Climatic resistance in some interspecific wine grape hybrid families

EDIT HAJDU

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Summary: In the lowland wine regions, which comprise almost half of the total wine production area in Hungary, meteorological observations indicate that severe winter frosts and deficiencies in precipitation occur in every 3rd year. Under these conditions, stable production requires varieties which can tolerate -23 to -25 °C and can be grown at a low yearly precipitation of 350-400 mm.

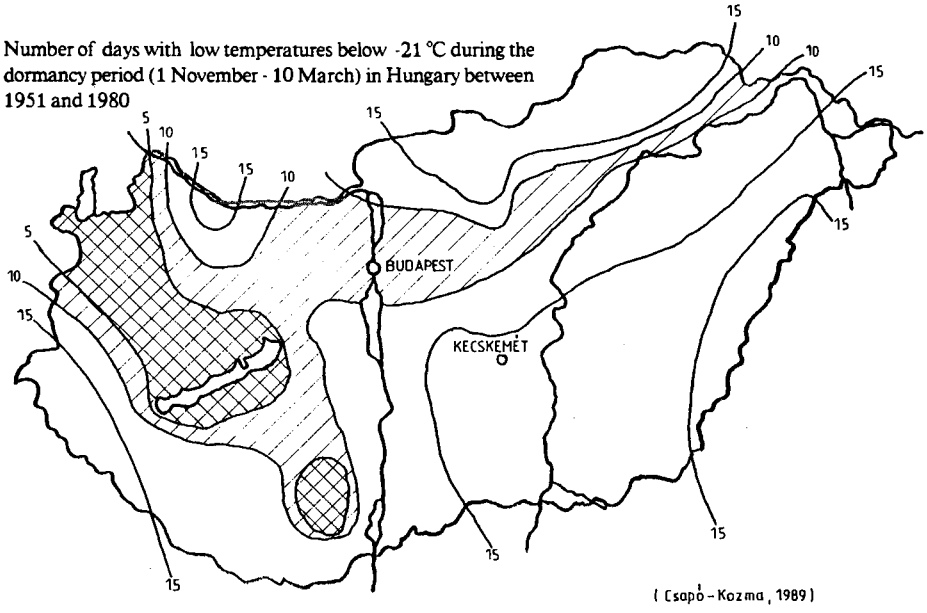
A part of our breeding programme includes breeding of wine grape varieties with climatic resistance. In our crosses interspecific and Eurasian hybrids are used as gene sources. In the progenies of hybrid families some individuals with excellent winterhardiness have segregated. Their distribution and characters are presented.

Key words: Hungary, climate, cold, precipitation, winter, dormancy, bud, resistance, selection, hybrid.

