Milk cap production can begin 4 years after planting.

Productivity of ROBIN MUSHROOM PLANTS mycorrhized and controlled with yellow boletus: Yellow boletus production can start from the 3rd year after planting.

ROBIN MUSHROOM PLANTS® are available in 2 different sizes of ROBIN ANTI-CHIGNON® BUCKETS: R430 cm3 and R 600cm3. These patented BUCKETS provide optimum root development, with a very abundant root ball and no malformations, thanks to the integral self-undercutting process. This is very important for the proper growth of the MUSHROOM PLANTS® and mycorrhizae.

MUSHROOM PLANTS®						
	ROBIN	ROBIN				
	ANTI-CHIGNON®	ANTI-CHIGNON®				
Avaliable nost species	BUCKET	BUCKET				
	GR430	GR600				
Austrian black pine (pinus nigra austriaca)	√	\checkmark				
Scots pine (Pinus sylvestris)	1	√				
Umbrella pine (Pinus pinea)	1	1				
Maritime pine (Pinus pinaster)	1	√				



See the availability and prices of our MUSHROOM PLANTS® on our website (enter the flash code below for direct access to our site) or contact us on Tel: +33 (0)4.92.50.43.16 or by email: info@robinpepinieres.com



PINUS NIGRA AUSTRIACA Austrian black pine SUILLUS LUTEUS GR430 PINUS SYLVESTRIS Scots Pine SUILLUS LUTEUS GR600

PINUS PINEA Umbrella pine LACTARIUS DELICIOSUS GR430



PINUS PINASTER Maritime pine SUILLUS LUTEUS GR600

ROBIN ANTI-CHIGNON® BUCKET

For almost 50 years ago, Pépinières Robin perfected and developed the production of plants in containers ROBIN ANTI-CHIGNON® Patented System.

A constant concern for research and innovation enables us to be able to offer very effective systems.

Two versions of GODET ROBIN ANTI-CHIGNON[®] containers:

1/

The ROBIN honeycombed expanded polystyrene bloc

Les plants sont livrés dans leur BACS de culture. 2 volumes d'alvéoles différents :

- GODET ROBIN ANTI-CHIGNON® R200, "cells" volume of 200 cm3.
- GODET ROBIN ANTI-CHIGNON® R400, "cells" volume of 400 cm3.

All our ROBIN TRUFFLE PLANTS[®] and MUSHROOM PLANTS[®] are grown in individual square ROBIN ANTI-CHIGNON[®] buckets, and are available in different volumes.

21 Individuel square GODET ROBIN ANTI-CHIGNON® buckets

Conditioned and delivered in a plastic boxe, this patented model is available in 4 different sizes.

- GODET ROBIN ANTI-CHIGNON® R430 cm3, 45 plants per box
- GODET ROBIN ANTI-CHIGNON® R600 cm3, 28 plants per box
- GODET ROBIN ANTI-CHIGNON® R1,5 Litre, 15 plants per box
- in 3-L ROBIN ANTI-CHIGNON® pots, 6 plants per box

UNIPERUS SQUAMATA « MEYERII » IN GODET ROBIN ANTI-CHIGNON® R600 CM3 SHOWN BY ANGELIKA



PINUS CEMBRA AGED 7 YEARS IN CONTAINER SHOWN BY ALEXANDRA.



GODET ROBIN ANTI-CHIGNON® R3L



The 4 volumes of GODET ROBIN ANTI-CHIGNON® individual squares



CEDRUS atlantica 1+0 in ROBIN ANTI-CHIGNON® R430 BUCKET

ROBIN ANTI-CHIGNON® BUCKET



PINUS sylvestris in ROBIN ANTI-CHIGNON® R200 BUCKET

The advantages of GODETS ROBIN ANTI-CHIGNON® containers

A cultivation system that guarantees a superior quality of young plants in containers, with a a living root system in a natural form without deformation.

• "ANTI-CHIGNON®" system:

Excellent recovery and development of new plants thanks to a root system without malformation.

• Integral self root pruning:

Over the entire surface of the root plug as well as the bottom of the container which encourages root development with very dense root system and without malformation, which optimizes recovery.

• Freshness of the plants:

Delivered to your sites in their cultivation boxes the freshness is preserved during transport and while waiting on site before being planted.

• Time saved:

No need to heel in to the soil.

The root plugs are in a regular and conical shape facilitating their installation.

