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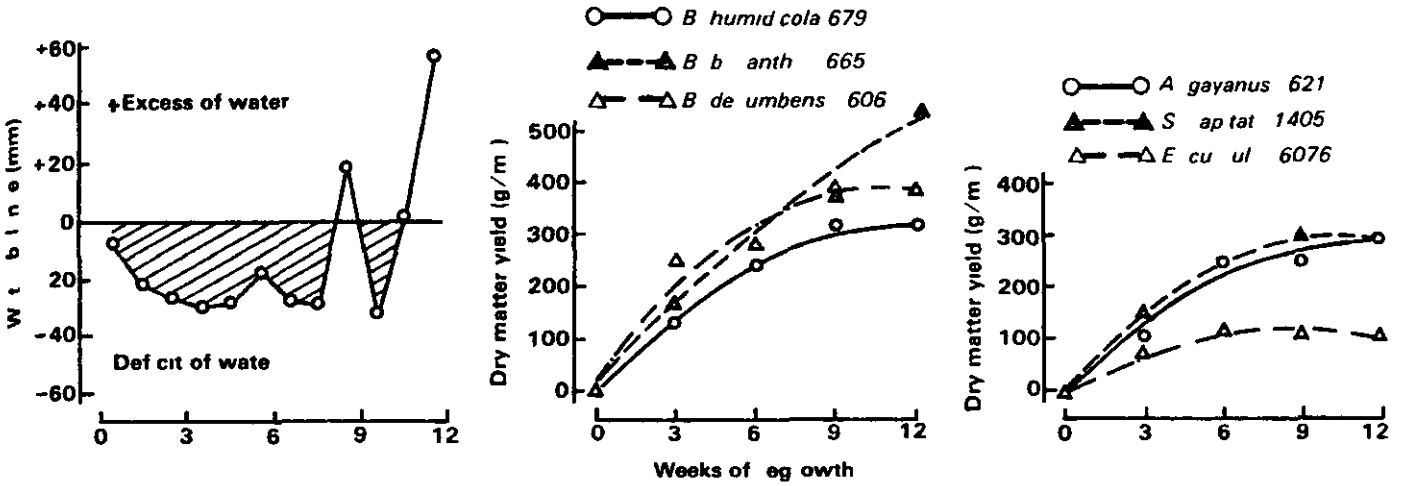

F g e 13 G owth urves of eight g ass ecotypes and o e legume d ng a d y pe od CIAT Qu l chao (June 4 A gust 28 1979)

two more effective treatments were dalapon in two applications and glyphosate (Table 15) This research will continue by applying the two selected herbicides at different rates on different growth stages of *A gayanus*

Methodology Studies

Methodological studies were initiated by using germplasm material established in a former grass agronomy experiment (40 grass ecotypes in association with *Stylosanthes capitata* CIAT 1405) The objective of these studies is to establish growth curves during the period of minimum and maximum precipitation for grass and legume germplasm that is being distributed for testing in the Regional Trials Network Figure 13 shows the growth curves for 5 of the 40 grasses evaluated during a dry period These studies will be complemented with leaf stem ratios and tissue analyses So far it is possible to observe even under a mostly negative water balance a faster regrowth of *Brachiaria* spp Another interesting observation is the similarity of the regrowth rates of *A gayanus* 621 and *S capitata* 1405

PROMISING GERMPLASM FOR THE MAJOR ECOSYSTEMS

For each ecosystem germplasm under evaluation is classified into previously established categories of promise (CIAT Annual Report 1977 page A 16) on the basis of results of germplasm evaluation conducted by the Program s agronomists in the major research sites and by collaborators in regional trials

In the past years germplasm evaluation was concentrated in Carimagua in the Colombian Llanos Orientales as a major research site representative for the ecosystem hyperthermic well drained tropical savanna By late 1978 germplasm evaluation was extended to the thermic well drained tropical savannas where experiments are conducted in collaboration with EMBRAPA at the Cerrado Center (CPAC) Planaltina Distrito Federal Brazil Consequently to date the classification of germplasm into categories of promise is mainly restricted to the ecosystem represented by Carimagua and only tentatively feasible for the ecosystem represented by the CPAC For both ecosystems some preliminary results from the first regional trials can be added

A comparative classification of germplasm into the three highest categories of promise for the two well drained savanna ecosystems (Table 16) indicates that (1) the grasses *Andropogon gayanus* and *Brachiaria decumbens* and the legumes *Stylosanthes capitata S guianensis* tardio and *Desmodium* (syn *Codariocalyx) gyroides* show the broadest range of

Table 16. Germplasm of forage species in the three highest categories of promise for the tropical well-drained, hyperthermic and thermic savanna ecosystems, as of November 1, 1979.

Species	Hyperthermic savannas (Carimagua-Llanos) No. of accessions in category of promise			Thermic savannas (CPAC-Cerrado) No. of accessions in category of promise		
	III	IV	V	III	IV	V
Andropogon gayanus			1		1	
Brachiaria decumbens		1			1	
B. humidicola		1				
Stylosanthes capitata	4	1		4	1	
S. bracteata				1		
S. guianensis "tardío"	1			1		
S. aff. leiocarpa	1					
S. hamata	1					
S. scabra					1	
Zornia spp.	9	1		1[1]		
Desmodium ovalifolium		1		1[1]		
D. gyroides	1			1		
D. heterophyllum	1					
Pueraria phaseoloides		1				
Aeschynomene spp.	4					
Galactia striata				1		
Centrosema spp.				1[1]		
Calopogonium mucunoides					1	

1 Tentative classification.

adaptability to well-drained savanna ecosystems in general. (2) *Zornia* spp., *Desmodium ovalifolium* and *Pueraria phaseoloides* seem to be better adapted to the hyperthermic Llanos ecosystem (longer growing season than in the thermic Cerrado ecosystem), while *Galactia striata, Colopogonium mucunoides* and *S. scabra* seem to perform better under the thermic Cerrado environment, where insect pests and disease stresses are apparently lower.

In addition to this, preliminary information from the first regional trial conducted at a series of sites in humid ecosystems in Bolivia, Brazil, Colombia, Peru and Venezuela, indicates that *B. decumbens, D. ovalifolium* and *P. phaseoloides* are well adapted to tropical forest ecosystems. Also, the performance of *A. gayanus* under humid conditions seems to be considerably lower than under savanna conditions.

FORAGE IMPROVEMENT

Improvement of Legumes

The objective is to develop screening methods, evaluate germplasm accessions, create new and desirable genetic recombinations, and stabilize these desirable characteristics in superior plants suitable for grazed pastures within the target area. Research is centered mainly on species of *Stylosanthes, Centrosema* and *Leucaena.*

Stylosanthes capitata

While most accessions of *S. capitata* have appeared resistant to anthracnose, significant damage has been observed in certain accessions at both Carimagua and the CPAC in Brazil. The wide distribution of the causal agent, *Colletotrichum,* within the target area suggests that a thorough knowledge of the genetic basis of resistance is required.