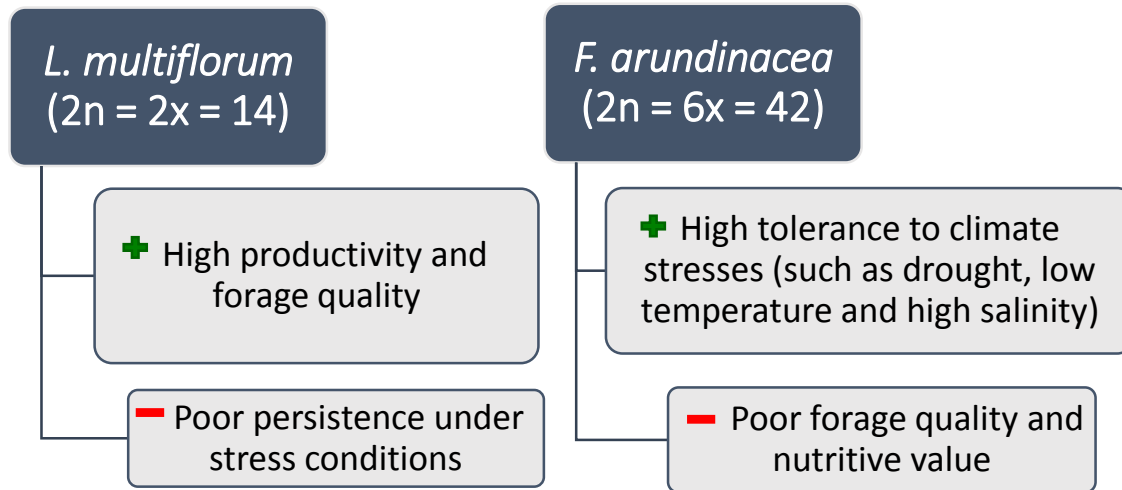


INTRODUCTION



INTROGRESSION

Lolium and *Festuca* species can be hybridized readily, and their homoeologous chromosomes can recombine at high frequency in intergeneric hybrids. This creates the possibility to transfer of beneficial traits from one species to another during the process of crossing.

PLANT MATERIAL

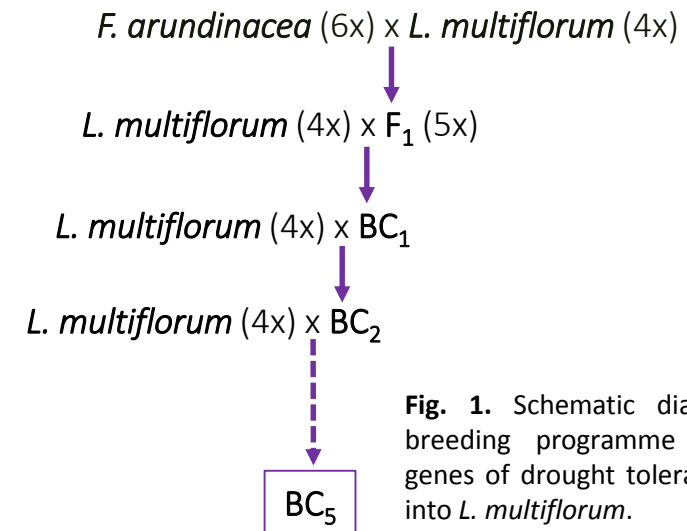


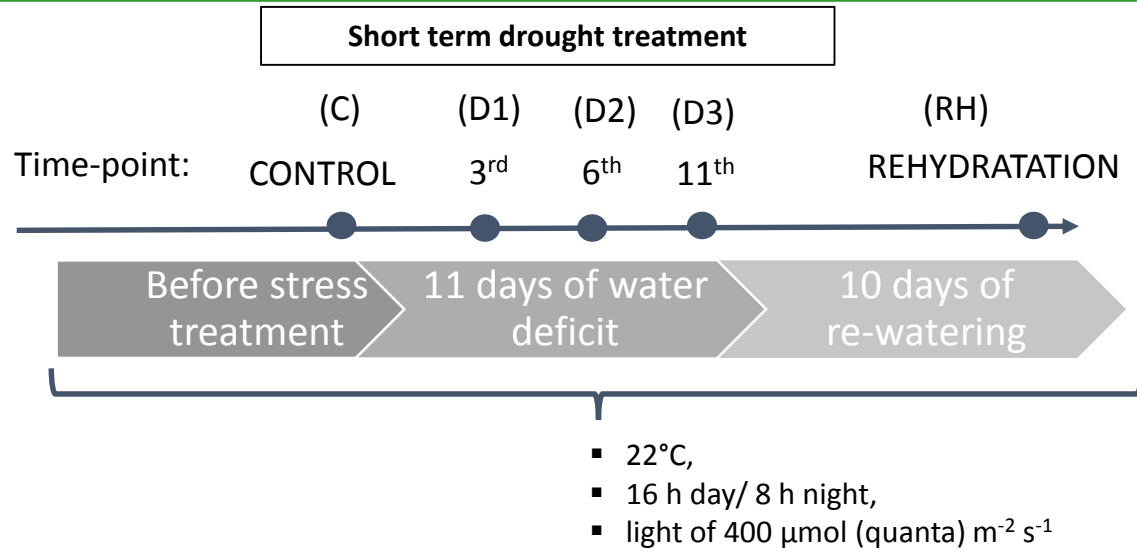
Fig. 1. Schematic diagram of the backcross breeding programme performed to transfer genes of drought tolerance from *F. arundinacea* into *L. multiflorum*.

