Stylo in China: a tropical forage legume success story

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Introduction Although *Stylosanthes gracilis* was the first stylo to be introduced as a green manure cover crop for young rubber plantations in 1961, the *S. guianensis* cultivars Cook and Graham introduced in the 1970s and 1980s were largely responsible for the stylo revolution in China. Before serious anthracnose outbreaks, these cultivars covered over 13,000 ha in southern China. Anthracnose had shifted emphasis to *S. guianensis* CIAT184 and successful cultivars originate from this introduction (Guodao *et al*., 2004). Well-adapted varieties are now available for much of southern China and in 2003, the total area of stylo exceeded 200,000 ha. Stylo development has been greatly aided by the release of commercial cultivars. Initially these were from Australia, but more recent cultivars have been selected from introduced accessions. Reyan No 2, Reyan No 5 Reyan No 7 and Reyan No 13 are selections from CIAT 184; Reyan No 10 originated from CIAT1283 and cultivar 907 was developed through Cr^{64}-γ radiation technology. These are suitable for utilisation for leaf meal production, pasture improvement, green manure and soil conservation and the variety Reyan No.5 is cold-tolerant.

Major reasons for success:

1. **A number of production systems generating strong market demand** China is deficient in high protein forage by about 15 million t and there is ongoing R&D to meet market demand for leguminous forage. Southern China supports an estimated 35 million head of ruminants, 74 million pigs and 830 million poultry on some 32 million ha of grasslands to meet the staggering 27% increase in the annual consumption of livestock products. Forest covers over 44% of the land in south China and agroforestry has become an ecologically sustainable option to supplement short-term income from annual crops. But it takes a long time for forest plantations to generate income. With privatisation offering incentives, smallholder farmers increasingly raise and sell animals such as pigs, ducks, chickens and goats. This has sharply increased the demand for both fresh and dried fodder.
2. **Stylo is well suited to many production systems** Stylo is well adapted to south China, it produces 15-22 t/ha per yr dry matter containing 15%-16% crude protein. Production of stylo leaf meal, pioneered by farmers in south China, has further enhanced the value of stylo as a nutritious fodder crop. Stylo intercropped in young plantation forests provides an early income stream from the fresh cut and carry forage, well before the 8-10 years it takes to produce the timber. When grown in hilly terraces with young rubber or horticultural plantations, stylo helps to conserve soil and water, control weeds and improve soil fertility and the growth of trees. Smallholders grow stylo to feed cattle, goat and pigs as freshly cut or cooked feed. They also and make crude meal as a feed supplement for livestock and poultry. High quality stylo meal and hay is produced and marketed by large farms using commercial drying and processing equipment.
3. **Simple and profitable technology** The labour-intensive forage, leaf meal and seed production technology in south China is appropriate for the large and relatively inexpensive labour force. Stylo has brought high economic benefits to farmers and returns of 1,500-22,500 Yuan/ha for stylo compare favourably with those from paddy (9,000-12,000 Yuan/ha) or sugarcane (9,000-10,800 Yuan/ha). Stylo provides employment, especially for local women. Improved technology, including the transplantation of vegetative cuttings, has increased commercial seed production to 225-300kg/ha in the otherwise poor yielding *S. guianensis.* This has helped to establish southwest Hainan as a commercial centre for the production and export of stylo seed.
4. **Effective international collaboration with strong national support** The Tropical Pasture Research Centre established in the late 1980s has a strong network of highly motivated research and extension personnel operating in Hainan, Guangdong and Guangxi. Access to improved germplasm and technology has come through international collaboration and the improvement and adoption of stylo technology comes from a successful application of the participatory research approach. Private and public sector partnership has helped to establish two leaf meal factories to process large quantities of stylo.

Conclusion Despite its relative short history, stylo in China has made a significant impact to a number of production systems, most notably in pioneering the use of dry leaf meal as animal feed. Commercial success has been underpinned by superior economic returns compared to other cash crops and through its use in plantation forest and horticulture, where stylo offers a quick return on capital in an otherwise long-term investment.

Reference

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