

International Congress of Agrobiodiversity

2. Production

2.4 Adaptations to climate changes

POSTER

Variability in chemical composition of *Opuntia ficus-indica* cladodes depending on soil and climate changes

Platamone G., Procacci S., Maccioni O., Rossi M., Borromeo I., Forni C., Bacchetta L.

Key words: cactus pears; cladodes; mucilage; irrigation

Opuntia ficus-indica (L.) Miller is a widespread species, well adapted to arid lands and to a diversity of climates all over the world; it is mainly cultivated for its edible fruit, although in some countries different parts of the plant are utilized in food, animal feed, cosmetic and pharmaceutical industries. In some European Countries, the yearly pruning produces a waste of 6-10 t/ha of cladodes and immature fruits. Recent studies have demonstrated that these by-products can be exploited as sources of high-value components (i.e, mucilage, polyphenolic compounds, etc.) mainly addressed to food/nutraceutical industries.

The aims of our work were to determine the influence of seasonal changes, kind of soil (sandy or clayey) and agronomic practices, such as irrigation, on cladode qualitative and quantitative composition. For this purpose, the biochemical composition of cladodes, collected during two years of OFI cultivation in experimental specialized organic orchards in Mazzarino (CL, Italy), was determined. Significant differences were found in polyphenols and monosaccharides amounts, i.e. % of arabinose increased and the % of mannose decreased in samples harvested during warmer season compared to winter. Besides, the irrigation positively influenced carbohydrates amount and consequently mucilage quality, especially in clayey soil.

Considering the positive economic trend of these by-products due to their multifunctional applications, these results can provide a model for other crop species in Mediterranean area, in order to address local specific-solutions as a downstream process of labour-intensive and environmentally-friendly innovation in crop management.