

## International course on TRUFFLE FARMING PLANTATION ESTABLISHMENT AND MANAGEMENT HARVESTING AND MARKETING

Basic concepts, planting, pruning, tilling and irrigation,  
Spanish wells, dog training, pests and diseases,  
showcooking, truffle dishes for product marketing,  
truffle selection (marketing qualities), field trips

6<sup>th</sup>-10<sup>th</sup> of February, 2023

Schedule, contents and  
additional info

### Monday the 6<sup>th</sup> of February

Morning (9:30 to 14:00 h) and afternoon (15:30 to 19:00 h)  
Basic concepts, plantation assessment and establishment,  
most common failure points, annual task calendar

#### - Basic concepts (2 hours):

- What is truffle farming? Why not wild truffle hunting?
- Basic concepts on fungal biology: fungi, truffles, mycelium and mycorrhizae, the brùle
- Truffle species used in truffle farming around the world, characteristics, basic agricultural needs and viability
- The host species used in truffle farming (trees and bushes), characteristics and viability in field conditions
- Black truffle, *Tuber melanosporum*, ecology, helper bacteria
- Productive and life cycle, of *Tuber melanosporum*, sexuality
- Why do truffle plantations stop producing?
- Mycophizal contamination progress in black truffle plantations

#### - Previous assessment on plantation viability (1.5 hours):

- Climate: temperatures, rainfall and their annual distribution
- Soil: basic parameters, nutrient levels, nutrient correction, correct soil sampling
- Water availability and basic needs for irrigation
- Previous crop and forest contamination
- Plant selection: tree species, plant age, plant quality
- Bibliography and on-line information sources

#### - Plantation establishment (1.5 hours):

- Previous steps: correction of soil parameters and fungal contamination
- Soil preparation
- Establishment: planting season, pattern (spacing), planting, tubes

#### - Conclusions: basic failure points in truffle plantations (1 hour)

#### - Annual calendar for plantation tasks (1 hour)

### Tuesday the 7<sup>th</sup> of February

Complete day at MicoLab's facilities, including lunch  
Pruning and shade control, weed control and tillage,  
showcooking, irrigation design and management

#### - Pruning and shade control (1.5 hours)

- Techniques and aims based on plant age
- Basic tips
- Pruning young plants
- Pruning older plants, factors that may influence decision-making
- Climatic factors that condition pruning options
- Mulches and other techniques to provide summer shading

#### - Weed control and tillage (1.5 hours)

- Objectives
- Tasks depending on plant age and type of soil, machinery and tools used
- Tilling the brùle: why, when and how

#### - Showcooking (1,5 hours)

- How to cook with fresh black truffles
- Organoleptic characteristics of black truffles, how compose a plate that enhances those qualities and puts aroma in the spotlight
- Preparation of easy cold and hot courses to promote black truffles

#### - Irrigation (2.5 hours)

- Objectives and aim in each plantation phase
- Moments and frequency
- Basic tips
- Irrigation emitters, pros and cons. Emitter selection
- Irrigation system design
- Other important devices for irrigation

The Schedule and timings for the whole training course may vary slightly depending on the group members' needs

### Wednesday the 8<sup>th</sup> of February

Morning (9:30 to 14:00 h) and afternoon (15:30 to 19:00 h)  
Spanish wells, pests, diseases and other damage factors,  
truffle dog training

#### - Spanish wells (spore field inputs), with the technical support of Clara Rascón Lozano (2 hours):

- Definition, pros and cons and how they operate
- When and how to do spore inputs with substrate
- Manual and mechanical options
- The substrate
- Techniques used to add the spores and how to prepare the inoculum
- Reinoculations: in which situations are they useful? How to do them?
- Inoculum quality control

#### - Pests, diseases and other damage factors in truffle plantations, by María Martín Santafé (2 hours):

- Do truffle plantations really have big phytopathological enemies?
- The importance of assessing the real need for pest and disease control in the plantation
- Agents of tree damage
- Truffle pests: flies and the truffle beetle (*Leiodes cinnamomeus*)
- Damage prevention and control

