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Agronomic Evaluation Of 13 Cotton Varieties To Organic Cultivation In A Hot Arid Environment

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Abstract

Cotton (*Gossypium* spp.), belonging to the *Malvaceae* family, is a semi-xerophytic species native to central-northern America and Mexico [1]. It is one of the most relevant species for the production of natural fiber. Unlike most agricultural raw materials, cotton fiber is not produced from one but from 39 species of *Gossypium*. In the last few years, the growing interest in natural fibers around the world has led to a revival of cotton cultivation in the Mediterranean area as well [2]. With the aim of its possible re-establishment in Sicilian environment, this work has set the objective of evaluating the agronomic response of 13 different genotypes, belonging to the species of *Gossypium hirsutum* L., *Gossypium barbadense* L. and hybrids of *G. hirsutum* × *G. barbadense*, grown under organic regime.

The test was carried out in 2023 in Sicily (Italy), adopting an experimental design with randomized blocks with three replicates. Regarding to production data, the raw fiber yield, the lint fiber % and the seed % showed highly significant differences ($p \leq 0.001$). The highest raw fiber yield was obtained in the variety PRG 9811 (5.99 t ha⁻¹), while the lowest yield in Olivia C1 (2.0 t ha⁻¹). Both varieties belong to the species of *G. hirsutum* and come from Greece. The highest percentage of lint fiber was found in the variety Concha (48,45 %) of *G. hirsutum*, that comes from Spain; while the lowest was found in the variety HA1432 (37,37 %), a hybrid of *G. hirsutum* and *G. barbadense* that comes from the US.

The results of this study are promising, revealing the possible reintroduction of cotton in the cultivation systems of the semi-arid areas of Sicily. All the 13 varieties have shown a specific capacity to adapt to Sicilian climatic conditions and some of them stand out in terms of productivity.

References

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