

GENETIC RESOURCES OF NORDIC TIMOTHY

PHENOTYPIC AND MOLECULAR CHARACTERISATION OF NORDIC TIMOTHY (*PHLEUM PRATENSE* L.)

Fjellheim S¹, Pedersen AJ², Andersen JR², Antonius-Klemola K⁶, Bondo L⁷, Brantestam AK⁷, Dafgård L⁷, Helgadóttir A³, Isoaho M⁵, Jensen LB², Lübberstedt T², Mannien O⁶, Marum P⁴, Merker A⁸, Tanuanpää P⁶, Weibull J⁹, Weibull P⁸, and Rognli OA¹

¹Norwegian University of Life Sciences, Department of Plant and Environmental Sciences, PO BOX 5003, N-1432 Ås, Norway, ²University of Aarhus, Faculty of Agricultural Sciences, Research Centre Flakkebjerg, Department of Genetics and biotechnology, Forsøgsvej 1, 4200 Slagelse, Denmark, ³Agricultural University of Iceland, Department of Land and Animal Resources, Keldnaholt, IS-112 Reykjavík, Iceland, ⁴Graminor, Bjørke Forsøksgård, Hommelstadvegen 60, 2344 Ilseng, Norway, ⁵Boreal Plant Breeding LTD, Myllytie 10, FIN-31600 Jokioinen, Finland, ⁶MTT Agrifood Research, FI-31600 Jokioinen, Finland, ⁷Nordic Gene Bank, PO BOX 41, SE-23053 Alnarp, Sweden, ⁸Swedish University of Agricultural Sciences, PO BOX 7070, 750 07 Uppsala, Sweden, ⁹Centrum för biologisk mångfald, Swedish University of Agricultural Sciences, PO BOX 7070, 750 07 Uppsala, Sweden

TIMOTHY - *PHLEUM PRATENSE* L. - THE NORDIC FORAGE SPECIES

Timothy is the most important forage grass species in the northern part of the Nordic countries due to its adaptation to the cool and relatively humid northern climate. In Finland, 60-70 % of pastures are sown with timothy. Correspondingly, in Sweden 50 % and in Norway 52 % of the seed production acreage of forage grass is covered with this species. This figure is even higher in Iceland where timothy is the dominating grassland species. Most of the forage grass production is utilised in milk and meat production, which counts 48, 30, 64 and 17 % of the agricultural income in Finland, Sweden, Norway and Denmark, respectively.

However, serious winter damages, which significantly lower forage yields, occur regularly in the Nordic region. Winter-hardiness of timothy involves tolerance to many environmental stresses including ice-encasement, frost, and low-temperature pathogens. Areas with sparse snow cover may suffer from frost and ice-encasement. As an example, a typical loss of sward due to winter damage at the Lapland experimental station in Finland has been 24 % for the first year sward. According to a report of the Nordic Council dating back to 1988, winter damages caused economical losses of 317 million NOK (466 million NOK when indexed to year 2005 level) each year in Finland, 71 million NOK in Sweden and 94 million NOK in Norway

In addition, farmer's inputs in fertilisers may not be fully exploited by the forage crop due to winter damages, and nutrients not utilised by the forage are causing environmental problems. In other important crop species we can rely on publicly available international research and development. This is not the case for timothy since this species is primarily utilised at higher latitudes and research is conducted mostly within the Nordic region

Therefore, the Nordic countries should have a special obligation to fund research in this economically important species. The Nordic plant breeders have so far been quite successful in developing new, highyielding varieties. However, the challenges today are to further improve winter hardiness and quality, as well as to produce varieties that might be exported to new markets, e.g. Russia

Specific knowledge and technologies from each of the participating partners will be utilised and combined into a joint effort that will result in comprehensive knowledge of timothy genetic resources in the areas of conservation (ex situ/in situ), collection needs of the species, population structure and dynamics including dispersion history and application of molecular tools in breeding of timothy

GOALS

- Enhance conservation and use of genetic resources of timothy through proper phenotypic and genetic characterisation
- Improve sustainability and economic output from agriculture based on forage feed in the Nordic region
- Strengthen co-operation between all stakeholders in the field of genetic resource management and germplasm utilisation in the Nordic countries
- Ultimately, new high yielding and high quality timothy varieties can be developed more efficiently in the future

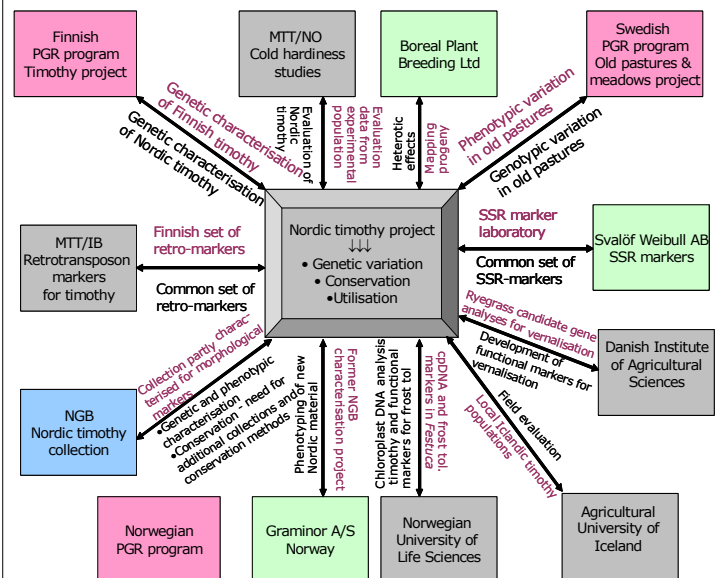


Figure 1: Background projects of different partners marked with purple text. The role/benefits of the present project marked with black text. Research partners highlighted with grey, plant breeding companies with green, national programmes for plant genetic resources with pink and gene resource centre (NGB) with blue



Homepage: www.nordictimothy.net



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