RESEARCH PROGRAM ON Livestock and Fish

CGIAR

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

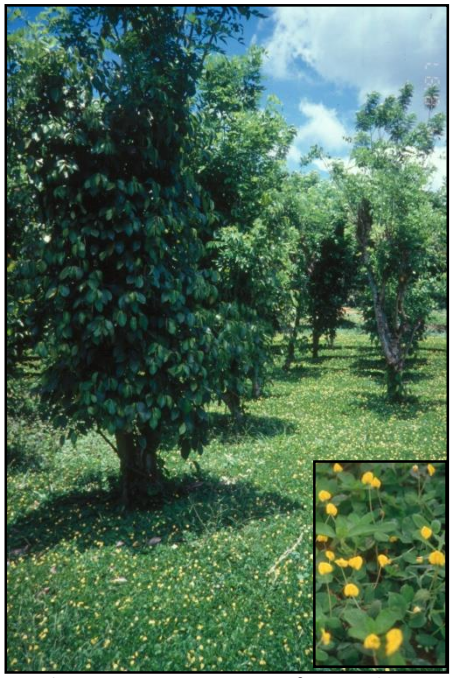
Feed Intervention TechSheet 22

Feed intervention >> Fodder production, grassland development and utilization> Improved planted forages

Herbaceous legumes, grown in monoculture or mixed with grasses

Legume cover crops under rubber trees, grazed by sheep in Malaysia

Stylosanthes guianensis as soil cover and for leaf meal production in Hainan, China



Arachis pintoi as a cover crop for weed control in a pepper plantation

Description

- ✓ Many creeping, twining and shrubby legumes have multiple uses.
- ✓ Annual (short-lived) and perennial forage legumes can be grown in monoculture for feed (or soil cover) or with grasses as pasture. Some dual-purpose legumes produce seeds for human food and the vegetative part of the plant can be eaten by animals. Food/feed legumes include *Vigna unguiculata* (cowpea); soil cover/feed legumes include *Centrosema molle* (centro) and *Pueraria phaseoloides* (kudzu); and for pastures *Arachis pintoi*.
- ✓ Most legumes need to be sown from seed. Some stoloniferous species, such as *Arachis pintoi* can easily be established vegetatively.
- ✓ In general, (a) legumes have a higher nutritive value but are less productive than grasses; (b) in the dry season, legumes are more readily eaten than grasses.
- ✓ Forage legumes are generally grown for strategic use: (a) as a feed supplement for highly productive animals such as dairy cows, or (b) for particular times of the year such as the dry season or whenever high-quality feed is needed.

Key benefits

- ✓ Legumes, via bacteria ("rhizobia") in root nodules, can fix nitrogen from the air making them independent of N fertilization. This may enrich soil fertility and can benefit subsequent food crops.
- ✓ Legumes have a high protein content and high nutritive value. The feed quality of legumes decreases much slower than in grasses which deteriorate quickly with age.
- ✓ Many legumes are drought tolerant because their deep-reaching root system can access moisture deep in the soil.

Key limitations

- ✗ Grass-legume pastures require a high level of knowledge and management skills to ensure persistence of the legumes.
- ✗ While many legumes nodulate freely with native rhizobia, some inoculation with a specific rhizobia strain is needed for effective nitrogen fixation.
- ✗ Seed is often not readily available.

TechFit is a tool to prioritize and select animal feed interventions. It was developed by ILRI under the leadership of Alan Duncan. It has been further refined and developed with inputs from many individuals in and beyond CGIAR. This is one of a series of feed intervention 'TechSheets' developed alongside the TechFit tool to provide summarized information on different interventions included in the tool. Werner Stür led the development of the TechSheets. This sheet was prepared by Rainer Schultze-Kraft. TechFit is supported by the CGIAR Research Program on Livestock and Fish. ilri.org/techfit

Stylosanthes hamata

Pueraria phaseoloides

Soil improvement under *Desmodium ovalifolium*

Arachis pintoi mixed with *Brachiaria brizantha*

Where does this intervention fit?

Potential to overcome feed limitations	Score
• Feed scarcity during ***dry season*** :	high
• Feed scarcity during ***cropping season*** :	medium
• Low feed availability :	medium
• Poor feed quality :	very high

Applicability to livestock		Score
Cattle/buffalo	• Breeding (cow-calf) :	medium
	• Fattening :	high
	• Dairy :	very high
Sheep/goats	• Breeding :	medium
	• Fattening :	high
Pigs	• Breeding (sow-piglets) :	high
	• Fattening :	high

Applicability to farming system	Score
• Pastoral (extensive grazing systems) :	n/a*
• Agro-pastoral/extensive mixed systems :	medium
• Intensive mixed crop-livestock system :	high
• Landless livestock producers :	n/a

Requirement for resources		Score
Requirement of	• Land :	high
	• Water :	low
	• Labour :	medium
	• Cash/credit :	medium
	• Access to inputs :	medium
	• Knowledge/skills :	high

* n/a = not applicable

More information:

- ✓ How to select suitable herbaceous legumes to grow in monoculture or mixed with grasses, and detailed descriptions of the various species: www.tropicalforages.info
- ✓ Stür, W.W. and Horne, P.M. 2001. Developing forage technologies with smallholder farmers – how to grow, manage and use forages. ACIAR Monograph MN088. aciar.gov.au/publication/mn088
- ✓ www.tropicalgrasslands.info

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