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~~Seed Production~~

The Section has continued with its basic objectives of: a) production and distribution of seed of experimental lines and of basic seed, and b) the study of limiting factors to production technology of important species.

Seed Production

Seed production areas are mainly located in Quilichao (Cauca) and Carimagua (Llanos Orientales), and facilities for cleaning, quality assessment and storage of seed are located at Palmira. Species and accessions for seed increase are defined by a Program Committee and depend on the potential demand for seed in the next phases of pasture evaluation.

Seed of a large number of species is produced in small plots in Quilichao, while larger seed production areas are concentrated in Carimagua. Quantities of seed produced during 1981 are shown in Table 1. Emphasis was on the genera Stylosanthes, Centrosema, and Desmodium.

Table 1. Summary of seed produced, October 1980–October 1981.

Genus	Accessions (No.)	Seed weight (kg)*
<u>Legumes</u>		
<u>Stylosanthes</u>	34	3,030.5
<u>Centrosema</u>	14	70.5
<u>Desmodium</u>	7	57.0
<u>Zornia</u>	6	67.0
<u>Aeschynomene</u>	2	88.0
<u>Pueraria</u>	1	2.0
Total legumes	64	3,314.5
<u>Grasses</u>		
<u>Andropogon</u>	3	4,949.0
<u>Brachiaria</u>	5	43.0
<u>Panicum</u>	1	8.0
Total grasses	9	5,000.0
Total all accessions	73	8,314.5

* Legumes, seed or seed in pod, > 95% purity.
Grasses, clean seed, > 35% purity.

D. ovalifolium 350 failed to produce seed in Carimagua during 1980 due to an early dry season which coincided with the onset of flowering. Observations suggest that this species requires good moisture availability extending through the flowering period for high seed production.

The quantities of seeds distributed by the Section to the Program and to collaborators are shown in Table 2. During 1981, 242 requests were handled and a total of 7370 kg of seed was distributed.

Table 2. Seed processed and distributed during 1980-1981.

Distribution*	Grasses (kg)	Legumes (kg)	Total (kg)
Pastures Program	3,327.3	2,708.8	6,036.1
Regional trials	138.6	30.7	169.3
Basic seed	1,015.0	62.0	1,077.0
Other	53.1	35.0	88.1
Grand total	4,534.0	2,836.5	7,370.5

*From a total of 242 composite requests.

Production Technology and *Andropogon gayanus*

In the Quilichao region, the two growing seasons offer two potential harvests annually, provided appropriate management is applied. An experiment is in progress comparing three defoliation treatments and two nitrogen levels. Burning stimulated higher seed yields and later maturity at 2 of 5 consecutive harvests. Otherwise burning, cutting, and cutting with removal of aftermath resulted in similar seed yields. Nitrogen (zero versus 100 kg/ha as urea) increased pure seed yields at 3 of 4 harvests, with increases averaging 40%. Overall, seed yields tended to decrease with age of stand.

The commercial management of established stands destined for seed production requires defoliation so as to restrict mature plant height and allow an efficient harvest. The simplest on-farm defoliation method is via grazing. It will be necessary to determine, within each geographic region, the optimum period and timing of regrowth following grazing to promote maximum seed yield. As a prelude to such a grazing experiment, the effects of different times of cutting and concurrent fertilizer application were compared at Carimagua during 1980. The cutting treatments were, uncut, cut July 30, cut August 29, cut September 30, and cut October 29, using a slasher at 30 cm height.

Nitrogen treatments 0, 50, 100 kg/ha, were applied to subplots as urea, following a common maintenance fertilizer dressing at the time of cutting. The uncut plots grew to 3 m at maturity, while the cut in July, August, September, and October treatments grew to 2.5, 2.1, 1.7, and 1.5 m, respectively. The maximum pure seed yield was recorded in the cut August 29 plus 100 kg N/ha treatment, with a period of 15 weeks between cutting and harvest maturity. Cutting after August 29 resulted in reduced seed yield in 1980. A response to nitrogen was only observed at the August cutting. These results used to plan a follow-up experiment involving different periods of continuous grazing until the same months of the year, to determine how to best manage areas for seed production under grazing.

On several occasions seed harvests have been made in comparable circumstances by both manual harvesting and direct combining. Results are summarized in Table 3 and indicate an average of 50% more pure seed by the manual method whereby inflorescences are hand cut, sweated in heaps for 3-4 days then lightly threshed. On the basis of 25 versus 4 mandays/ha for the manual and combine methods, respectively, a combine harvesting rate of 4 hr/ha and prevailing costs of labor and combine rental at Palmira, the cost of harvesting a kg of pure seed is comparable for the two methods.

Table 3. Pure seed yields from two methods of harvesting Andropogon gayanus at Palmira.

Harvest	Pure seed yield* (kg/ha)	
	Combine	Manual
1. January, 1978	32	69
2. August, 1980	19	32
3. September, 1980	29	49
4. July, 1981	23	51
Average	26	50

*Pure seed, as defined by presence of a caryopsis.