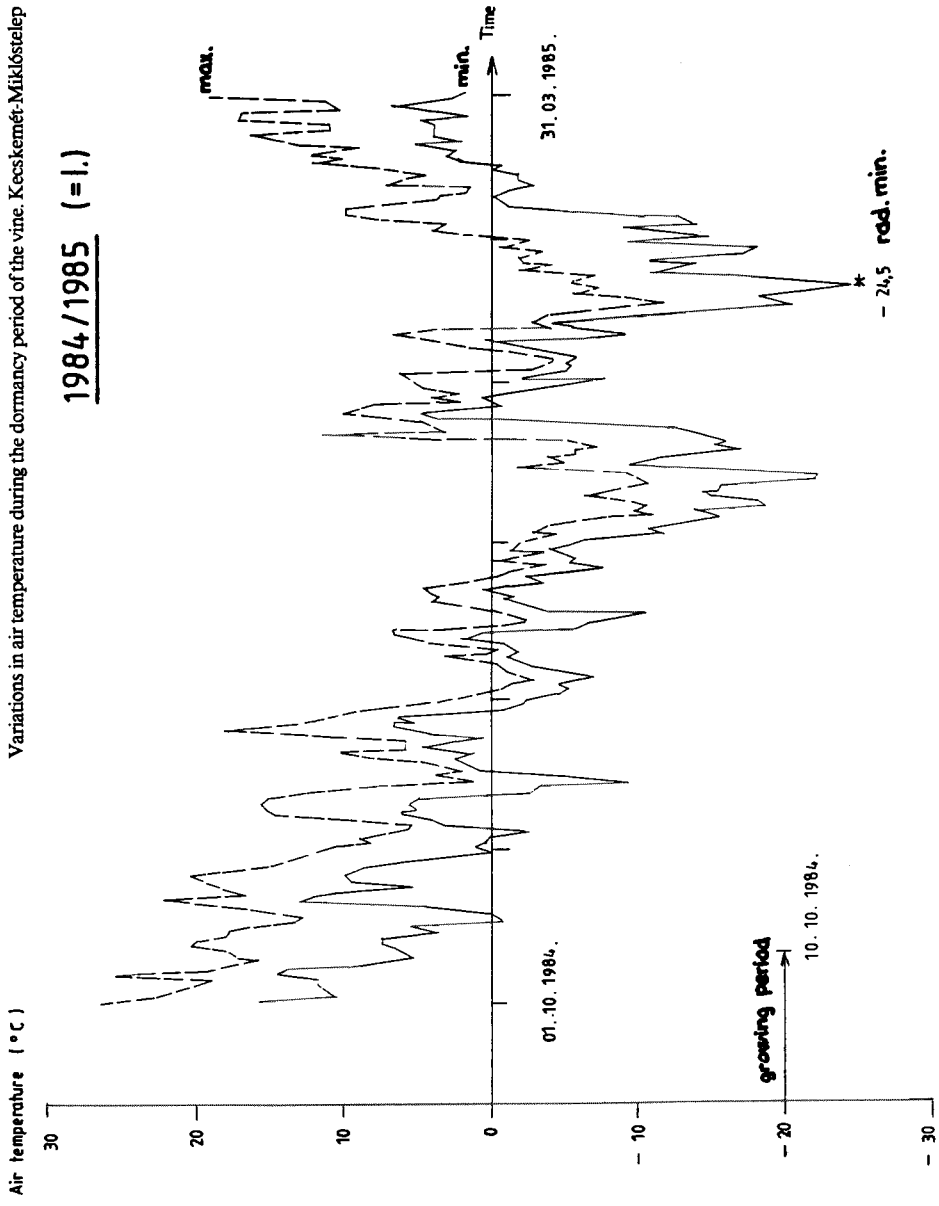
Frequency of winters with severe frost in Hungary between 1902 and 1988

Year	Cultivation mode
1928/1929	Low training
1941/1942	" "
1962/1963	" "
1963/1964	" "
1984/1985	High training
1986/1987	" "
1988/1989	" "

Number of days with low temperatures below -21 °C during the dormancy period (1 November - 10 March) in Hungary between 1951 and 1980

