

New Variety: Armstrong – a high protein, high oil variety with β -glucan to boot!

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Summary: A brief description of Armstrong - a new a high protein, high oil, high β -glucan variety on the Swedish variety list.

Background

CropTailor has developed a unique mutant oat population that has been extensively used for trait discovery since 2007. Even though variety development has not been our main focus, a comprehensive selection, crossing, and purification program has resulted in a range of pure lines which are ready for variety testing and registration (and more are on the way!).

‘Armstrong’ is the first oat line that CropTailor has submitted to official registration tests and the first line from CropTailor that has been approved. It is, therefore, also a proof of concept – namely, that our method of breeding works and generates interesting, distinguishable, uniform, and stable lines. Armstrong is derived from one of CropTailor’s mutagenized oat lines (so called CT-lines) which were produced by traditional (random) mutagenesis of seeds from the Swedish variety ‘Belinda’. Belinda, in turn, was bred by Bengt Mattson at Svalöv Weibull (now Lantmännen seed) and was approved for the Swedish national variety list in 1996. The pedigree of Belinda is seen in Fig.1. One advantage of using Belinda, is that the genome of its grandparent ‘Sang’ has been sequenced and assembled by CropTailor and the research consortium ScanOats at Lund University. A Belinda genome is also in the pipeline.

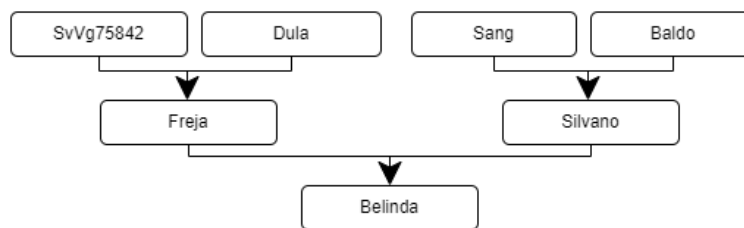


Figure 1. Belinda pedigree

Armstrong was mainly selected for its combination of high β -glucan and protein content – this is in line with CropTailor’s goal of making oat a high-valued crop by improving its beneficial properties for farmers and consumers alike. Starting 2018-12-20, Armstrong underwent and passed two major external evaluations: the DUS test, in accordance with Swedish Seed Testing and Certification Institute (SUK) rules, and VCU evaluation, by the Swedish University of

Agricultural Sciences (SLU). As of 21 November 2022, CropTailor has been granted EU plant breeder's rights for Armstrong.

Armstrong: Characteristics

During several years of in-house multi-location field testing, Armstrong has shown significantly elevated levels of protein and beta-glucan compared to standard Nordic milling oat varieties (Fig 2). Only the variety 'Active' (from Lantmännen) has higher levels. However, Armstrong is stronger agronomically, with higher yield and better lodging resistance. Armstrong also has higher lipid content than other market varieties (Fig 2)¹.

In addition, the cadmium uptake of Armstrong was 40% lower than that of the market-leading milling oat 'Galant'. Regarding the thousand kernel weight, Armstrong's average was 36.2, which is lower than Belinda (37.8) but higher than Galant (35.0).

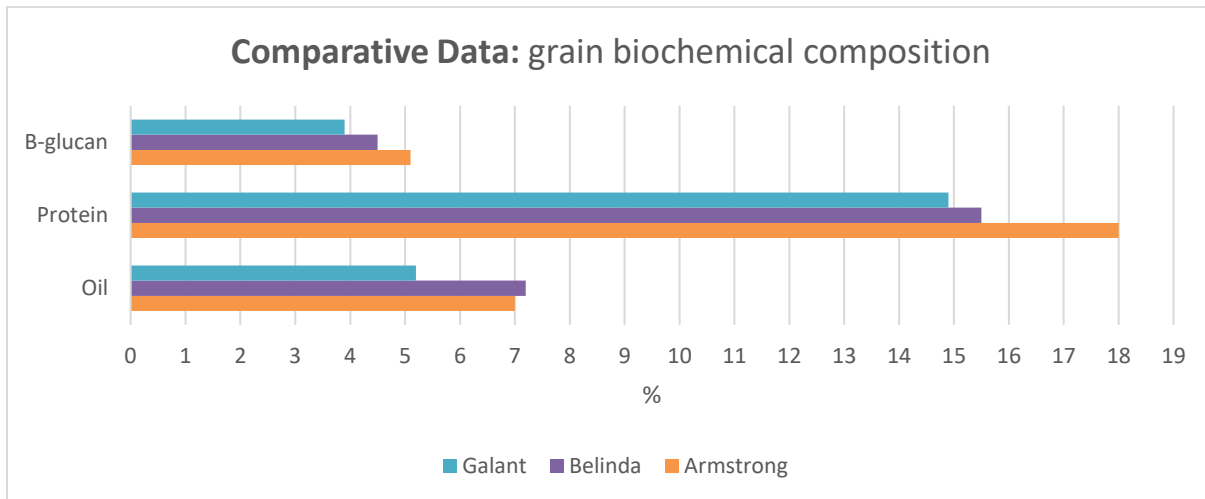


Figure 2. Comparative data of biochemical composition for Armstrong, Belinda (parent variety), and Galant (market-leading variety). Data provided by Lantmännen seed.

During 2022, Armstrong was included in experimental field trials performed by ScanOats researchers at the Swedish University of Agricultural Sciences (SLU) studying the effect of early/late sowing and nitrogen dosage on protein content. We are excited to learn the results from these trials!

If the reader wishes to learn more about our new variety and its composition, physiology, and agronomic performance or anything else related to CropTailor and our lines, please don't hesitate to contact us.

Armstrong is approved for the period 2022-04-25 - 2032-12-31.

¹ Note that Armstrong's parent variety Belinda, which has higher lipid content, is no longer on the Swedish variety list.