

## Preparing of laboratory protocols for certification and identification of selected Wild Food Products (WFP) – A comprehensive and stepwise approach in identification and certification of truffles

**Author:** Tine Grebenc, Slovenian Forestry Institute

**Published on:** May 2021

**Key words:** (4-5) Truffles, identification, certification, laboratory protocols

**Location:** Ljubljana (SFI), Slovenia

### Context:

Truffles are among the most precious wild food products collected in the Mediterranean area and sold globally. The main speciality of truffles are their irresistible aromas. Only fresh truffles (live fruiting bodies) produce their original aroma that gives them the adequate price and the real gastronomic value. Truffle aromas are generally species specific with detectable local/regional differences in the aroma components profile (Strojnik et al. 2020, Šiškovič et al. 2020). Also, molecular markers can distinguish between geographically distinct truffles among and within taxonomic species (Marozzi et al. 2020). Buyers of truffles should be informed and aware about these differences and well equipped with affordable and easy-to-perform methodologies for detecting truffles differences through specific tests that can prove the identity of the species (and with it the general aroma profiles) and its specific origin (with their local/regional specific variants of aromas).

### Objective:

The objective is to gather available (published) tests and approaches to identify truffle species, truffle aromas and other potential characteristics that could help end users in identifying truffles as end products that they are buying. For each approach/methodology, a laboratory protocol for identification (and potential certification methodology) will be collected and/or referred to. For each protocol a rough estimation of costs will be prepared, and a decision tree will be made for easier selection of adequate method(s).

### Expected Results:

The main result of the pilot project will be a compendium of tests and approaches, that can be used for identification of marketed truffle species. A decision tree based on applicability, availability to non-specialists and estimated costs will be prepared for end users. Assembled tests and approaches will be published as a Standard operation protocol for certification of truffles identity and characteristics for the use at the Slovenian Forestry Institute (and partner institutions) laboratories.



**Figure 1.** *Tuber aestivum* sporocarps of a various ripeness stage. How to set the reproducible quality control of sporocarps based on the level of ripeness? Photo: T. Grebenc.



**Figure 1.** Ascomycetes of truffles – mixture of several different species with predominant *Tuber magnatum*. Simple, reliable and affordable approaches are needed for certification and identification of each sporocarp. Photo: T. Grebenc.

#### References:

- Strojnik, L., Grebenc, T., & Ogrinc, N. (2020). Species and geographic variability in truffle aromas. *Food and Chemical Toxicology*, 142, 111434.
- Šiškovič, N., Strojnik, L., Grebenc, T., Vidrih, R., & Ogrinc, N. (2021). Differentiation between species and regional origin of fresh and freeze-dried truffles according to their volatile profiles. *Food Control*, 123, 107698.
- Marozzi, G., Benucci, G.M.N., Suriano, E., Sitta, N., Raggi, L., Lancioni, H., Baciarelli Falini, L., Albertini, E. and Donnini, D. (2020). *Tuber mesentericum* and *Tuber aestivum* Truffles: New Insights Based on Morphological and Phylogenetic Analyses. *Diversity*, 12(9), 349.