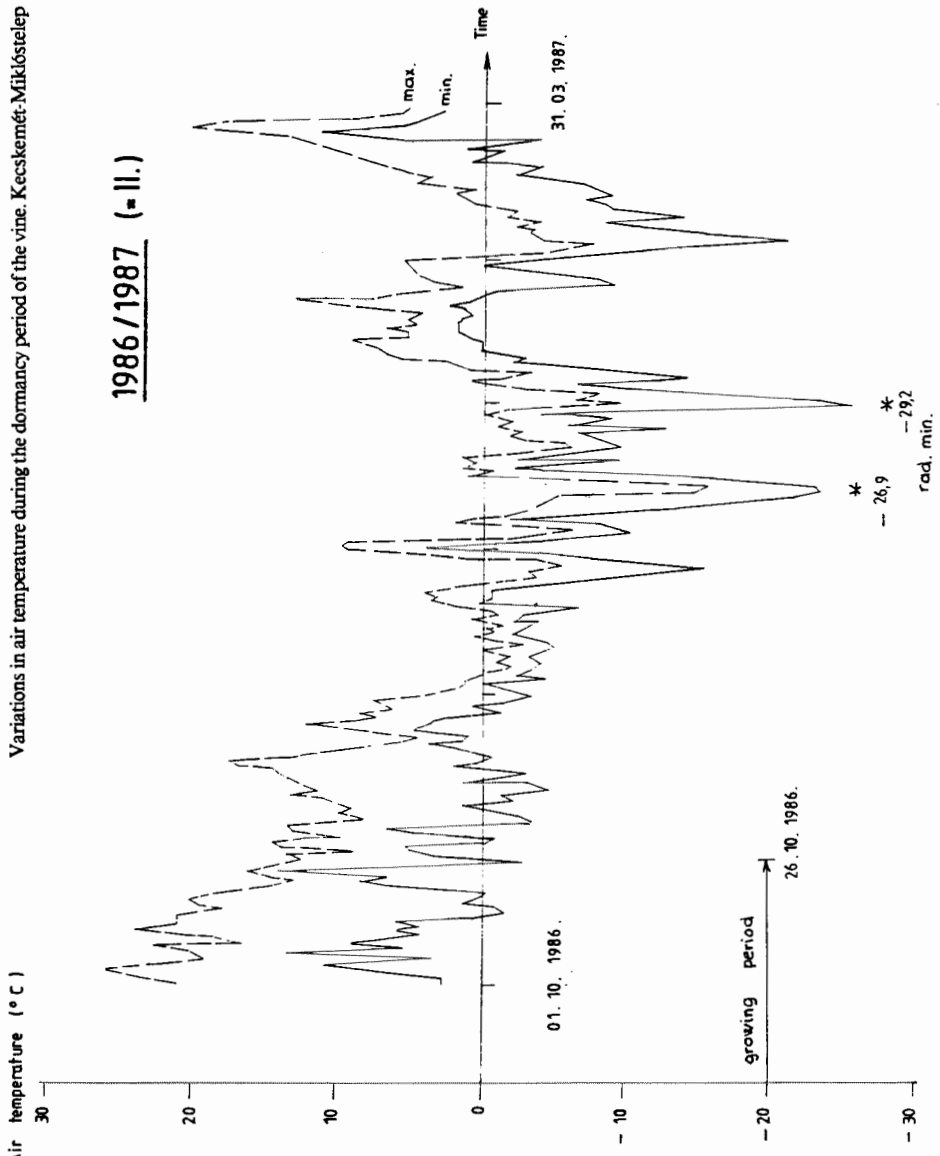


(Csapó - Kozma, 1989)

