Evaluating the sustainability of almaciga resin production practices in Samar, Philippines

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THE Philippines is endowed with rich natural resources, the development of which can boost the country's economy. The harvesting of non-wood forest products alone can provide livelihoods for a significant portion of the population. The extraction of forest products such as rattan, wild honey and resin is a major economic activity in areas where these products abound.

The tree species almaciga (*Agathis dammara*), the primary source of a resin known in the trade as 'Manila copal', is relatively abundant on the island of Samar. Almaciga resin is used as an ingredient in a variety of products, including paints, varnishes, lacquer, soap, printing inks, linoleum, shoe polish, floor wax and plastic waterproofing materials. It is also used for incense in religious ceremonies, as fuel for torches and as a caulking substance. The demand for the commodity in local and international markets continues to increase.

However, relentless resin extraction may cause a gradual decline and/or local extinction of the species. IUCN – The World Conservation Union has, in fact, listed almaciga as a potentially threatened and vulnerable tree species in the country. For this reason, the call to conserve almaciga and protect remaining stands in their natural and man-made habitats is now urgent.

Overcutting: an almaciga tree after tapping; the cut inflicted here is too long and wide to be sustainable and leaves the tree open to infection and invasion by termites. *Photo: E. Abasolo*

A relatively large number of empirical studies have been conducted on the viability of almaciga as a source of resin. However, very little study has been done to evaluate harvesting practices, in general and on Samar in particular, but information on this is essential if further degradation is to be prevented. Part of the almaciga conservation strategy, therefore, should be to evaluate existing resin-tapping practices. My study was conducted as part of an effort to do so. Specifically, I set out to answer the following questions:

- what are the resin production practices in Samar?
- what factor(s) encourage or promote these practices?
- are the practices sustainable? and
- how do the practices affect and/or influence the sustainability and conservation of almaciga trees?

How the study was carried out

The study was conducted in two municipalities on Samar, namely Hinabangan and Taft. The study site occupies a total area of 559 100 hectares of mostly rugged terrain.

Both primary and secondary data were used in analyses. Primary data were gathered through interviews with 25 resin-tappers in the study area. Four separate schedules of interviews with each of the 25 respondents were made over the study period. During the first round of data-gathering, eight resin-tappers working within the licensed area of Mr Maximo Tecson were interviewed. In the second and third rounds, 13 resin-tappers from the three people's organisations in the area were interviewed. For the fourth round, four members of the resin-tappers' cooperative were interviewed with the assistance of the cooperative's president. Secondary data sources included articles published in scientific journals, newsletters, books, and reports on almaciga resin-tapping practices and production from various government offices and agencies.

Data gathered from interviews were encoded in the Microsoft Excel program and processed using Statistical Package for the Social Sciences (SPSS) software. Trends representing socioeconomic factors and practices and number of tree deaths and practices were also analysed. To strengthen/validate these results, statistical tools such as correlation, chi-square test and multiple regression were used.

Evaluation of sustainability

The sustainability of resin-tapping practices in the study area was evaluated based on the practices recommended by an ITTO project (PD 36/99 REV.3 (I)) implemented by the Forest Products Research and Development Institute, as well as the requirements for the proper tapping of almaciga as stipulated in DENR Form F-16 (Ordinary Minor Forest Products Licensing). The values for sustainable tapping practice are ≤30 cm in length, ≤2.25 cm in depth, ≤2.0 cm in width, for rechipping >7 days, for harvest cycle >21 days, and for minimum tree size diameter at breast height >0.40 m. In this study it was assumed that practices 25% lower than the minimum requirements as well as practices 25% higher than the maximum requirements would be unsustainable. This assumption was made at the suggestion of Ella (personal communication).

Findings

Results showed that young tappers have a tendency to tap almaciga unsustainably. That is, they tend to make longer, wider and deeper cuts, and to harvest the resin more frequently. Similarly, respondents with higher education (that is, those who have reached elementary or high-school level) and those who are new to the industry and have not attended any training on proper almaciga tapping tend to make cuts that are longer, wider and deeper than what is sustainable. However, the analysis did not reveal a correlation between income and resin-tapping practices.

An evaluation of tapping practices for sustainability revealed some concerns. Three critical factors determine sustainability, namely: tapping width, length, and harvesting cycle. As practised in the area, the maximum tapping width and length are far beyond the recommended levels. The harvesting cycle was also less than the recommended number of days between harvesting.

The economic implications of this situation are significant. My data suggest that unsustainable tapping caused a number of tree deaths in the concessions surveyed. The primary cause of tree deaths observed was termite attack: deep, wide and long wounds on the bark create an avenue for these insects to infest the tree and slowly cause it to die. Declining tree populations ultimately means reduced income for tappers; continued unsustainable resin-tapping practices, therefore, will cause the decimation of resin-tapping as a livelihood for hundreds of tappers in the study area and the demise of an economically important tree species.

Recommendations

Based on the results of the study, the following recommendations can be made for the management of the resource and for further investigation:

- **formulation of appropriate policies and measures:** policies should promote proper harvesting techniques for sustainable resource utilisation;
- **rationalisation of access to resources:** rationalisation of access would include strict licensing mechanisms so that young and inexperienced resin-tappers can be trained properly. Monitoring of tapping practices should also be given more emphasis;
- **conduct of participative training programs:** better training programs should be implemented by encouraging more participation and hands-on experience. Trainees should be monitored and their performance evaluated. Previously trained resin-tappers should be made to undergo retraining when necessary; and
- **provide solution to termite infestation:** almaciga stands should be inspected regularly so that remedial measures can be undertaken to limit termite infestation. The dissemination of information on how to mitigate this problem would be valuable.

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