Handiness

Light and compact, the Robin 'honeycombed' boxes are very easy to handle even on hilly land.

Stackable, they are very practical for loading on lorries, etc.

• Lengthening of the plantation period.

· Guarantee: We guarantee the recovery of plants delivered in ROBIN ANTI-CHIGNON® (see the condition of our guarantee on www.robinpepinieres. com).

Advice for using plants in GODET ROBIN ANTI-CHIGNON® containers.

In order to obtain the best results with the plants that you are going to receive, we would like to Advise you on differents ways.

Storage and precautions for conserving the plants following delivery

• Right from the reception of the plants, we advise you to store the boxes flat on the ground, (the plants in an upright position) outside, sheltered from the wind.

Be careful if the plants must be stored inside in a shed or cellar for some reason, insure that the place is light and airy. Plants must never be left in darkness for a period of several consecutive days.

If planting is delayed, you can keep the plants outside, for several days or even several weeks before planting them, and if possible they must be sheltered from the wind.

• If storage is for more than a week in dry or windy weather, the humidity of the root plugs must be checked, and watering once or twice a week is necessary.

• If planting is delayed for more than a month, it is advisable to lift the boxes a few cm off the ground (4 to 10 cm) to enable self-pruning (except during the winter – December to March – when strong frost can occur).

Plant transportation to the plantation site

• You can easily transport the plants in the ROBIN ANTI-CHIGNON® containers delivered in a polystyrene box, stocking the boxes on the side. This is what we do when we make our deliveries with our lorries. Volume will be gained in this way.

• For the deliveries of our ROBIN TRUFFLE PLANTS, the boxes are stowed on shelves, in order to transport the plants upright in the best conditions, without risk of damaging the plants.

Conditions in extreme cases

For our reforestation sites at high altitude we can place at your disposal our boxes for helicopter transportation. Each of these boxes can contain around 1 500 plants

GODET ROBIN ANTI-CHIGNON® R350 containers. A helicopter type Lama or Alouette 2 is capable of transporting this volume at each rotation.



En godets

4 500 plants

in 100 crates

stowed on

shelves

crates

At the time of planting

The plants in the **GODET ROBIN ANTI-CHIGNON**® containers enable the time of planting to be extended. The plants having been delivered in their cultivation boxes, can be taken out of the nursery and planted without any risk at practically any time of year. In this way you can start your planting in Autumn in the month of September on flat land and from mid-August in the mountains.

No need to wait for the plants to be hardened off.

For **ROBIN TRUFFLE PLANTS**, planting is possible starting in the middle of September.

In the Spring you can wait until June without any risk.

The beginning of Autumn remains the ideal period for outplanting young plants and **ROBIN TRUFFLE PLANTS** in **GODET ROBIN ANTI-CHIGNON**® containers.

In fact, the young plants put in place at the beginning of Autumn have the possibility of rooting before winter, even if they are hardened, and if growth of the aerial has finished the root system develops as long as the substrate is warm (till 10 celsius degrees the root growth continues).

This enables young plants and PLANT TRUFFIER ROBIN

(truffle plants) to set up before winter, which avoids the risk of weakening during winter and enables a much more rapid regrowth starting in the first warmth of Springtime.

Thanks to GODET ROBIN ANTI-CHIGNON® containers and integral self pruning Obtained across the surface of the root-plug, the natural architecture of the root system is optimal.



Planting at the beginning of september

Rooting in mid-Novembre

Planting advices

Before planting, it is highly recommended to water the plants in **ROBIN ANTI CHIGNON**® if the root plugs are dry (or to moisten them soaking the boxes for a few minutes in water).

You will build up a supply of humidity which will enable the root system of the plants to start growing more quickly.

It is necessary to ensure, that the planting hole is deep enough for root ball to be correctly put in place from the **ROBIN ANTI-CHIGNON®** container and in an upright position without being squashed. The top of the root plug should be covered by 2 to 3 cm of soil to avoid the wick effect.

In order to optimize the planting technique of our plants in **ROBIN ANTI-CHIGNON®** containers and to be sure to place the rootplugs, in an upright position, at the correct depth, we have developed a specific DIBBER (see page 53)

IMPORTANT

The best results for planting, growth and rate of recovery with plants grown and delivered in GODETS ROBIN ANTI-CHIGNON® containers are obtained, with very early Autumn plantations.

