

Summary

The biological effects and economical returns of different methods of pasture renovation were assessed in a degraded *Brachiaria decumbens* pasture on the Rita de Cassia farm in Porto Velho, Rondônia State, Brazil (altitude: 96.3 m; latitude: 8° 46' 5" S; longitude: 6° 5' W). The soil was a yellow Latosol with the following chemical characteristics: pH = 4.1; Al = 3.8 mE%; Ca + Mg = 0.6 mE%; P = 1.5 ppm and K = 48.5 ppm. The experimental area was a degraded pasture of

Brachiaria decumbens that had been severely attacked by the spittlebug (*Deois incompleta*). The area was initially cleaned manually and ploughed using two crossed harrowings during the dry season. Grasses were sown using vegetative material, and legumes, using seed. Phosphorus (P_2O_5) was applied at 50 kg/ha. The associated pastures were established in alternating strips of grasses and legumes, 4 m wide.

A completely randomized experiment design was used with four treatments and two replications. The treatments consisted of the following pasture renovation methods: (1) pasture of *Brachiaria humidicola*, (2) *B. humidicola* + phosphorus fertilization; (3) *B. humidicola* + phosphorus fertilization + legumes (*Pueraria phaseoloides*, *Centrosema pubescens*, and *Stylosanthes guianensis* cv. Cook); and (4) pasture of *Setaria sphacelata* cv. Nandi + phosphorus fertilization + legumes. Each renovation method was managed with low (1.8 animals/ha) and high (3.2 animals/ha) stocking rates, according to the seasons of the year, using a continuous grazing system, during 3 consecutive years. The results showed that the treatment with *Brachiaria humidicola* and phosphorus fertilization was more efficient in renovating degraded pastures of *Brachiaria decumbens*, and resulted in greater forage availability, higher stocking rates, lower incidence of weeds, better animal performance, and increased economic returns.