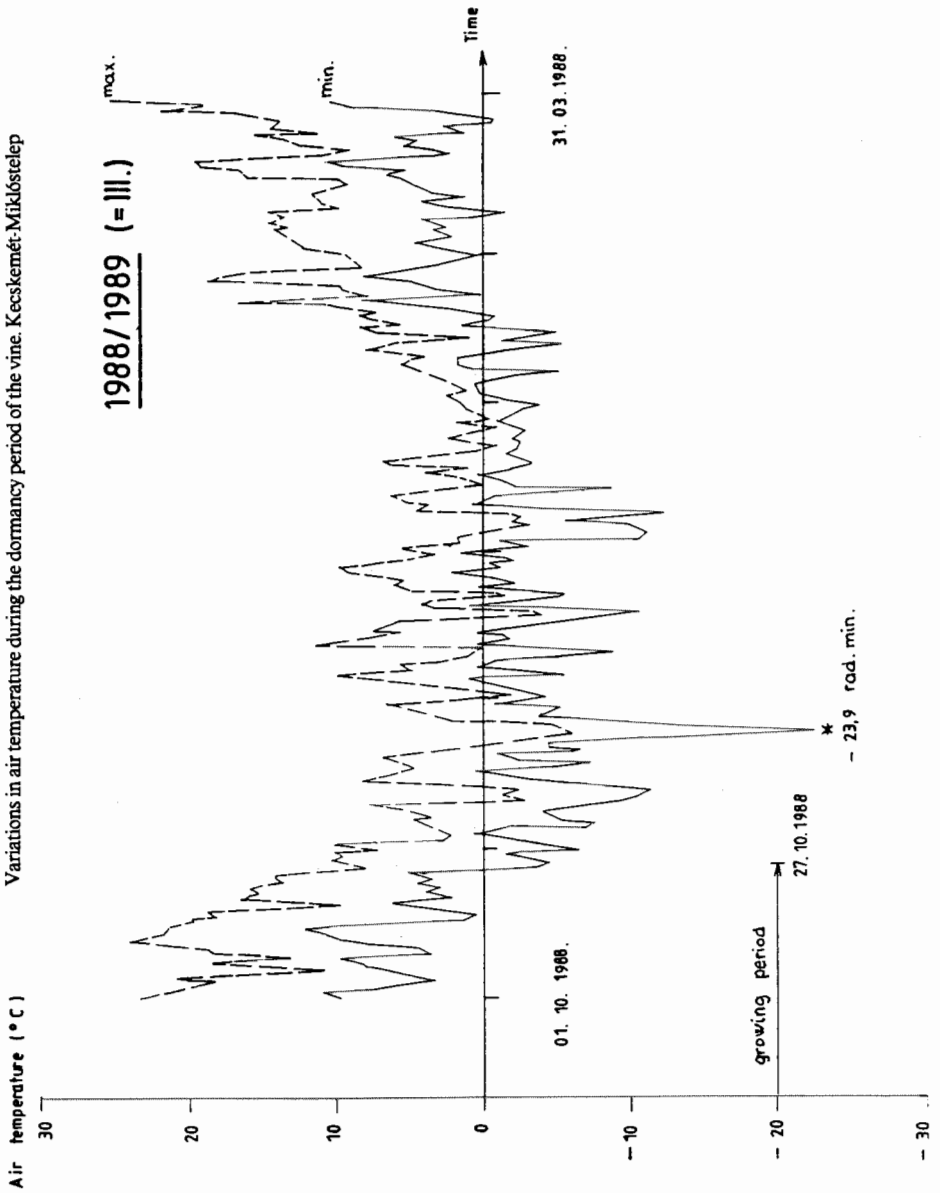


Results

The last three winters with severe frosts (1984/1985, 1986/1987, 1988/1989) exerted high selection pressure on seedlings grown in the field on sandy soils under arid conditions. Selection conditions were excellent for climate tolerance and especially for winter hardiness.