Our plants grown and delivered in **GODET ROBIN ANTI-CHIGNON**® containers benefit from a 90% trade-in guarantee (see our guarantee conditions on our website **www.robinpepinieres.com**)

A plant cropping contract for plants in GODETS ROBIN ANTI-CHIGNON® CONTAINERS.

It is our best guarantee of quality and insurance for you to obtain the plants that you needed.

We are at your service to put in place a plant cropping contract and to to study all the conditions for you. To be carried out under the best conditions, the contract must be formalized and signed at the latest in the month of January for delivery as soon as the following September.

Depending on the origin of the seeds or the age of the plants required, it can be necessary to finalize the contract slightly earlier meaning during Autumn N, for delivery in Autumn N+1.

The plant cropping contract for plants in ROBIN ANTI-CHIGNON® containers is the insurance for you that your delivery of the plants that you need includes a money-back guarantee.

In the cropping contract of plants in GODET ROBIN ANTI-CHIGNON® containers we advise you to make the best choices :

- From the origin of the seeds which are best suited to your situation
- To the volume and the type of container (individual square ROBIN container or a Polystyrene 'honeycomb' box.

For the HAUTE PERFORMANCE® controlled mycorrhizal plants following a soil physiochemical analysis, we advise you on the choice of mycorrhizal fungal species which is the best adapted to your plantation site and which will give the best results.

For the ROBIN TRUFFLE PLANTS, we can, starting at a minimum quantity of 450 plants, grow in culture under contract, your own batch of seeds that we can inoculate with our own truffles or with truffles from your region. These plants will in this way be perfectly adapted to your region.

Produced under a Cultivation Contract for the European programme REINFFORCE

In total 140 000 young plants in ROBIN ANTI-CHIGNON® containers indexed in 300 resinous and deciduous genetic units, were delivered during Winter 2011/2012 to 35 arboretums sSpread across the Atlantic cost of Northern Scotland across to Southern Portugal.

The goal of the programme, piloted by the IEFC (European Institute for Cultivated Forest) is to prepare for the adaptation of European forests to climatic changes. All of the seeds were provided by the customer.



Cultivation contract for the REINFFORCE project, Pinus elliottii (From South Carolina)



Control culture for the REINFFORCE project Cunninghamia lanceolata (from China)

ROBIN PLANTATIONS

ROBIN Pépinières offers a turnkey service for the creation of your MUSHROOM ORCHARD® or TRUFFLE ORCHARD.

Indeed, during a site visit, your regional sales manager will be able to help you take a soil sample for analysis, which is highly recommended for any **MUSHROOM ORCHARD**® or **TRUFFLE ORCHARD** plantation. This sample will be sent for analysis to our partner laboratory, which specialises in soil analysis with a view to planting truffles or **MUSHROOM PLANTS**® (cost of this analysis €98 incl. VAT).

During this visit, our sales manager will guide you in your choice of host species and the species of truffle or mushroom best suited to your land, and will advise you on the type of bucket and the choice of protection and mulch to use.

For plantations of more than 150 plants, we can offer to take charge of the planting if you wish. Our planting service includes:

- Delivery, supply and installation of 80 micron plastic mulch, 1.50 m wide, using our tractor and its specially adapted machine (this technique only applies to areas of at least one hectare).
- Manual planting with a ROBIN planter or pickaxe.
- Delivery, supply and installation of protective sheaths and individual mulching for plantations of less than 1 hectare.
- And the ROBIN 1-year 100% recovery guarantee: supply and planting, which we have on all planting operations carried out by us.



Guillaume Lefèbvre, our responsible of meccanic works and fitting plastic mulches, for our Planting with a pickaxe. nursery.



Planting of 626 ROBIN TRUFFLE PLANTS carried out by us in Eyguians plot(05).







Putting in place protective covering.

As part of the VERCHAMP® Programme (Franco-Italian Intereg Alcotra programme), we supplied and installed over 15,000 ROBIN TRUFFLE PLANTS and MUSHROOM PLANTS® on 68 plots of land in the Piedmont region of Italy and Provence Alpes Côtes d'Azur. Success rate: 100%

You are going to carry out a plantation of ROBIN TRUFFLE PLANTS.

In order to optimize the success of your plantation, we strongly advise you to protect your plants securely to prevent damage from wildlife, but also to carry out a mulch around the base of the plants.