Table 1. Characteristics of selected *L. multiflorum*/*F. arundinacea* introgression forms

Genotype of BC ₅	Winter hardiness	Frost tolerance	Resistance to <i>Microdochium nivale</i>
180/30/19	++	-	++
180/30/75	++	+	++
180/30/84	-	+	-
180/30/138	-	++	-

Trait intensity:
(++) high,
(+) low,
(-) lack of stress tolerance/resistance.

SCHEME OF EXPERIMENT



Physiological parameter measurements

Relative water content (RWC)

Electrolyte leakage (EL)

Chlorophyll fluorescence

CONCLUSION

The physiological parameters such as RWC and EL could be good indicators of tolerance to soil water deficit and ability to recover after stress cessation in the *L. multiflorum*/*F. arundinacea* introgression forms as it was demonstrated earlier for *F. arundinacea* (Kosmala et al. 2012).

References

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- Augustyniak A, Masajada K, Płażek A, Pocięcha E, Dziurka M, Kosmala A (2016) Molecular indicators of resistance to *Microdochium nivale* in *Lolium multiflorum*/*Festuca arundinacea* introgression forms. Abstracts of the 20th Eucarpia General Congress of Eucarpia, 29 August – 1 September, 2016, Zurich, Switzerland. p. 246.
- Kosmala A, Perlikowski D, Pawłowicz I, Rapacz M (2012) Changes in the chloroplast proteome following water deficit and subsequent watering in a high and a low drought tolerant genotype of *Festuca arundinacea*. *Journal of Experimental Botany* 63: 6161-6172.

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RESULTS AND DISCUSSION

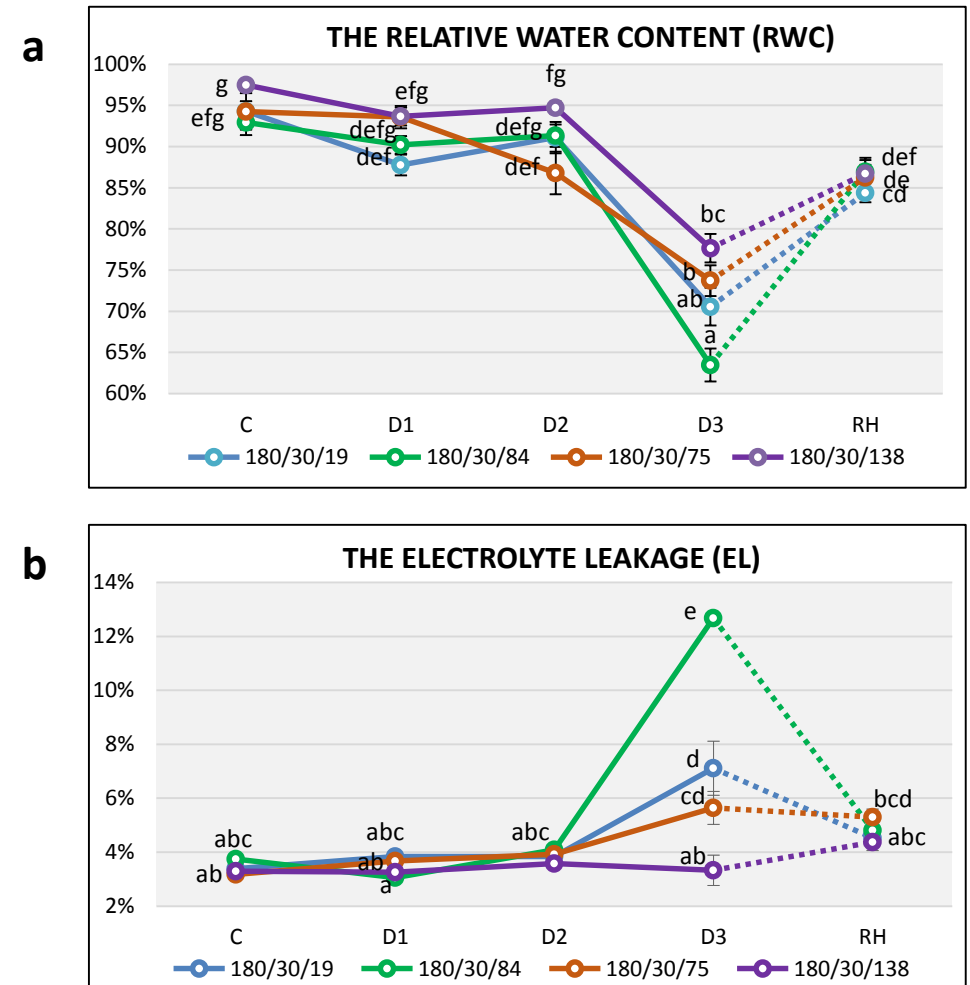


Fig. 2. The Relative Water Content (RWC) (a) and the Electrolyte Leakage (EL) (b) in four *L. multiflorum*/*F. arundinacea* introgression forms before stress treatment (C), on the 3rd (D1), 6th (D2), and 11th (D3) day of water deficit and 10 days after re-hydration (RH) initiation. The data represent means for ten individual leaves ± SE. Values of the same parameters marked with the same letter did not differ significantly at P = 0.05 according to Tukey HSD test.