

Effects of sowing date and growth regulators on yield and nutritional quality of *Avena sativa* L. cv. Júpiter INIA in comparison to a lower β -glucan control cultivar

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The oat-breeding program of INIA Chile has been developing pure lines with increased nutritional quality. Cultivar Júpiter INIA (JU) was released in 2016, exhibiting higher β -glucan and protein contents in groats than all other commercially available cultivars in Chile. JU, however, has lower grain yield than the most widespread cultivar Supernova INIA (SN), which could limit its adoption by farmers. It is possible that the yield gap JU has with SN could be narrowed by optimizing JU's agronomical management. The working hypothesis of this research was that grain yield of JU can be equal to the SN control by adjusting sowing date (SD) and using growth regulators (GR). Our objective was to evaluate the existence of interactions between genotype (JU vs. SN) and SD (G x SD) and genotype and GR (G x GR). Two experiments were conducted in 2016 and 2017 at three different locations each. We evaluated separately for 2016 and 2017 the effects of location (random), SD, block (random), genotype, and GR, and the interactions between genotype and location (G x L), SD and GR under a split-split plot randomized design. Grain content of protein and β -glucan was evaluated in only one environment. SN's yield was consistently greater than JU's in 2017 ($P < 0.001$). There were no interactions between G x SD on yield both in 2016 ($P = 0.58$) and 2017 ($P > 0.19$). Likewise, there were no interactions between G x GR on yield both in 2016 ($P = 0.25$) and 2017 ($P = 0.81$). In 2016, there were interactions G x SD with greater contents of β -glucan ($P = 0.04$) and protein ($P = 0.015$) in JU at the intermediate and later SD; greater grain nutritional quality in JU was confirmed. In summary, neither SD adjustment nor GR were useful to overcome the gap in grain yield of JU with regard to SN.