Teak and forest management in Myanmar

Myanmar's natural teak forests are being supplemented increasingly by plantations

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THE harvesting of teak (*Tectona grandis*) from natural forests has been a major source of export earnings for Myanmar for many decades. Although the sustained yield concept was introduced as early as 1752, it has been officially recorded that scientific forest management started in 1856 with the introduction of the so-called Brandis management system, which has evolved gradually to what is now known as the Myanmar Selection System (MSS), still the main system practised in the management of natural teak-bearing forests in Myanmar.

Treading softly: elephants are still used widely for log extraction in Myanmar's teak forests.
Photo: Myanmar Forest Department

Under the MSS, forest lands are organised into felling series, each of which is divided into 30 blocks of approximately equal yield capacity. One block per year is harvested and the whole felling series is worked in the course of a 30-year felling cycle. In each block due for harvest, marketable trees with diameter at breast height (dbh) at or above the fixed exploitable limits (which vary depending on forest type; see below) are selected and cut; the extracted volume must be within the bounds of the annual allowable cut, which is determined for each felling series based on the principle of sustained yield management.

For teak, which is usually girdled and left standing to dry and season for three years before felling, the exploitable limit varies with the type and condition of the forests: 73 cm dbh in moist forests with good growth rates and 63 cm dbh in drier types. The limits for other hardwoods, which are felled green, vary by species. Exploitable limits are determined and fixed at sizes beyond which trees are not expected to put on appreciable increment and where their retention would interfere with the growth of young trees and impede regeneration. However, some trees at or above the exploitable limit may be retained; where seed-bearers are scarce, for example, superior trees at and above the exploitable limits may be kept as seed trees, while unhealthy trees below the limits can be removed if they are marketable and unlikely to survive through the next cycle. Trees retained at the time of selection are recorded to provide a reliable basis for calculating future yield.

Apart from the extraction of mature and senescent trees, which itself can be considered a cultural operation, various kinds of silvicultural treatments are provided for a range of conditions to improve the natural regeneration of teak and to protect immature stock and assist it in attaining a healthy maturity. These include improvement felling, natural regeneration felling, thinnings in congested naturally regenerated stands, felling of nyaungbat (*Ficus*-bound teak), climber-cutting, etc.

We believe that the MSS system is an excellent and also the only feasible way of working the multi-species, complex natural teak-bearing forests of Myanmar. It not only lends itself well to forest in which close to a thousand tree species grow but only a few are extracted, but also causes little ecological damage. Most log extraction is done by elephant, a practice which minimises disturbance and complements the silvicultural regime. The present annual allowable cut for teak and other hardwoods is 460 528 m^3 and 2 533 608 m^3 respectively; production for the decade 1990–2000 is shown in the table.

However, as in other countries, Myanmar is experiencing forest degradation due to an increasing population and

Teak take

Harvested volume (m^3) of teak and other hardwoods from natural teak forests in Myanmar, 1990–2000

YEAR	TEAK	OTHER HARDWOODS
1990–91	534 858	578 751
1991–92	469 682	711 948
1992–93	503 439	743 054
1993–94	458 042	717 435
1994–95	473 620	861 432
1995–96	414 719	1 122 993
1996–97	366 113	1 323 219
1997–98	431 038	1 493 153
1998–99	454 084	1 559 768
1999–00	470 365	1 533 192

growing demand for timber and agricultural land. Myanmar is, therefore, faced with the challenging task of restoring its degraded forests and enhancing the existing natural stock of teak not only by natural but also artificial means.

The Myanmar Forest Policy of 1995 stipulates that the natural forest of Myanmar shall never be substituted by plantations, although cultural treatments to assist immature stocks and natural regeneration may include supplemental plantings of various types and extents. Tree-planting is carried out on a moderate scale to enrich degraded areas and prevent inbreeding depression, while larger-scale plantations are being established to replenish deforested areas in an effort to create an additional future timber resource.

Plantation forestry

The first recorded attempt to establish a teak plantation by the *taungya* method was made in 1856. Previously, plantations had been established more with a view to increasing the natural stock of teak rather than creating fully stocked large stands. Silvicultural treatments, especially thinning, were provided up to the age of 40 years, after which planted areas were left to merge with the natural surroundings and treated as such under the MSS. Plantation forestry had its ups and downs for a number of reasons and it was not until the early 1980s that extensive teak plantations were established with a well-defined rotation (initially of 80 years and later of 60). To date, some 332 844 hectares of teak plantations have been established throughout the country.

Complementary to the extensive normal plantation effort, a special teak plantation program was introduced in 1998. This program is being implemented on the basis of past experiences and the ITTO guidelines for planted forests; it aims to maximise timber production within the limits of environmental best-practice. These plantations will have a rotation of 40 years and the establishment phase is structured with a series of eight consecutive stages of five years each. The annual rate of planting is 8100 hectares, so that by the end of the 40-year rotation a total of 324 000 hectares would be established. Thereafter, 8100 hectares will be available annually for harvesting; the sustainable annual production may be as high as 1.8 million m^3 but certainly not less than 0.6 million m^3.

Qualitative improvement is also being made through the selection of seed production areas for the immediate future and the establishment of clonal seed orchards to ensure long-term teak improvement. More efficient propagation methods such as vegetative cuttings and tissue culture are also being developed and practised with the establishment of teak hedges or multiplication gardens.

Community participation

Community participation in forest management is also being encouraged. The recently completed ITTO PROJECT PD3/98 REV. 1(F): 'Teak-based multistoried agroforestry system: an integrated approach towards sustainable development of forests', which demonstrated the compatibility of teak with other tree species and cash crops, is expected to be the forerunner of a more widely applied system in which communities participate more fully in teak-forest management and use.

Sources

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Teaknet (Asia-Pacific Region)

The Second Regional Seminar on Teak held in Myanmar in 1995 unanimously endorsed the establishment of 'Teaknet Asia-Pacific Region', a network designed to strengthen interaction among all those concerned about the conservation, management, utilisation and trade of teak. The Forest Department of Myanmar, with its vast experience in the management of teak forests, was given the privilege and honour of hosting the secretariat of this network, which was inaugurated in June 1995 with the approval of the Government of Myanmar.

The specific objectives of Teaknet are to:

- facilitate the exchange of technology and information on silviculture, management, harvesting, processing and trade of teak;
- assist in the exchange of genetic material, plant and wood samples and the standardisation of trials for international comparison; and
- promote collaborative studies on critical areas of common interest to member countries or institutes.

Teaknet's activities comprise: the organisation of seminars in collaboration with international organisations and related government agencies; the publication and distribution of a newsletter, proceedings and other publications of interest; the collection of information and compilation of a database and library; the arrangement of visits by Teaknet members; and responding to enquiries on teak and related matters, among other things.

Anyone interested in participating in Teaknet should contact the author.