



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, financial needs and yield, product trading, truffle selection (marketing qualities), field trips



2th-7th of February, 2025

Schedule, contents and additional info



Sunday the 2nd of February

Complete day at MicoLab's facilities (10:00 to 19:00 hours)
Basic concepts, plantation assessment and establishment

- **Basic concepts (3 hours):**
 - What is truffle farming?
 - Fungal biology: fungi, truffles, mycelium and mycorrhizae, the brólé
 - 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?
 - Mycothizal contamination progress in black truffle plantations
- **Previous assessment on plantation viability (2 hours):**
 - Climate: temperatures, rainfall and their annual distribution
 - Soil: basic parameters, nutrient levels, nutrient correction, field 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 (2 hours):**
 - Previous steps: correction of soil parameters and fungal contamination
 - Soil preparation
 - Establishment: planting season, pattern (spacing), planting, protectors

Monday the 3rd of February

Complete day at MicoLab's facilities (10:00 to 19:00 hours)
Common failure points, annual task calendar, pruning, weed control and tillage, irrigation (part I)

- **Conclusions: basic failure points in truffle plantations (1 hour)**
- **Annual calendar for plantation tasks (1.5 hours)**
- **Weed control and tillage (1.5 hours)**
 - Objectives
 - Tasks depending on plant age and type of soil, machinery and tools used
 - Tilling the brólé: why, when and how
- **Pruning and shade control (2 hours)**
 - Techniques and aims based on plant age
 - 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
- **Irrigation I (1 hour)**
 - Objectives and aim in each plantation phase
 - Moments, frequency and basic tips depending on targetted needs

Tuesday the 4th of February

Complete day at MicoLab's facilities (10:00 to 19:00 hours)
Irrigation management, Spanish wells, pests, diseases and other damage factors

- **Irrigation II (2 hours)**
 - Irrigation emitters, pros and cons. Emitter selection
 - Irrigation system design and other important devices for irrigation
- **Spanish wells and spore field inputs (2.5 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 (2.5 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

Wednesday the 5th of February

Complete day at MicoLab's facilities (10:00 to 19:00 hours)
The economics of a truffle plantation, truffle dog training, final conclusions

- **The economics of establishing and running a truffle plantation, by Ricardo Forcadell Pérez (2.5 hours):**
 - Initial investment needs
 - Management financial needs in each phase
 - Cost and benefit analyses
 - Financial yield
- **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 6th of February

Field trips: morning in truffle plantations (Cella, Teruel)
evening in trader facilities (Teruel city)

- **Truffle search** with dogs and dog management in truffle plantations, with Alba Herranz
- **Monitoring and adapted management: soil moisture, radiation, temperature, to improve irrigation and yield**, by Ricardo Forcadell
- **Demos on machinery adapted to truffle cultivation:** deep tilling (subsoiling), trencher and driller for Spanish wells by Cirilo Hernández
- **Demos: linear trenching machine to do Spanish wells Nido-Line and liming equipment**, by Chencho Zugasti and Cristóbal Burguete
- **Truffle menu** at lunch time in Bar Teruel (In Teruel city)
- **Visit to Mytruff facilities for truffle marketing and export.** Truffle trading, facilities and equipment needed for truffle preparation for exportation and **quality grading and selection**, by Cosme Martínez

Friday the 7th of February

Field trips:
morning in intensive plantations (Monreal del Campo, Teruel)
evening in traditional high yield plantations (Sarrión, Teruel)

- **Implantation and intensive management of highly technified truffle plantations:** demos on machinery and techniques for tilling, weed control and Spanish wells, explanation of the irrigation design, with Ricardo Forcadell and César Vaquero
- **Lunch** in Restaurante Migas (In Teruel city)
- **Traditional management of high yield truffle plantations** with the plantation owner and farmer (afternoon, In Sarrión)
- **Truffle search** with dogs and dog management in truffle plantations, with Alba Herranz

The Schedule and timings for the whole training course may vary slightly as it will be adapted to the group information needs

Lectures, field visits and demos by

Luz Cocina Romero Agricultural Engineer CEO at MicoLab	Ricardo Forcadell Pérez Forest Engineer Technical Manager at Mytruff	Cosme Martínez Science degree in Pharmacy Manager at Mytruff
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Alba Herranz Dog training specialist CEO at Alba Herranz Adlestramiento Canino	César Vaquero Agricultural Engineer CEO at Globaltek, Irrigation and Engineering	María Martín Santafé PhD in Forest Engineering Researcher at the AgriFood Institute of Aragon (CITA)
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Chencho Zugasti Truffle farmer Manager at Todotruficultura.com	Cristóbal Burguete Truffle farmer and machinery designer Todotruficultura.com	Cirilo Hernández Herranz Truffle Farmer Contractor of machinery for truffle farming services
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Price and additional information

The **price** of the course is **3.125 €**

The price includes:

- Bound notes on all the concepts explained during the course
- Lunch meals of the five days of the course
- Snacks and drinks in between lectures at MicoLab's facilities
- Roundtrip rides from MicoLab's facilities for the two days of field trips
- Individual accomodation for Thursday night in a four star hotel in Teruel

In order to book the course, a 1.125 € down payment has to be made. The remaining amount has to be paid maximum by the 29th of November, 2024. After this date, if the remaining amount hasn't been paid, the deposit and the reserved place will be lost.

If by the 10th of December of 2024 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 9th of February (one day after the farming course) there will be a technical training on microscopy applied to truffle farming for a maximum of 9 students. If interested, contact MicoLab or check the courses section of our webpage: www.micolab.com

For more info, please, contact us:
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+ 34 665 911 457 (phone calls or WhatsApp)