Seed Performance of Three Interespecific Hybrids of Elephant Grass × Pearl Millet under Controlled Deterioration

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Key words : interespecific , hybrids , *Pennisetumpurpureum* × *P . glaucum* ,recurrentselection ,controlled deterioration , viability

Introduction The interespecific hybrid *Pennisetum purpureum* (elephant grass) × *P . glaucum* (pearl millet) has been developed with the goal of getting the rusticity and high forage production of elephant grass and the high production of pure seeds of pearl millet (Schank *et al* . , 1996) . However , it revealed low phenotypic uniformity (around 50 .0%) as well as low pure seed production (5 -10 .0%) . A recurrent selection scheme has been applied , resulting in two populations (Cutting-and Grazing-types) , showing high phenotypic uniformity (around 80 .0%) and a good pure seed production (around 30 .0%) (Usberti *et al* . , 2005) . The goal of this work was to analyze their seed performances with controlled deterioration .

Materials and methods Five moisture content levels and three storage temperature (40℃ , 50℃ and 65℃) were used for each hybrid . Seed sub samples for each moisture content and storage temperature combination were sealed in laminated aluminum foiled packets and stored at those temperatures until complete survival curves were obtained .

Results and discussion The recurrent selection has not changed seed storability of the hybrids , however it has altered their seed sizes as well as increased initial seed quality (Ki) (Table 1) and seed size for Grazing-type population (lower and high-tiller plants) . Results were reversed for the Cutting-type population (higher and low-tiller plants) . Table 2 displays the viability equation constants estimated for each hybrid . Logarithmic relationships between seed moisture content and sigma are depicted in Figure 1 . It appears feasible to estimate the viability equation for the hybrids , through the constants K_E = 8 .033 ; C_W = 4 .662 ; C_H = 0 .02544 ; C_Q = 0 .000386 .

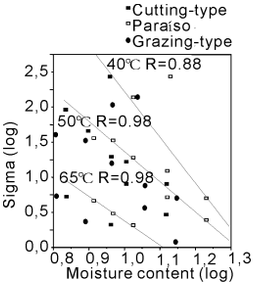

Figure 1

Table 1 K_i *(Probit) values for each hybrid .*

Hybrids	K_i	S .e .	Germination(%)
Cutting-type	0 .49	±0 .02	69 .1
Paraiso	0 .84	±0 .02	80 .2
Grazing-type	0 .68	±0 .02	75 .9

Table 2 *Viability equation constants for each hybrid .*

Constants	Cutting-type	Paraiso	Grazing-type
K_E	8 .417	7 .735	8 .285
C_W	5 .037	4 .658	4 .522
C_H	0 .02309	0 .01969	0 .03655
C_Q	0 .000436	0 .000403	0 .000300

Conclusions Recurrent selection did not change seed storability , however it altered seed size of the hybrids . The hybrids presented different values of Ki. Recurrent selection increased initial quality and seed size for Grazing-type hybrid , but contrasting results were obtained for Cutting-type hybrid . It was possible to estimate a unique viability equation for using with the three interspecific hybrids .

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