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C.1 Chemical element distribution analysis in a wild population of *Dittrichia viscosa* L. in the area of Taranto (Italy)

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Intensive anthropic activity, like mining and heavy industry, influence the air and soil quality. The ecosystem around is able to react but in some cases water and soil become very polluted, harmful for human health and not suitable for agriculture. The phytoremediation technique is very helpful to rescue contaminated land. A lot of plants are known to be able to uptake and translocate contaminants present in the soil. Some of these plants, the hyperaccumulators, are able to accumulate high amount of contaminants but not all produce high amount of biomass, which is an important parameter for phytoremediation application. *Dittrichia viscosa* (L) *Greuter* is a widespread plant in the Mediterranean area and grow on diverse environments, including marginal and contaminated soil. It isn't a hyperaccumulator plant but it produces high quantity of biomass. We have sampled *D. viscosa* plants in different area in the Taranto province near and far from the ex-ILVA/Acciaierie di Italia and we analyzed the elemental content in the shoot dividing it in apical, sub-apical and terminal parts. The elements analyzed are differentially accumulated in the three shoot parts. This study can give us information to correlate the stage in which it is better to harvest the plant when used in phytoremediation; for example, for a contaminant accumulated more in the apex could be preferable harvesting the juvenile parts of the plants several time per year. Because the apical part is predominant in the shoot composition. It is also important to notice that the natural biodiversity in the populations of *D. viscosa*, allow to select plants with different performances on different pollutants uptake supporting further improvements of phytoremediation approaches.

C.2 Biobanking for genetic resources conservation: *Abies nebrodensis* a case of study

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The Madonie Fir (*Abies nebrodensis*) is an endemic conifer of Sicily, Italy. The relic population consists of only 30 adult trees, located in the "Parco delle Madonie" (Sicily), spread in an area between 1400 and 1650 meters a.s.l. It is considered as Critically Endangered by the International Union for Conservation of Nature (IUCN), due to the dramatic genetic erosion and the poor natural regeneration. In order to develop concrete actions to preserve the Madonie Fir from extinction, an EU LIFE project was initiated (LIFE4FIR, Life18 Nat/It/000164 - 2019) with several partners (CNR - IPSP and IBE Institutes; Universities of Palermo and Seville; Ente Parco delle Madonie and Sicily Region). Among the different actions of LIFE4FIR project, the action C5 involves the constitution of a seed-bank and a cryo-bank for long-term conservation of *A. nebrodensis* germplasm. Seed-bank is the classic approach for maintaining the germplasm of species characterized by gamic propagation. In *A. nebrodensis*, as many conifers, the large presence of empty seeds, together with normal seeds, is a major problem. Hence, an X-ray investigation protocol was developed to separate the full seeds from the empty seeds; this will allow implementing the seed-bank with only full and germinable seeds. Cryopreservation refers to the preservation of plant organs and tissues at the ultra-low temperature of liquid nitrogen (-196°C). Effective protocols for the cryopreservation of pollen, excised embryos and embryogenic callus lines of *A. nebrodensis* have been already developed for the establishment of cryo-bank. The LIFE4FIR project (2019-2023), funded by the EU in the 'Nature and Biodiversity'.