

Context

- Forages contribute to the production of livestock, with livestock products being one option to increase income of smallholders
- Typical sources of grain (maize, soybean) for feed are becoming more expensive
- Demand for pork and poultry is increasing rapidly, providing opportunities for smallholders
- Human health concerns surround consumption of beef fed on high grain diets

What are high value forage products?

- Forage technologies that offer farmers options of producing and marketing seed, added value forage products, and animal products that have characteristics on demand by consumers and consequently offer price premiums to producers.

Target Group

- The work on high value products by CIAT's Forage Team focuses on grasses and legumes that can be produced by smallholders with limited resources and that respond to existing or emerging market "niches"
- Many poor smallholders are located in marginal production environments. Achieving widespread adoption requires that forages can be produced in low fertility acid soils and under environmental stress such as drought

Role of CIAT in the development of high value forage products

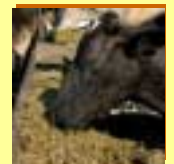
- Developing superior forage cultivars for different agroecologies, production systems and market "niches" (e.g. legume cultivars appropriate for hay production)
- Promoting farmer experimentation and catalyzing development of prototype agro-enterprises (e.g. smallholder seed systems linked to markets; feeding systems based on high quality legume leaf and seed meals)
- Testing different farmer organizational models (e.g. cooperative of hay producers) and catalyzing the creation of knowledge networks

Specific products and markets

Forage-based products to fulfill different demands: household (e.g. farmers producing feed for their own animals), local market (e.g. farmers with or without animals who produce feed for sale to neighboring farmers) or wider markets (e.g. animal products with attributes in demand by consumers)

High quality hay and silage

- Enable farmers to overcome seasonal feed shortages
- Can be sold in the market (e.g. little bag silage and hay)
- In demand by specialized dairy systems and horse owners
- Numerous new markets are emerging for high quality feed in Central America, including the first hay auction in Costa Rica and other informal market channels in Honduras and Nicaragua



Little bag silage

Legume leaf and seed meals

- Suitable for ruminants and monogastric animals (swine, poultry, rabbits and fish)
- Can be produced locally as an alternative to expensive soybean meal
- Provide high protein and pigments to produce animal products with low fat (swine) and high pigmentation (broilers and eggs) in high demand by consumers
- Animals fed on high leaf or seed meals diets can obtain high price premiums at local and export markets



Legume meals for monogastrics

Organic grass-fed beef

- Provides human health benefits such as lower fat and calories, more omega-3 fatty acid and conjugated linoelic acid (possible reducing cancer risk) and higher vitamin E contents, leading to a specific market niche
- Smallholders have an inherent competitive advantage and linkages to local markets (Supermarkets)
- External markets can fetch even higher price premiums for high-quality beef



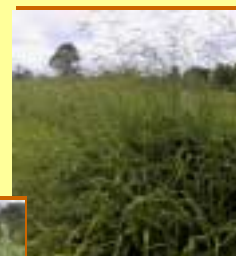
Grass – fed beef

High-quality forage seed

- Provides a means to diversify for smallholder farmer income sources.
- Smallholder-produced seed can be of high quality and thus be attractive for purchase by larger companies
- Additional source of income that is often compatible with seed production (i. e. forage, either grazed or harvested)

An example of a farmer led forage seed enterprise from Honduras:

- A farmer enterprise, PRASEFOR (Producción Artesanal de Semillas Forrajeras) now produces 2 t seed annually and still expanding
- Farmers obtained ten-fold higher net return from a ha of forage seed than from a ha of maize
- An agreement has been signed between a larger seed enterprise and PRASEFOR to ensure market sustainability and access to wider range of clients



Toledo seed production



Farmer group PRASEFOR

Cowpea seed production