We remind you that the rate recovery guarantee on ROBIN TRUFFLE PLANTS which is 80% will be increased to 100% when plants are protected by a protective covering against wind or by mesh netting, and mulched with a cork tile of the type HPK Robin or a machine distributed polyethylene film.

Pépinières Robin propose a wide range of protection and mulches selected for their quality and efficiency.

The ROBIN dibber

This tool which is specially adapted to the form of **ROBIN ANTI-CHIGNON®** containers can be used on prepared soil for example: sub soiling with a bull-dozer, rotavator, holes dug with a mechanical shovel.

In these conditions the dibber enables an increase in yield while insuring the perfect quality of the crop, thanks to the ROBIN dibber the root-balls are perfectly put in place vertically.

The dibber is available in two sizes:

- The large model: to be used when planting out the **ROBIN ANTI-CHIGNON**® containers with a volume of 400 cm3 or 600 cm3
- The small model: designed for planting out the ROBIN ANTI-CHIGNON® containers with a volume of 200 cm3

model	Volume of the containers	Unit price
Large model container	ROBIN ANTI-CHIGNON® container volume : 400 cm³, 430 cm³ ou 600 cm³	Ø
Small model container	ROBIN ANTI-CHIGNON® container volume : 200 cm³	C



1. Very practical and easy to transport thanks to the handle. Very simple to use



2. Press in the dibber vertically



3. Pull out the dibber



4 et 5. Place it in the hole



6. Tamp down strongly being careful to re-cover the top of the ball with a few cm of earth.

Protective **coverings**

For protection against rabbits or hares, it is recommended to place a protective covering of at least 60 cm in height. Ideally the protective covering against wind Height 60cm with 20 cm diameter to be fixed with 2 curved steel stakes Height 80 or 100 cm.

For protection against roe deer, it is necessary to use a protective covering at a height of 120 cm.

The ideal is protective mixed mesh netting at a height of 120 cm with a 30 cm diameter held in place by 2 chestnut stakes 150 cm in height with a 9/11 circumference (or two steel stakes 1m50 in height with a diameter of 8 mm for very stony soils.)

Protective netting

Climatic wind break protection*

- Mesh 3 mm Colour black
- Fine mesh with wind break effect, which protects plants from strong drying winds
- Prevents small branches from getting through the mesh

Diameter/	Packaging					
height (cm/cm)	weight	Units by packet	Mesh	Units by pallet		
14/60	85 gr	100	2x2 mm	8,400		
20/60	130 gr	100	3x3 mm	6,000		
30/60	240 gr	100	4x4 mm	3,000		
14/120	85 gr	50	3x3 mm	4,200		
20/120	130 gr	50	3x3 mm	3,000		
30/120	240 gr	50	4x4 mm	1500		



Climatic Protective Mixed Mesh Netting Height 120cm with diameter of 30cm on a crop of truffle oaks. For an excellent hold, it is recommended that the protection should be stapled to the stakes.

Mulching film 80 microns noir

Mulching film A 12V Label 2* 80 microns black							
Rouleau de film plastique A/2V-noir							
Largeur	Longueur	Poids	10 rouleaux/+	de 1 à 9 rouleaux			
1m10	477m	40 kg	Ø	Ø			
1m25	524m	50 kg	Ø	Ø			
1m50	511m	58 kg	Ø	Ø			
2m	511m	80 kg	Ø	Ø			

We do not detail the rolls *For prices, please contact us



Climatic wind break protection. H120cm Ø30 Mesh 4x4mm on a QUERCUS pedonculata.

Climatic protective covering mixed Mesh netting*

a double mesh = twice the efficiency

- Mesh 3x3 mm lined with a reinforced mesh 2.7x2.7 cm for a better resistance to tearing. The climatic protective mixed mesh covering also insures protection against wild game, protects against wind and plays a role in providing shade.
- 4 folds to aid installation
- Colour black

Diameter/	Packaging*					
height (cm/cm))	weight gr/ml	Units by packe	Mesh	Units by pallet		
14/120	110gr	50	Mixte	1950		
20/120	190gr	50	Mixte	950		
30/120	280gr	25	Mixte	1000		
20/180	190gr	25	Mixte	1200		



Truffle plantation carried out on a plastic mulch A12V 80 microns, 1.5 m wide mechanically unwound by Pépinières ROBIN.

