CONTRASTING TALL FESCUE SEED PRODUCTION SYSTEMS: CASE STUDIES

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INTRODUCTION

Tall fescue (*Festuca arundinacea* Schreb.) is the main perennial grass in Uruguayan artificial pastures. Seed used for sowing is mainly produced in Uruguay (92%), but average seed yield is low (< 400 kg/ha). New seed technologies are in process of adoption.
In 2020, the use of plant growth regulator Moddus was evaluated in two seed fields of tall fescue Rizar, but no differences with the check were obtained. Both fields were contrasting in some management practices, but principally, on the main technology used: irrigation (B) vs rainfed (A). The results form both fields generated good information, but questions arose about which the next steps are to improve seed yield.

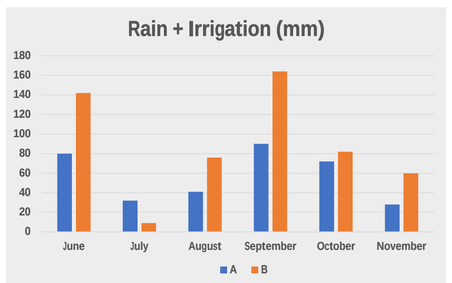
MATERIAL AND METHODS

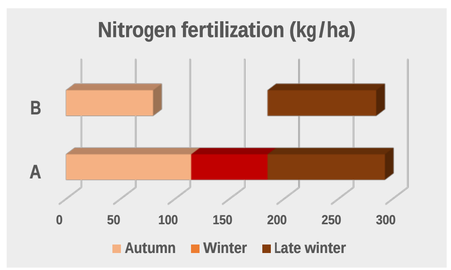
Seed yield was evaluated in 12 main plots of 0.24 to 0.31 ha size field (field seed yield - FSY) using a commercial harvester.
Small plots (potential seed yield – PSY) taken before windrowing (three samples in each main plot), where seed yield components (seed weight - TSW and inflorescence/m^2 - infl/m^2) were evaluated.
Seed losses were registered among windrows before harvest, within windrows after harvest and among windrows after harvest.
Total forage dry matter (DM t/ha) before windrowing was assessed in each main plot.

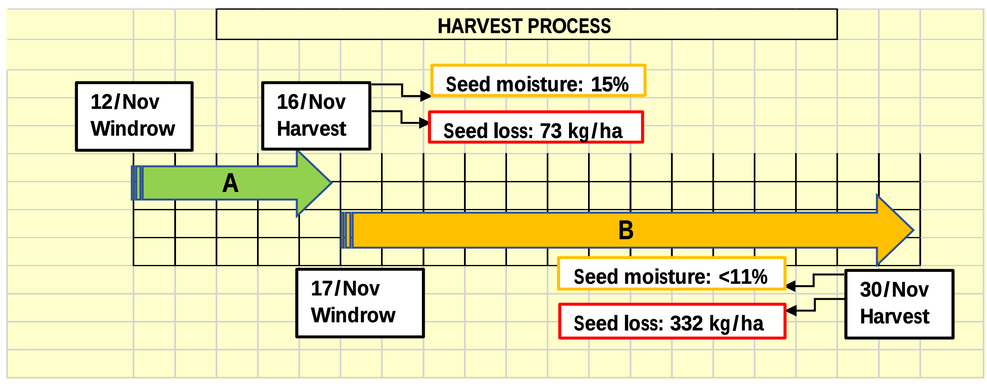
SIMILARITIES OF BOTH CASES

Same cultivar (Rizar), new crops of two (A) and three-years (B) old field areas; grazed from January to June; free of pests; 100 kg/ha of nitrogen in August/September and windrowed at the middle of November.