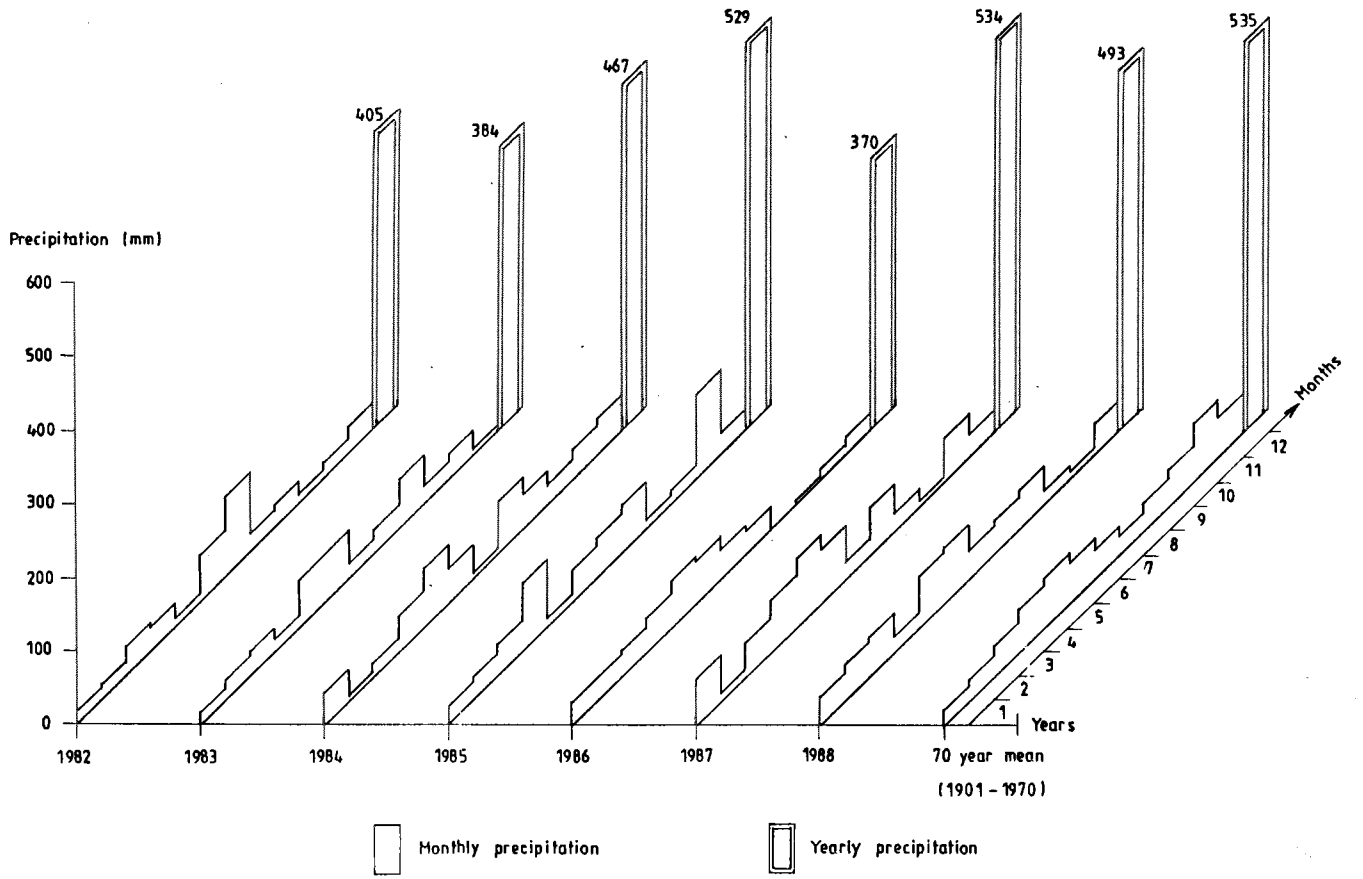


In the winter of 1984/1985 (-23 °C) individuals of good winter tolerance, in the winter of 1986/1987 (-25 °C) individuals of good winter tolerance and relatively good frost tolerance, and at the beginning of winter in 1988/1989 (-24 °C) individuals of good winter tolerance and early dormancy could be selected.



Winter tolerance and relative frost tolerance are well transmitted by the interspecific hybrid varieties RF 48, Zalagyöngye and Kunleány. The interspecific hybrid Kunleány used both as female and male parent in reciprocal crosses transmitted good winter tolerance and also relatively good frost tolerance.

Precipitation distribution per month and year in Kecskemét between 1982 and 1988



Seedling distribution in some hybrid families based on winter hardiness of the main buds in three winters with severe frost
(1984/1985, 1986/1987, 1988/1989 = I., II., III.)

HYBRID CHARACTERISTICS:

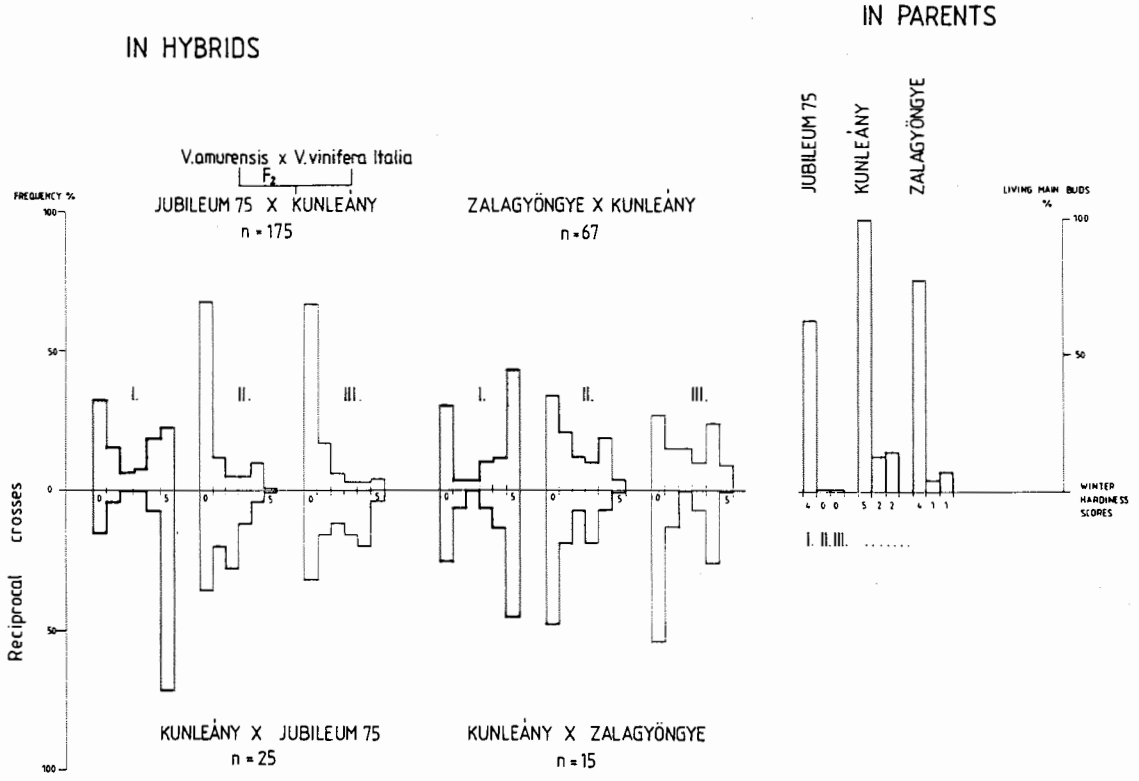
n = seedling number in hybrid families
Year of seedling planting: 1983
Cultivation mode: high training

