ProINTA Carmina: First Argentine Alfalfa Cultivar Tolerant to Bloat

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INTA-Produsem SA joint venture - Argentina

Frothy bloat is a very serious problem in Argentina. Even though there are several methods to reduce its incidence, the availability of a bloat-tolerant cultivar would be the most economic and practical solution. With that objective, INTA Manfredi initiated in 1991 a breeding program based on phenotypic and genotypic recurrent selection for *in situ* lower initial rate of dry matter (IRDMD) disappearance (1, 2). After 3 cycles of selection, ProINTA Carmina, a non-dormant (FD 8) cultivar with higher fiber (FDA and FDN) and lower IRDMD was released. In order to evaluate the real potential of ProINTA Carmina for bloat reduction, several identical grazing experiments were planted in 2003 at Manfredi (Cdba), Marcos Juarez (Cdba) and General Villegas (Bs As) Exp. Stn.-INTA. Each trial included 36 steers (230-250 kg) that were distributed in a randomized complete block (RCB) design with two treatments (ProINTA Carmina and a check) and two replicates (0,5 ha each). Bloat severity was measured during spring-summer 2003/04 on a visual 0 (no bloat) to 5 (death) scale for every individual animal in a challenge-type grazing test. Challenges were effective every time alfalfa plots reached approximately 10% blooming. ProINTA Carmina had higher percentage ($p<0.05$) of non-bloated (grade 0) animals than the check at Manfredi (35,8% vs. 25.3%) and Marcos Juarez (63,9% vs. 47,1%); within little to moderately bloated animals (grades 1-3), ProINTA Carmina exhibited less severity than the check: 61.2% vs. 68.4% at Manfredi and 34.5% vs. 52.9% at Marcos Juarez, respectively. Another experiment was conducted in a cattle breeding ranch at Pasteur (Bs As), using an experimental design that included 80 bull calves and two 25-ha paddocks: one planted with ProINTA Carmina and the other with a check. Using a rotational grazing system, each 40-animal group was kept in its paddock for a 100-day period. Bloat was measured using the previously described scale. Results are summarized in Figure 1.

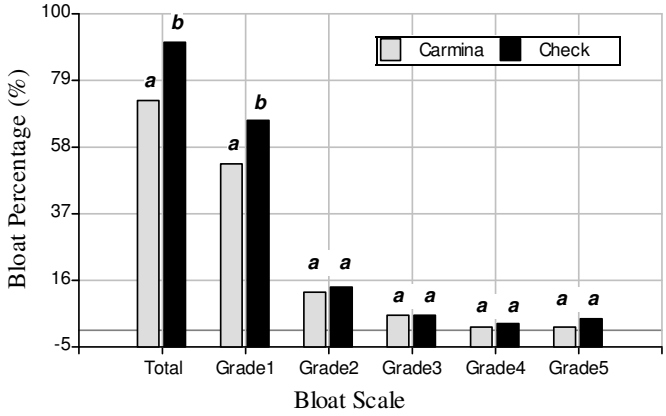

Figure 1: Bloat severity in a grazing trial at Pasteur (Buenos Aires)

Another experiment was conducted at Manfredi during 2005/2006 season. Two treatments (ProINTA Carmina and a check) and 42 steers were arranged in a RCB with 3 replicates (2 ha each). Using a 6-paddock rotational grazing system, animals were kept in each replicate for the 4-month evaluation period in which not only bloat severity (0-5 scale) but also beef production was measured. Steers exhibited very similar individual daily weight gains between both treatments (958 g steer^{-1} day^{-1} on ProINTA Carmina and 936 g steer^{-1} day^{-1} on the check). There were no differences in bloat severity along the trial until January 23th, when 4 animals died from bloat in the check. This bloating episode supported ProINTA Carmina´s higher final beef production per unit area (335.9 kg ha^{-1} vs. 233.7 kg ha^{-1}), daily production per unit area (3.18 kg ha^{-1} day^{-1} vs. 2.09 ha^{-1} day^{-1}), and stock efficiency (47.7% vs. 26.6%). Overall, it is concluded that ProINTA Carmina had not only a positive effect on reducing both bloat incidence and severity but also on beef production per unit area. However, it would be necessary to corroborate this performance for a longer number of years and locations.

References

1- Basigalup, D., C. Castell, V. Arolfo and M. Benítez 1998. Report of the 36th NAAIC, p. 90.
2- Basigalup, D., C. Castell and C. Giaveno. 2004. J. of Gen. & Breeding 57 (1): 31-38.