

Introduction

Land regeneration was formerly assured by prolonged fallows in the traditional farming systems of North Cameroon. Today increased pressure on land has reduced the ability of natural fallows in restoring soil fertility. Soil improving legumes are being used in most cropping systems to provide above and below – ground biomass to increase biological activity and soil fertility. Past efforts in this zone had been focused on the introduction of exotic varieties but with limited success due to poor adaptability and adoption. This study was aimed at exploring opportunities offered by indigenous herbaceous species hitherto considered as weeds in local farming systems.

Materials and Methods

The abundance and importance of indigenous herbaceous species under different management and land use systems were assessed in the soudano-sahelian zone of Cameroon using farmer participatory research techniques. Common legume species were collected and introduced on-station in pure plots and in associations with maize. They were evaluated for establishment, soil cover, aerial and root biomass, nodulation and seed yield.

Results

Out of 36 relevant herbaceous species identified, legumes contributed less than 10%. These were frequently encountered on abandoned plots and roadsides and generally considered as weeds. Farmers however identified other beneficial roles such as forage, soil cover and medicinal value (Figure 1). Direct seeding and establishment was good for 3 varieties of *Vigna* (*V. pubigera*, *vexillata* and *radiata*), *Indigofera nummulariifolia*, *Zonia glochidiata*, *Desmodium adreudens*, and *Crotalaria ochroleuca*. There were significant differences in aerial biomass production among species ($p < 0.001$). *V. pubigera*, *V. vexillata* and *I. nummulariifolia* gave the best aerial biomass yield (4.25 – 5.2 t/ha).

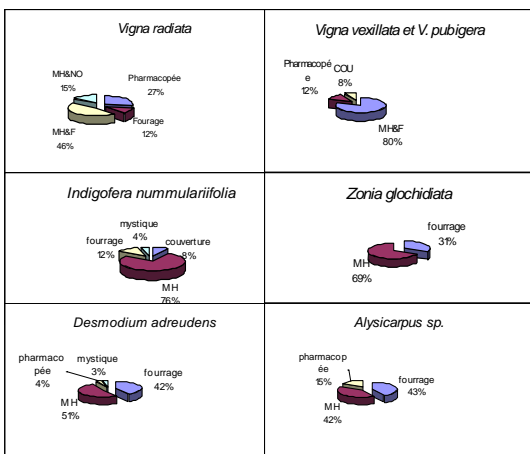


Figure 2: Root density in *V. vexillata*



Figure 3: Pure and intercropped stands of *Desmodium adreudens*

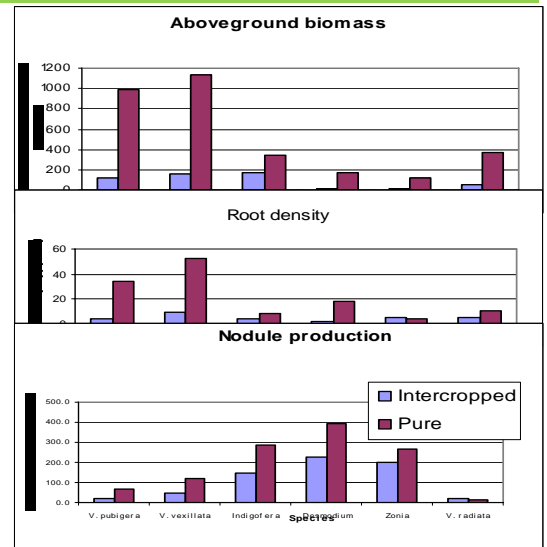


Figure 4: Performance of selected indigenous herbaceous species in intercrops with cereal (maize)

Figure 1: Common usage of identified species by local farmers

Based on the overall performance of the selected species and considering the characteristics evaluated (Table 1), *Vigna vexillata* and *Indigofera nummulariifolia* had the highest ratings of 14 and 13 points respectively. The good spread and high aboveground biomass production in all the *Vigna* varieties is an indication of good soil cover and extra forage for livestock (*V. radiata*), whereas high nodule production in *Indigofera nummulariifolia*, *Zonia glochidiata*, and *Desmodium adreudens* is an indication of possible soil fertility improvement and low competition especially under intercropped conditions.

Table 1: Ranking of selected species according to their suitability for use in local farming systems

Species	SP	H	AB	RT	N	P	TOT
<i>Vigna pubigera</i>	***	**	***	**	*	*	12
<i>Vigna vexillata</i>	***	**	***	***	**	*	14
<i>Vigna radiata</i>	***	**	**	*	*	***	12
<i>Indigofera nummulariifolia</i>	*	***	**	*	***	**	13
<i>Desmodium</i>	*	**	*	**	***	***	12
<i>Zonia</i>	*	***	*	*	***	***	12

Performance rating: * = low = 1 point, ** = fair = 2 points, *** = good = 3 points
 SP = Spread, H = Height, AB = Aboveground biomass, RT = Root biomass,

Conclusion

These results show that the herbaceous cover in this study area harbors indigenous legumes which have different root and aerial biomass characteristics whose beneficial attributes can be used to improve productivity especially in terms of soil fertility and forage. The choice of any of these legumes for use depends on the farmers' aims and objectives. However, there is need to carry out further studies to quantify their nutrient input in the soil and uptake by associated crops as well as their use in livestock feeding.

Bibliography

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