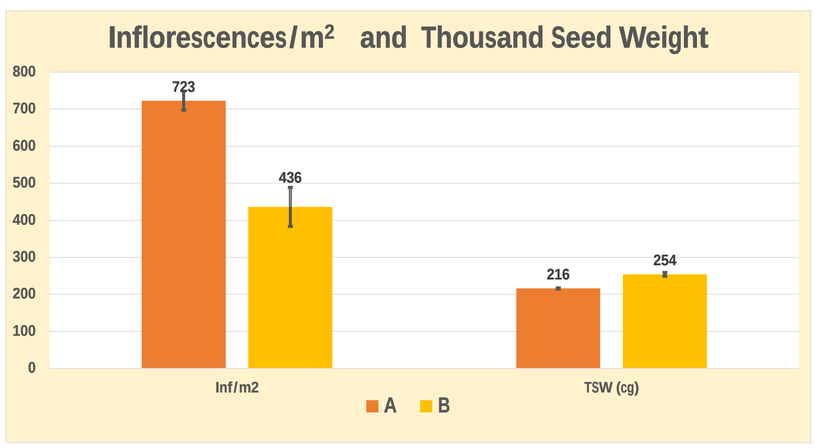
MAIN DIFFERENCES OF BOTH CASES

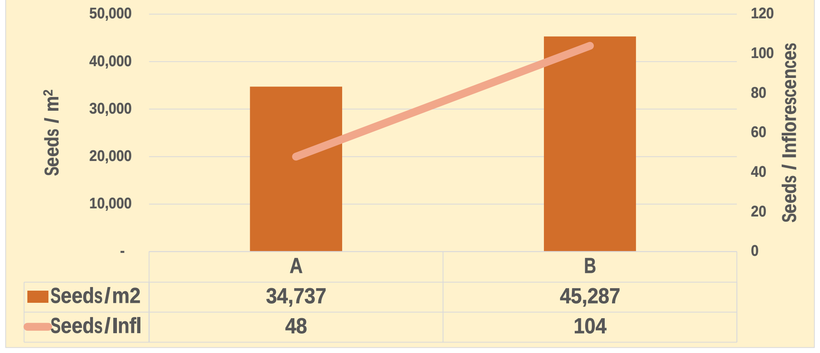






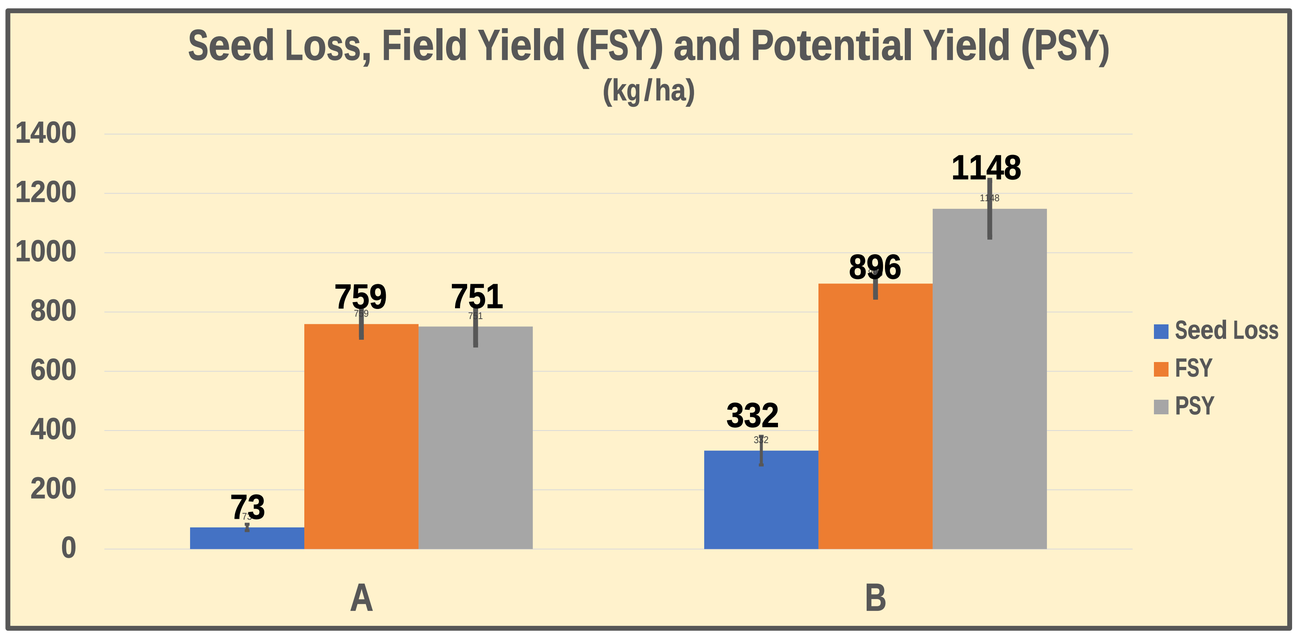
RESULTS





The number of Inflorescences/m^2 in Case A was high for Uruguayan environment, but not for Case B, where it is not clear why only a normal value was generated. The difference in TSW is probably due to the soil water availability during seed filling for each case.

Higher Seeds/m^2 in Case B was due to bigger inflorescences, higher seed set or a combination of both, most likely due to irrigation. Rainfed crops suffer normally stress during seed set. The period from grazing closure to harvest generates high water demandant crops with biomasses higher than 10 t/ha.



Field seed yield in both cases was high in relation to average seed yield production in Uruguay. Case A exploited its drying capacity and reduced clearly seed losses. Case B took advantage of irrigation and with good seed weight and seed set constructed a high potential, which could not be achieved because of seed losses.
With these results we hypothesize that the route to 1.0 t/ha seed yield could be an adequate nitrogen rate in fall/winter to ensure enough new tillers, irrigation to obtain better seed set and seed weight, and seed drying to be able to harvest earlier with high seed humidity and thus reduce seed losses.

CONCLUTIONS?

- The low number of inflorescences in the irrigated field was caused only by applying less nitrogen during fall/winter?
- Do we must improve management of irrigated crops, closing the grazing later?
- How irrigate to promote tillers differentiation instead of new tillers, generating a crop with less total forage dry matter and higher harvest index?
- **Could it be possible to combine the better yield components of these two fields (723 infl/m2, 2.54 g TSW, 104 seeds/infl) to reach 1.910 kg/ha seed tall fescue yield?**