

Investigation on the soil environment of white truffle (*Tuber magnatum*) in Motovun forest

Gilberto Bragato¹, Barbara Sladonja², Đordano Peršurić²

¹CRA-Istituto Sperimentale per la Nutrizione delle Piante, Via Trieste, 23 - 34170 Gorizia (e-mail: g.bragato@isnp.it)

²Institute of Agriculture and Tourism, C. Huguesa 8, 52440 Poreč, Croatia

Abstract

The mixed oak (*Quercus robur*) and ash (*Fraxinus oxycarpa*) wood located near the town of Motovun is a well-known white truffle – the *Tuber magnatum* Pico fungus species – producing area in Istria. Motovun forest covers a 900-ha area in the fluvial plain of River Mirna, which flows into the Adriatic Sea in a hilly landscape originated by a sedimentary sequence of a Triassic-Eocene carbonatic platform and Eocene-Oligocene Flysch turbidites, the quite high erodibility of which has originated very thin soils on slopes and thick undifferentiated alluvia in valley bottoms. White truffle production has been decreasing in the last 10 years and a study was specifically performed in an attempt to explain it. The study area was subdivided into productive and unproductive sub-areas on the basis of the 1:50.000 soil map of Croatia and of the experience of truffle searchers. Sampling locations with an approximate density of 1 observation every 10 ha were selected according to a stratified random sampling design. The morphological features of their soil were observed in 100-cm deep augerings, whereas chemical-physical properties were determined in undisturbed samples collected in the 0-10 cm layer, where carpophores are usually found. Unproductive soils on slopes – Calcaric Regosols, according to FAO classification – were compared to productive and unproductive Gleysols of the valley bottom, the former being drier, thinner and more developed than the latter. *T. magnatum* carpophores are not found all over the fluvial plain and Motovun forest was further subdivided into productive, unproductive and occasionally productive areas. All soils of the valley bottom were thick and continuously rejuvenated by the frequent deposition of fine sediments from slopes, but only unproductive ones were characterized by water saturation in some periods of the year. The soil comparison proved the need of white truffle for an alkaline, moist, very well drained and aerated soil environment. Moreover, soils suitable for white truffle should be neither too dry nor too moist. In Motovun forest, instead, the decrease of production has been taking place in combination with public works that have modified the hydraulic equilibrium of the valley bottom in the last 40 years, causing an overall drying of the forest soil.

Key words: oak wood, soil environment, soil water regime, *T. magnatum*.