ROBIN SARL

ROBIN PROTECTIONS

Mulch

100% natural plant felt tiles.

Plant felt tiles are a 100% natural and biodegradable product.

The benefits of plant felt:

Lightweight and compact,

- Flexible and strong: easy to handle when installing,
- Excellent durability compared to other biodegradable mulches

• Waterproof: maintains moisture at the base of the plants,

• Prevents regrowth of herbaceous competition

Caution: For total efficacy, the plant felt tile should be fixed with 2 or 3 metal staples, depending on the size of the tile.

To get the best effect on your truffle plants, we recommend that you opt for the 75x75 cm tile, which will be most effective.

Technical characteristics:

- Weight: 1400g/m2
- Thickness: approximately 1cm
- Composition: 100% plant fibres. Jute and hemp,
- needle-punched binding. No glue or film.
- Service life: 24 to 36 months.

Natural biodegradable mulching tiles ROBIN **HPK***

The cork tile **Robin HPK** is a product that is 100% natural.

The advantages of cork:

- Light and compact
- Supple and resistant : easy to handle and to put in place
- Excellent durability over time compared to other biodegradable mulching
- Waterproof : insures a good level of humidity at the foot of the plants
- Prevents the regrowth of competitive weeds
- Prevents the germination of seeds that fall on the tiles

Attention: For total efficiency the cork tile must be fixed with 2 or 3 metal staples according to the size of the tile.

In order to obtain the best effect on your truffle plants we advise you to opt for the 70 cm diameter tile since the effect of tiles with smaller dimensions will be a lot less significant.



The cork mulching tile ROBIN is a product that is 100% natural.

Packo	aging
Robin c	ork tiles
Dimensions	Units
in cm	per
1400g/m2	pallet
square 50 x 50 cm	1000
round Ø 70 cm	750

Packaging	
Dimensions in cm	Units per pallet
50 x 50 cm 1400g/cm2	500
75 x 75 cm 1400g/cm2	150



Plant felt tile 75 x 75 cm. Fixed by three metal staples 40 x 20 x 40 cm.

Cork tile

Ø 70 cm and Climatic

Mesh Netting H.60 Ø 30 cm



Technical specification Density: 400 kg / m3

Thickness: 3 mm Duration: 3 / 4 ans

Composition: Cork conglomerate (biodegradable mix of natural cork granules and synthetic resin (alimentary binder) completely inert after polymerization through heat (0.5% volume of cork)

Metal staples*

		*Pri	celist		
Twisted iron metal staple	Dimensions	5000/+ unités	500 to 5000 units	100 to 499 units	less than 100 units
Ø 5mm	20x20x20 cm	Ø	Ø	Ø	Ø
	20x40x20 cm	Ø	Ø	Ø	Ø

Protective Mixed

ROBIN PROTECTIONS

Mulches

Woven fabric Agrosol*

- Woven fabric Agrosol 100 gr/m2
- Woven fabric Agrosol 130 gr/m2



Fabric Agrosol H\$ 130 is used to cover slopes and other steep ground. It is also used for linear crops (hedge or truffle bed).

STAKES and POSTS

Chestnut stakes

• Chestnut stakes (Poles) 1st choice, split with a saw, blunted, peeled.

Steel stakes

STEEL STAKES for fixation and the support of protective covering on hard or stony land.

Steel stakes*			
Height in m	Section in mm		
Recourbé 1m50	6 mm	Attachés par Paquets de 100	
Recourbé 1m50	8 mm		



5mm twisted steel stakes H: 80 cm curved and metal staples 20 x 40 x 20 cm

Woven fabric Agrosol 100gr/m2* 100ml roll / colour green or black				
Width in m	10 rolls/+	for 1 to 9 rolls		
110gr	Ø	Ø		
190gr	Ø	Ø		
110gr	Ø	Ø		
190gr	Ø	Ø		
280gr	Ø	Ø		
190gr	Ø	Ø		
110gr	Ø	Ø		

Woven fabric Agrosol 130gr/m2* 100ml roll / colour green or black				
Width in m	10 rolls/+	for 1 to 9 rolls		
1m65	Ø	Ø		
2m10	Ø	Ø		
3m25	Ø	Ø		
4m20	Ø	Ø		
5m25	Ø	Ø		

We do not sell rolls separately.