EVALUATION FOR WINTER TOLERANCE:

at sprouting: 23. April 1986 (= I.)
6. Mai 1987 (= II.)
19. April 1989 (= III.)

EVALUATION METHOD: scoring

0 = no sprouting
5 = 100% sprouting of main buds



Seedling distribution in some hybrid families based on winter hardiness of the main buds in three winters with severe frost
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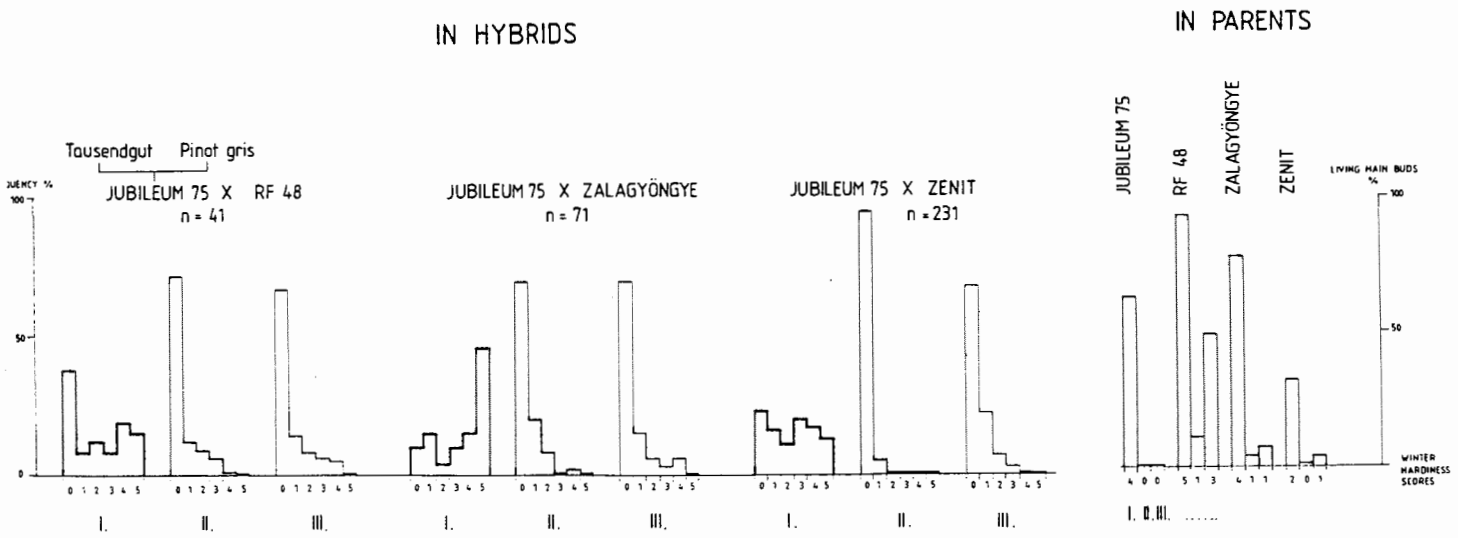

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