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## COMPARATIVE EVALUATION OF APPLE CULTIVARS UNDER LATE SPRING FROST CONDITIONS IN THE HILLY AREA OF BISTRIȚA

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**Abstract:** Late spring frosts are an increasing threat to apple production under climate change conditions. A severe frost event ( $-5.2^{\circ}\text{C}$ ) recorded in April 2025 caused significant damage in orchards from the hilly area of Bistrița. This study evaluated the response of 33 apple cultivars and two hybrids. The results highlight the importance of selecting adapted genotypes for sustainable apple production and breeding programs focused on frost tolerance.

### Introduction

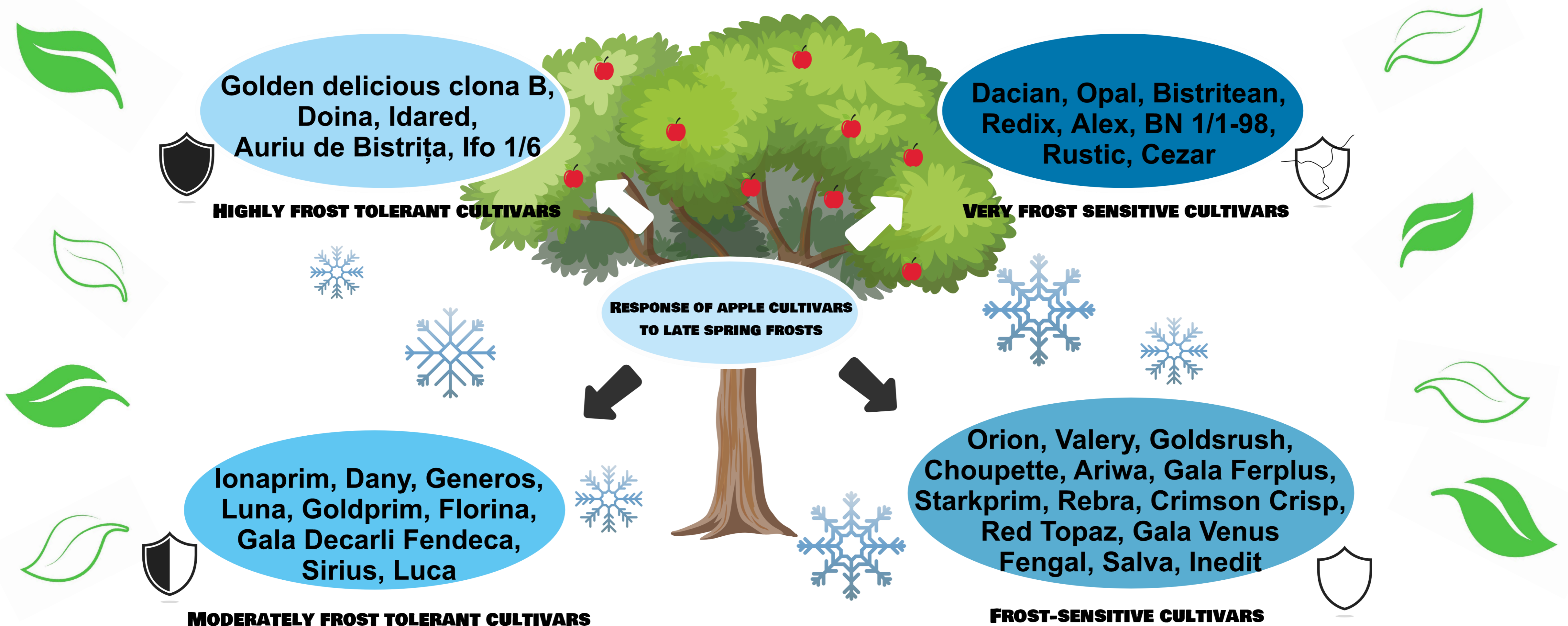
Apple productivity is highly affected by environmental conditions during flowering. Late spring frosts, intensified by climate change, can severely damage flowers and reduce yield. Evaluating cultivar response to frost stress is important for selecting resilient genotypes and improving orchard sustainability in the hilly area of Bistrița



### Materials and Methods

The study was carried out in a comparative apple orchard established at FRDS Bistrița. Frost damage was evaluated seven days after the frost event by randomly sampling 100 buds from four trees of each cultivar and determining the percentage of affected buds.

### Results and Discussion



### Conclusions

Significant differences in frost tolerance were observed among apple cultivars. Doina, Ifo 1/6, Dany, and Sirius showed better adaptation, while Dacian, Opal and Bistritean were the most sensitive to late spring frost.