Che	Chestnut stakes*			
Height in m	Average Ø in cm	Packets of		
0000	9/11	50		
01160	11/13	40		
100	9/11	50		
1111	11/13	40		
1m50	9/11	50		
11150	11/13	40		
10075	9/11	40		
11175	9/11	40		
200	9/11	40		
200	11/13	30		
2m50	13/15	30		



Chestnut stakes peeled blunted H 1m50- circumference :11/13 H 2m – circumference :11/13



Photo of a truffle plantation with a 50 x 50 cm cork tile fixed with three 20 x 20 cm metal staples and a windbreak sheath H.60 cm, \emptyset 20 cm, held by two steel stakes H.80 cm.

*For prices, please contact us

ROBIN PROTECTIONS

Anti-game fence (standard model)*						
Height	Roll length	No. of wires Horizontal	Spacing between wires Vertical	Galvanisation	Horizontal Wires top and bottom	Other wires
200 cm	50 ml	17	15 cm	80 g/m2	ø 2.0 mm	ø 1.6 mm
200 cm	50 ml	17	30 cm	80 g/m2	ø 2.0 mm	ø 1.6 mm
200 cm	50 ml	22	15 cm	80 g/m2	ø 2.0 mm	ø 1.6 mm
200 cm	50 ml	22	30 cm	80 g/m2	ø 2.0 mm	ø 1.6 mm
200 cm	50 ml	25	15 cm	80 g/m2	ø 2.0 mm	ø 1.6 mm

Anti-game fences and galvanised steel posts





Anti-game fence (heavy model)*						
Height	Roll length	No. of Horizontal wires	Spacing between Vertical wires	Galvanisation	Top & Bottom Horizontal Wires	Other wires
200 cm	50 ml	17	15 cm	215 g/m2	ø 2.5 mm	ø 2.0 mm
200 cm	50 ml	22	15 cm	80 g/m2	ø 2.5 mm	ø 2.0 mm
200 cm	50 ml	25	15 cm	215 g/m2	ø 2.5 mm	ø 2.0 mm
200 cm	50 ml	25	15 cm	80 g/m2	ø 2.5 mm	ø 2.0 mm



Galvanized steel posts *					
Height	Post shape	Galvanisation			
265 cm	Diamond	Galvanisation			
250 cm	С	Galvanisation			



ROBIN DELIVERIES

90% of Robin production is delivered directly to our customers by our own fleet of vehicles which enables us to assure:

- Greatly reduced DELIVERY TIMES between the nursery and your site.
- PUNCTUALITY : dates and hours of delivery respected.
- ADVICE ON THE STORAGE AND THE USE OF PLANTS AND PROTECTIVE COVERINGS DELIVERED by our staff.



Fleet of ROBIN trucks for direct delivery to our customers.



Plants in ROBIN ANTI-CHIGNON® BUCKETS are delivered on a roll.





Our trucks are equipped with tailgate. This makes unloading easier.

ROBIN DELIVERIES



Young forestry and ornamental plants

Free delivery by our trucks



from €1,500 excluding tax

from €4,000 excluding tax

from €5,000 excluding tax

for Corsica and abroad our prices are excluding tax ex nurseries

Prices ex works

- For orders below the amounts indicated above: a contribution to delivery costs will be invoiced.
- For small orders, we ship:
- By colissimo post
- Express delivery by France Express; delivery within 24 or 48 hours
- Delivery by courier within 3-4 days.

The minimum carriage-paid rates shown above only apply to deliveries of plants. For protection deliveries, our prices are always exclusive of VAT.



ROBIN DELIVERIES

JNI and

The details contained in our catalogue and other brochures are not contractual offers. They have a purely indicative value and orders placed with reference to these documents will only be carried with our acceptation of these orders by us and the availability of the subjects ordered.

