

Evaluation of cereal-legume intercropped forages for smallholder dairy production in Zimbabwe

N T Ngongoni, M Mwale, C Mapiye, M T Moyo, H Hamudikuwanda and M Titterton

Abstract

A study was conducted at Henderson Research Station in Mazoe, Zimbabwe to assess the establishment, persistence, yield and nutritive quality of cereal and ley legumes sole crops and cereal-legume intercrops on sandy and clay soils. Four cereals, maize and three sorghum varieties; Jumbo, Pan 888 and Sugargraze, and five legume varieties *Vigna unguiculata*, (Cow pea) *Lablab purpureus* (Lablab), *Crotalaria juncea* (Sunnhemp), *Glycine max* (Soyabean) and *Lupinus albus* (Lupin) were used. A 2 x 4 x 5 factorial experiment in a split-split plot design with soil type as the main plot factor, cereal as the sub-plot factor and legume as sub-sub-plot factor was used.

Total herbage yields were significantly higher on the clay than sandy soil, with yield ranging from 8.0 to 11.0 t/ha Dry matter (DM) and 1.0 to 5.6 t/ha DM, respectively. On intercrops legumes contributed 14-69 % of the total herbage yield for sandy soils ($P < 0.05$). On clay soil, legume contribution was low ranging from 3-30 %. The dry matter yield for cereals grown on the sandy soil was 22-34 % of clay soil yields. Cowpea, lablab and sunnhemp sandy soil yields ranged from 44-60 % of the clay soil yield. Soybean performed poorly on the sandy soil whilst lupin did so in both sites. Sandy soil forage tended to have significantly higher DM, Water soluble carbohydrate (WSC) and fibre contents and low Crude protein (CP) contents than those grown on clay soil. Maize and Jumbo had higher yields than Pan 888 and Sugargraze ($P < 0.05$). Cowpea, lablab and sunnhemp had higher yields than lupin and soybean ($P < 0.05$).

Intercropping of cereals and legumes is commendable for the increase of nutrient quality particularly the crude protein content of cereals on clay soils. However, the matching has to be thoroughly done to avoid mixing forages that may hinder each other from the access of nutrients, chiefly sunlight. Therefore, farmers are recommended to use cereal-legume intercrops especially maize or sorghum and cowpea and or lablab to enhance dry season feed availability.