#### - Truffle dog training, by Alba Herranz (2 hours):

- Characteristics of the canine sense of smell, olfactory memory
- Selecting a future truffle dog
- Definition and stages of dog socialization
- What it is and how to achieve motivation in working dogs
- How do dogs learn? Classical and instrumental conditioning
- Smell association: direct and by reward
- Animal welfare

#### - Final conclusions and group discussion

### Thursday the 9<sup>th</sup> of February

Field trip, practical trainings in Teruel:  
dog training, traditional plantation management

From 9:30 until 20:00 hours

- **Truffle search** with dogs and dog management in truffle plantations, with Alba Herranz (morning, in Cella)

- **Truffle menu** at lunch time in La Fondica (in La Puebla de Valverde)

- Field visit: **Traditional management of high yield truffle plantations** with the plantation owner and farmer (afternoon, in Sarrión)

### Friday the 10<sup>th</sup> of February

Field trip, practical trainings in Teruel:  
intensive management, machinery, marketing

From 8:00 until 20:00 hours

- Field visit: **Implantation and intensive management of highly technified truffle plantations, with machinery demonstrations**

Demos on machinery and techniques for tilling, weed control and Spanish wells, explanation of the irrigation design, with Ricardo Forcadell and César Vaquero

Demo on the management of a linear trenching machine to do Spanish wells plus discussion on the importance of creating truffle farmers' associations, by Marisa Esteban and Jesús González (morning, in Monreal del Campo)

- **Truffle menu** at lunch time in Bar Teruel (in Teruel city)

- Field visit: **Mytruff facilities for truffle marketing and export.**

Explanation of facilities needed for truffle preparation for exportation and **quality differentiation and selection**, by Cosme Martínez (afternoon, in Teruel)

### Lectures, field visits and demos by:

Luz Cocina Romero  
Agricultural Engineer  
CEO at MicoLab

Clara Rascón Lozano  
Master's Degree in Cultural  
and Natural Heritage  
Technical Director at Arte Trufa

María Martín Santafé  
PhD in Forest Engineering  
Researcher at the AgriFood  
Institute of Aragon (CITA)

Alba Herranz  
Dog training specialist  
CEO at Alba Herranz  
Adiestramiento Canino

Ricardo Forcadell Pérez  
Forest Engineer  
Manager at Ollex  
Forest Consultancy Services

César Vaquero  
Agricultural Engineer  
CEO at Globaltek,  
Irrigation and Engineering

Jesús González  
Agricultural Engineer  
Truffle Farmer  
Machinery designer

Marisa Esteban  
Truffle Farmer  
President of the  
Young Truffle Farmers'  
Association of Teruel

Cosme Martínez  
Science degree in Pharmacy  
Manager at Mytruff

### Price and additional information

The **price** of the course is **2.650 €**. In Spain taxes are not applied to training courses.

The price includes:

- Bound notes on all the concepts explained during the course
- The lunch meals of the five days of the course
- Snacks and drinks in between lectures at MicoLab's facilities
- Roundtrip rides in a private bus from MicoLab's facilities for the two field trips

In order to book the course, 25% of the total price has to be paid by bank transfer. The remaining amount has to be paid maximum by the 15th of November, 2022. After this date, if the remaining amount hasn't been paid, the deposit and the reserved place will be lost.

If by the 6th of December of 2022 a minimum of 6 students haven't applied for the course, it will be cancelled and the full amount paid will be returned to all students.

All students get an official invoice and a training certificate signed by Luz Cocina Romero (Agricultural Engineer with a master's Degree on Education, and accredited teacher by the Spanish Education Ministry).

**A maximum of 18 students are allowed per course.**

The lectures on Monday, Tuesday and Wednesday will take place at **MicoLab's facilities**, located in:

Avda. Corts Valencianes, 75 bajo izda  
46530 Puzol (Valencia Province, Spain)

On Sunday the 12th of February (one day after the course) there will be a technical training on microscopy applied to truffle farming for a maximum of 9 students. If interested, contact MicoLab.

**For more info, please, contact us:**

info@micolab.com

+ 34 665 911 457 (phone calls or WhatsApp)

Courses **MicoLab**  
Control y gestión de calidad de planta micorrizada  
www.micolab.com