ORDERS Conditions OF ORDER

The fact of placing an order implies complete adhesion to the conditions of sale which figure in the catalogue for that year, to be requested in the case of non reception. The prices for the current year have been established in function of economic evolution between January and December of the previous year. They can be subject to modifications if new fluctuations intervene during the season of sale. The buyer will be informed of these modifications, if this happens before the order is sent. The prices invoiced will be those in force at the acceptation of the order by the seller. All taxes, rights and other benefits are to be paid in accordance with French regulations or that of another importing country or of transit are at the charge of the buyer. The seller reserves the right to modify the price of an article when there has been an error in the

printing of the price. Acceptation OR o	onfirmation OF THE ORDER
The fact of accepting or confirming an order involves the obligation for us to delive except in the case of impossibility resulting from circumstances beyond control or a case of "force majeur" such as: - Bad harvest, - Bad harvest, - Transport difficulties, - Strikes, lock-outs, social troubles, administrative decisions. - Third parties causes, Diamter (force for the second sec	 Broken machinery, Any event likely to delay, prevent or to render economically exorbitant the execution of the engagements of the seller. The aforementioned list is indicative and not limitative. Likewise, if the buyer has not paid the money owed on previous invoices for deliveries, the seller is freed from any obligation to supply orders previously accepted. The seller must inform the buyer by letter of the impossibility of delivering the order. Except when a letter has been sent requesting the contrary, missing articles from an order in number or variety will be money there in the previous interpret them in even there is the previous of the previous of
- Disusters, noodings, nies,	replaced by mose most resembling mermin nomber and vallery.

DELIVERIES Place of delivery

Unless otherwise specified the delivery will be made to the invoice address. All orders destined to be delivered to a place at a distance from an agglomeration, or from a main road must be accompanied by a map and the necessary instructions for access. The place of delivery must be accessible for a full truck or with semi-trailer. In the case where the place of delivery requested by the buyer cannot be found or is not accessible, the buyer is responsible for the plants which are the object of the order. In the case where the delivery is impossible due to failings of the buyer, the buyer will have to receive the delivery in the warehouse at ROBIN Pépilères

Clams

In the case where the buyer complains about the batch of goods, he cannot refuse their their reception without having informed us. Any refusal to accept goods must be notified to us be registered letter with acknowledgement of receipt to be sent in the three days after the delivery, not taking into account Sundays and legal public holidays. Any refusal not made within this time will not be given effect whatever the cause.

To be valid, and claim duly motivated must be addressed to us in the three days following reception of the goods by registered letter with acknowledgement of receipt, in the case where the buyer is complaining about a batch of goods he must return the totality within the same deadline. Both outward and inward transport charges are the buyer's responsibility

The deadlines for delivery are only indicative and approximate The seller does not accept any penalty or cancellation of order due to late delivery, whatever the cause, importance or consequences of the delay

The customers are committed to strictly respecting the conditions of storage and conservation of the plants to maintain their health according to the regulations in force and those issued by the seller.

It is up to the buyer to make any necessary observations in the case of damage or missing articles by a note being made without fail on the purchase order of the deliverer at the delivery and then to confirm this by an extra-judicial document or by registered letter within three days from the date of delivery, a copy should be sent, within the same time, to the seller

As a result, the seller declines any responsibility for delay, loss, damage for which only the transporter is responsible.

Recovery guarantee

(See the conditions of our guarantee on page 8 of our catalogue.)

No claims founded on the guarantee of latent defects will be received if they do not establish our responsibility. Our responsibility cannot be engaged in case of the failure of a culture Guarantee of authenticity

No contestation concerning the authenticity of the species or variety can be made after two weeks following the day of delivery. The guarantee of authenticity is in this case limited to our choice, or replacement of the article or to a refund of the invoiced price on the order.

No guarantee other than those previously mentioned will be granted to the buyer especially concerning apparently evident damage.

Methods of payment

a) Invoices will be paid net and without discount up to 45 days from the date of emission of the invoice. Failure to pay by this date all or part of the amount owed shall result, without further formality the right to interest due to delay, of which the rate is fixed at three times the rate of legal interest, increased by seven percentage points counting from the date following the right to paid on the invoice. Furthermore, in the case of recovery of payment by bailiffs, litigation, voluntary or compulsory liquidation or bankruptcy; the money owed to us will be increased by 25% which represent the recovery costs. b) A draft will be presented directly to the bank on the due date. This will not have the effect of derogating from these methods of payment. By signing these conditions of sale,

the buyer agrees in advance that his bank account will be supplied with enough money on the due date to cover. The buyer accepts in advance the payment by draft directly drawn by EARL ROBIN Pépinières from supplies that they have received. The non-payment of the amounts owed on the due date will lead to the application of charges and agios for the buyer defined in the previous paragraph.

c) Payment should always take place at our headquarters. A sale carried out with a buyer with whom we have never done business previously, should always to be paid in advance.

