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INTERNATIONAL COOPERATION IN FORESTRY RESEARCH  
AND NEED FOR INCREASED RESEARCH IN AGRO-SILVICULTURE

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1. The Need for International Cooperation in Forestry Research for Developing Countries

The need for international cooperation in forestry research stems from the very nature of this research which relates to the management and long-term use of complex ecosystems covering a wide range of ecological zones and stretching over national boundaries. These features of forestry research necessitate an international exchange of research methodologies and results as an indispensable complement to national research programmes. For these reasons, the International Union of Forestry Research Organizations (IUFRO) was established almost a century ago. The importance of IUFRO and its membership have grown steadily through the years and IUFRO offers today efficient and flexible communication between national institutions or individual scientists dealing with a vast range of forestry and forest industries research problems.

IUFRO's membership was at first largely circumscribed to Europe, North America, and the developed countries of Asia and the Pacific. However, during the last few years, IUFRO has been alert to the fact that many developing countries must strengthen their national forestry research programmes for the development of their forestry sector. Of special significance in this respect is Resolution 1(c), adopted by the International Council of IUFRO (25 June 1976), which reads as follows:

- "c) That in future research, special emphasis be given to the needs of developing countries. IUFRO should make every effort to include studies of problems relating to developing countries in their programmes and to involve scientists from developing countries."

The need to strengthen national forestry research organizations in developing countries and to increase international cooperation between these countries, as well as between them and the developed countries, has consistently been stressed in most large international forestry meetings during the last few years. This refers in particular to the various meetings of the FAO Committee on Forest Development in the Tropics, the FAO Committee on Forestry, and the 7th World Forestry Congress (Buenos Aires, 1972).

FAO, through its Forestry Department and in collaboration with IUFRO, UNDP and other multi- and bilateral agencies, has supported the strengthening of national research institutions and has encouraged their cooperation for a long time. FAO's past and present experiences in this field indicate that support of forestry research should encompass activities at national as well as at international level.

## 2. The Need for Increased Research in Agro-Silviculture

Agro-Silviculture, a combination of agricultural and forest production systems, can be seen as a means of using the forest resource potential for promoting rural development and of benefiting the people living in or near the forests. Agro-silviculture may include activities related to growing trees in order to produce specific goods or services for the local community (fuelwood, poles, timber, fodder, etc.); activities to grow trees for reasons such as soil protection or control of water run-off so as to increase and sustain agricultural production in adjacent areas; activities to enhance the well-being of communities living in the forest; or activities to settle new communities in the forest. At the same time, agro-silviculture is designed to ease the pressure on forest land, which frequently leads to the indiscriminate destruction of large areas, by introducing rational forms of resource utilization. This refers particularly to forests on steep slopes which have important protection functions, and the clearing of which seriously endangers the development of permanent agriculture in adjacent areas.

Agro-silviculture is, therefore, a production system that is highly relevant to both environmental conservation and socio-economic development, since it contributes to: (a) increase food production, (b) improve the nutrition standards and the quality of living of one of the poorest segments of the rural population, (c) introduce land-use forms which are in harmony with sound ecological criteria, and (d) mobilize human resources, with little additional high-level technology and capital investment.

Although various forms of agro-silviculture have been practised in many tropical countries for a long time, there is no comprehensive and systematic body of information available on the environmental and socio-economic advantages and drawbacks of agro-silvicultural techniques. Little research on it is being carried out in the well-established forestry research institutes of the developed countries. None of the many working groups of IUFRO appears to deal specifically with agro-silviculture. Many developing countries have shown increasing interest in this subject, but their national research facilities are still weak in most cases and their research personnel is scarce. There is a need, therefore, for systematic and sustained international efforts to promote and support national research activities related to agro-silviculture and to disseminate the findings of such research.

In view of the importance of rural forestry in developing countries, FAO's Forestry Department is preparing a special programme on this topic, in which the promotion of agro-silviculture will play a major role. A number of forestry field projects executed by FAO on behalf of UNDP (e.g. in Thailand, Costa Rica and Tunisia) were directly related to agro-silviculture, and considerable experience was gained through these projects. In October 1976, a special expert consultation was held in Rome in which several case studies were examined and advice was given on how to develop a programme for enhancing the contribution of forestry to rural development through the promotion of agro-silviculture and other activities. Efforts will continue during 1977 in order to prepare a plan of action and to build up a body of information for use by practitioners and as a basis for research.

It is anticipated that FAO's work in this area will concentrate on disseminating proven agro-silvicultural techniques; on improving the institutional framework and strengthening the national and local administrations in developing countries so as to enable these countries to carry out field programmes of this type; and on identifying good opportunities for national, multilateral and bilateral projects. A concerted international effort, intended to promote specific research programmes for agro-silviculture, would certainly support FAO's work in this field.

### 3. Conclusions

From the experience FAO has gained so far with regard to agro-silviculture and the potentials it offers for rural development and environmental conservation, the following conclusions can be drawn:

- (a) Agro-silviculture encompasses a large number of diverse and complex systems of land use under different ecological and socio-economic conditions. Their location specificity and their complexity make it difficult to define research objectives and priorities which could be of common general interest. However, enough is known about agro-silviculture to be able to state that it offers opportunities for intensifying the use of land under judicious criteria of ecological management in order to sustain a growing population and improve levels of living.
- (b) An international research programme on agro-silviculture should from the beginning be designed in close collaboration with scientists from tropical, sub-tropical and arid countries in which agro-silvicultural techniques have been developed on an empirical basis, and which are at the same time the prospective users of research findings. This programme should be designed as an interdisciplinary project involving specialists in natural sciences (foresters, agronomists) and human sciences (anthropologists, rural sociologists and rural economists as well as experts in training and extension).
- (c) The definition of specific objectives and priorities for an international research effort on agro-silvicultural systems should be based on a comparative analysis of experience gained by the various countries in each ecological zone. Work could commence with the collection and compilation of existing documentation. Literature on the subject is, however, relatively scarce, and most of the information needed would have to be gathered through a series of surveys in each major ecological zone.
- (d) These surveys could be carried out in stages and should progressively develop cooperation and common methodologies among specialists from agricultural and forestry institutions in the developing countries concerned. The survey teams should be of a multi-disciplinary nature and include expertise from the region, in particular on socio-economic aspects and institutional problems.
- (e) Selected national and/or regional institutions within each of the ecological zones could be identified to serve as focal points for international cooperation in this field.

(f) The ecological zones for which agro-silviculture appears to be of particular significance include the tropical forest ecosystems in mountain areas, the Sahelian zone and other tropical, arid and semi-arid areas where population pressure has reached or will reach in the near future a critical limit with regard to the existing resource potential.

(g) The implications of agro-silvicultural projects are largely cultural, socio-economic, institutional, organizational and educational. Without prejudging the results of the comparative analysis mentioned under (c) above, it can be anticipated that important research efforts will be devoted to these aspects.