

# Summary

An experiment was carried out at CATIE's Tropical Livestock Research Station in Turrialba, Costa Rica (9° 53' N, 83° 38' W; 2641 m; 23.5°C; 602 m.a.s.l.), to evaluate the effect of corn (*Zea mays* L.) or *Vigna unguiculata* (L.) Walp (vigna) on the growth of *P. purpureum* cv. Mott, *B. brizantha* cv. Marandú and *B. dictyoneura* CIAT 6133, when they were established simultaneously in alternate rows, as an alternative to reclaim degraded pastures dominated by native grasses (mainly *Axonopus compressus*).

A randomized complete block design, with 11 treatments and four replications were used. The treatments were defined by the factorial arrangement of the two annual crops x the three grasses, plus the five crops grown in monoculture. In order to define the growth pattern of the grasses, different non linear regression models were adjusted to the total aerial biomass yield measured at the following phenological stages: shoot formation, stem

elongation, pre-flowering, flowering initiation and full flowering. Also, analysis of variance were run for the maximum total biomass yield and the linear growth rate estimates.

The maximum total aerial biomass yields obtained for *P. purpureum* cv. Mott, *B. brizantha* cv. Marandú and *B. dictyoneura* CIAT 6133 grown in monoculture were: 113.4, 33.8 and 6.24 tons DM/ha, respectively. When intercropped to corn, these yields declined to 44%, 38%, and 68% of what was recorded for the monoculture treatments. The corresponding values for the association with vigna were 49%, 35%, and 10%, respectively.

On the other hand, the growth pattern analysis indicated that a fast growing prostrate legume, such as vigna cv. Chiricano, which can reach a very high leaf area index ( $9.1 \text{ cm}^2/\text{cm}^2$  of land) at only 56 days after planting imposes strong competitive effects on the companion grasses. The plant losses registered for the grasses intercropped with vigna, suggest not to consider this species for simultaneous planting with grasses, even though an important compensatory growth was detected for *P. purpureum* cv. Mott and *B. brizantha* cv. Marandú, after the vigna pods were harvested.

On the contrary, the grass/corn intercropping seems to be a more promising alternative for the reclamation of degraded pastures, although the establishing phase of the grasses is delayed. However, the competition effects made by corn are temporary, and even less marked in a prostrate and slow growing species such as *B. dictyoneura* CIAT 6133.