d) Drawing of drafts on the buyer by ourselves does not cause any modification to the fundamental obligations between the parties and especially not any waiver of the conditions of sale.

e) Non-payment on the due date of an invoice automatically leads to the loss of terms which could be accorded concerning the payment of other invoices and authorizes the seller to suspend deliveries until complete payment has been made, without there being a rupture of the contract. ACTION AGAINST THE TRANSPORTER

Arrival in freezing conditions

In the case of arrival in very frosty conditions, place the parcels, without opening them in premises with a moderate temperature that is not heated. Freezing conditions are considered to be a case of "force majeur", the transporter is not responsible for damaged by them except if the contractual deadline for transport has

Delay of goods on route

When the transport deadline has been passed, the recipient has three days not including national holidays, to notify the following: - Either the service of SNCF lines

- or the road, marine or rail transporter, by an extrajudicial act or by registered letter of his complaint.

or the postal service

Goods always travel at the risk and peril of the buyer, even if the products are delivered free of charge and whatever the mode of transport, he is the only judge and person responsible for making claims at arrival. Without any particular instructions from the buyer, the seller will choose the method of transport that he thinks most appropriate and will not assume any responsibility for this

choice, and will not accept any claims made concerning transport. Inssurance

When the goods are insured, the recipient must in the case of damage, strictly observe the stipulations of the insurance policy.

RESERVATION OF TITLE The actual transfer of ownership of commercial products by a company is suspended until the complete payment of the price by the buyer in principle and peripherally, even

in the case of granting deadlines for payment. Any clause stating the opposite is deemed to be unwritten.

The company could assert the right to claims that it holds under the present clause for any of the outstanding payments owed to it concerning goods in the possession of the buyer, these being conventionally considered to be those for which payment has not been received and the company could take them back or claim them as compensation for all the unpaid invoice without prejudice to its right of resolution of orgoing sales. The buyer refuses to grant or to yield as security the ownership of goods before their complete payment.

The buyer is authorized within the framework of his normal operation, except if he finds himself with a cessation of payment, to resell the delivered goods under the condition that he pays the seller the corresponding amount. In the case of the opening of a collective procedure against the buyer, the ongoing orders will be automatically cancelled and the company reserves the right to reclaim the goods in stock. The present clause does not prevent the risks linked to the preservation of the goods to be passed to the buyer. as soon as they are with the transporter. From the delivery, the buyer is considered as the depositary and guardian of the said goods. In the case of returned goods, the return transport costs remain with the buyer and the payments made remain valid as a penalty clause.

COURT OF JURIDICTION - APPLICABLE LAW

Any question relating to the present general terms and conditions of sale as well as to sales that are governed by it which are not treated by the present contractual stipulations will be governed exclusively by French law to the exclusion of all others. All conflicts relating to the the conclusion, the execution and the validity or to the interpretation of the present or to resulting orders will be dependent on the competence of the tribunal nearest to the headquarters of the company ROBIN Pépinières EARL. This clause applies even in the case of an incidental claim or multiple respondents and whatever the mode and the modes of payment.

Sianed in :on.....

Handwritten endorsement « Agreed and signed »

Name and signature of the payee

been passed.

www.robinpepinieres.com



QUALITY, INNOVATION AND SERVICE

Our website www.robinpepinieres.com aims:

- To give you a better understanding of our company and its various activities
- To introduce you to our "flagship products" which are our HIGH PERFORMANCE[®], MUSHROOM PLANTS[®] and our ROBIN TRUFFLE PLANTS
- To allow you to place your orders directly on our online store.

On our website you will find a presentation of:

- Controlled mycorrhization
- Our HIGH-PERFORMANCE® mycorrhizal plants
- Our **ROBIN TRUFFLE PLANTS**
- Our MUSHROOM PLANTS[®]
- All the advice you need to make a success of your TRUFFLE ORCHARD and your MUSHROOM ORCHARD®

But also:

- Numerous testimonials from customers using our mycorrhizal plants
- A presentation of our company and its commitments
- Know-how, guarantee of recovery and our assets
- The advantages of Robin ANTI-CHIGNON® buckets
- A complete press review of the written press and TV reports on ROBIN Pépinières



You can now place your orders on our website: www.robinpepinieres.com

> To contact us: info@robinpepinieres.com



ROBIN pépinières

WELCOME TO OUR NURSERIES

We will be very happy to welcome you to our nurseries if you should honour us with your visit.









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