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Poster Communication Abstract – 1.35

NOVEL GENETIC TOOLS FOR THE FINE-TUNING CONTROL OF IMPORTANT AGRONOMICAL TRAITS IN LEAFY CROP SPECIES (ENDI-FIT)

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Cichorium endivia is an annual herb belonging to the Asteraceae family, popular in central Italian cuisine for its bittersweet taste and consumed both raw and cooked. There are two main cultivars, distinguished by leaves morphology: *C. endivia* var. latifolium, commonly known as escarole with smooth leaves, and *C. endivia* var. crispum, known as endive and characterized by narrow curly leaves. Its relevance in the food market is rising - also outside Italy - for its nutritional values and ease of cultivation as a crop species.

Despite the relatively low requirements for its growth, the current climate crisis still poses a threat to production, especially due to unpredictability of flowering time.

The transition from vegetative growth to flowering stage - called bolting - is a critical process in plants life cycle, and it is tightly regulated by a complex network of genetic factors as well as environmental cues like light quality, temperature variation, and water stress that can shorten the

vegetative phase.

In leafy vegetables such as *C. endivia*, bolting represents a full stop for commercial production.

The emergence of reproductive tissues prevents the harvest due to morphological and biochemical changes (elongation and accumulation of secondary metabolites) that render the plant inedible causing loss in yield and resources.

Cultivation of *C. endivia* could be optimized by adapting the species to climate changes and making production more stable and sustainable in terms of costs and resources.

To this end, cutting-edge omics technologies are being used in an interdisciplinary effort to further describe and characterize the flowering pathway and find key genes that control flowering time: the genetic diversity of escaroles and endives is being exploited to study the effects of abiotic stress on flowering time and plant biochemistry, and to identify molecular markers for precision breeding of more resistant varieties that can maintain yield and nutritional values in increasingly variable climate conditions.