Frost tolerance of selected Rosa cultivars from the collection of Gene Bank at Research Institute of Horticulture in Poland during spring deacclimation under warming climate

Bożena Matysiak

Research Institute of Horticulture, Poland



# Introduction and methods

- Climate warming and increasing temperature variation may cause premature loss of cold hardiness of garden roses during spring deacclimation.
- Unusual last winter's weather in Poland (warm January and February and heavy frosts in March)
- The aim of the study was to determine frost tolerance of 10 garden roses during early spring deacclimation (4 climbing, 6 shrub roses).

#### Frost tolerance under controlled conditions

- I. -18°C (temperature-controlled chamber)
- 2. +4°C (control plants)
- REL (relative electrolyte leakage) method degree of injury
- 2 times (beginning of February, mid-March 2018)

Assessment of overwintering field grown roses in 2017 and 2018.

Relative electrolyte leakage (REL %) from current season's stems of *Rosa* cultivars grown in field conditions (evaluation in February)



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**Relative electrolyte leakage (REL %)** from current season's stems of Rosa cultivars exposed to subfreezing -18°C temp. in controlled conditions (evaluation in February)



### Relative electrolyte leakage (REL %) from current season's stems of *Rosa* cultivars grown in field conditions (evaluation in March)



Relative electrolyte leakage (REL %) from current season's stems of *Rosa* cultivars exposed to subfreezing -18°C temp. in controlled conditions (evaluation in March)





# Conclusions

- The electrolyte leakage method is useful for determining frost tolerance of garden roses during early spring deacclimation.
- Results of REL test were highly correlated with field-based freezing injury data and overwintering garden roses.
- The most tolerant to low temperature during deacclimation: 'Flammentanz', 'Florentina', 'Louise Odier', 'Sympathie' and 'Schwanensee'.
- The most sensitive: That's Jazz 'Chopin', 'Uncle Walter' and 'Venrosa'.



### Thank you for your attention



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