Jl. Rubb. Res. Inst. Sri Lanka (1977) 54, 417—421

COUNTRY PLANS AND PROGRAMMES FOR RUBBER DEVELOPMENT AND FAO ASSISTANCE

K. J. GUNAWARDENA

(*Industrial Crops Group, Plant Production and Protection Division, FAO, Rome.*)

There is optimism everywhere about the future of natural rubber. The latest technological advances and the tremendous boost generated by research and development have been mainly responsible for this optimism. A demand for "isoprenic" rubber in the 1990's at levels around 10 million tons/year, three times the present output, have been projected. Even the use of the long forgotten guayule rubber (*Parthenium argentatum*) is receiving renewed interest (Anon, 1976).

Most of the rubber in the developing world is in smallholdings as indicated below :

Country	*Total ac*	*% Smallholdings*
Malaysia	4·95 million ac	60%
Thailand	3·04 ,,	95%
Indonesia	2·2 ,,	75%
Sri Lanka	675,000 ac	51%
India	530,000 ac	70%
Papua New Guinea	40,000 ac	15%
Nigeria	500,000 ac	85%
Liberia	260,000 ac	73%

Production in smallholdings in many countries is often less than a third of the better organised and well managed estates. Considerably higher production increases than the current average can be obtained by improving management and rehabilitation or replanting with improved clones. It is also stated (Sekhar, 1973) that the yield barrier on the basis of energy input and partition efficiency is 9,000 kg/ha and this means the availability of a huge potential for further research and development to raise yields from the present production possibility of 3,300 kg/ha.

Production increases and higher incomes can come in the future, as stated by many, from (a) organization of economically viable units or groups of smallholdings, (b) use of considerably improved plant material from uniform plants derived as a result of advances in tissue culture techniques, (c) replanting and rotational planting for high latex yields and timber for pulp, packing, fuel and furniture, (d) early stimulation and monthly collection of latex in poly bags and central processing factories taking in more than 100 tons per day. The present economic conditions are most opportune for the adoption of these improved methods and innovations.

West Africa

Increasing interest in rubber production in West Africa is indicated by the new plantings that are scheduled for the next five-year period. Sierra Leone has only 2,000 ac of planted rubber in five estates. Programmes for expansion are underway and the World Food Programme under its "Food for Work" scheme proposes to assist rubber growers under a Rural Development Project. A Government Estate of 20,000 ac and a 600 ac rubber development scheme for smallholders are proposed for the immediate future, with the assistance of the Overseas Development Ministry (ODM) of the United Kingdom.

Liberia with half a million ac under productive and non-productive rubber has over 70% under small and medium size plantations producing 32% of the exportable rubber. The private sector replanting in large estates amounts to 5,000 — 6,000 ac annually. Replanting is assisted among the smallholders through a World Bank sponsored pilot project based at Suakoko. The World Bank has also commissioned Agrar-Und Hydrotechnie of Essen, Germany, to carry out a feasibility study on the rehabilitation and replanting of Liberian owned rubber. This proposal is expected to rehabilitate 80,000 ac of rubber and replant 40,000 acres.

In the concessions sector it is stated (personal communication) that successful breeding has resulted in a South American Leaf Blight (SALB) resistant tree being evolved with good commercial yield possibilities. In order to avoid any possibility of accidental introduction of SALB from Brazil, direct airline operations between the two countries have been suspended.

FAO assistance in training local rubber extensionists specifically for smallholdings has been provided through the country based experts. Assistance in processing of the smallholders rubber will be provided by the establishment of three group processing centres, with Government or private sector aid.

At present, 100,000 ac have been planted in the Ivory Coast and Cameroons and within the next five years an additional 150,000 ac are proposed to be planted. The Institute of Research for Rubber in Africa (IRCA) has been very active in this area with clone introductions, breeding and agronomic research.

In Ghana, the Western region mainly grows this crop on a plantation scale with the involvement of state organizations and some companies. Only 3,000 ac are being tapped out of a total of nearly 15,000 acres. The rest of the rubber area is being rehabilitated and replanted. New large scale plantation projects are expected to come under active programmes in several areas of the Western and Central Regions.

Development Plan (Anon, 1974) in Nigeria envisages increase in productivity and area as well as quality. Towards this end, the establishment of a Rubber Development Agency and a Rubber Research Institute have been proposed and recently a Rubber Marketing Board has been instituted. The ambitious planting programmes in the first and second development plans were never realised and the yields remained woefully low (200 — 300 lb/ac) from a total of 600,000 acres. Plantings done with 300 — 1000 plants/ac and the method of share cropping adopted in the majority of farms left management and tapping in the hands of itinerant tappers who obtained a half share of the crop for their services during 6 months of the year. It is assumed that with replanting in the smallholdings sector, management improvement and expansion under new areas, the total production by 1985 will be in the neighbourhood of 140,000 tons. Future programmes involve research and training with nucleus estates as centres of innovation, skill, management and market outlets for surrounding small farms. Subsidy schemes and necessary inputs will be supplied through the Nigeria Agricultural Bank and State Governments. Further FAO assistance in the adoption of modern methods of processing rubber is expected to be made available.

Latin America

Brazil, Costa Rica, Bolivia, Colombia and Peru produce only about 32,000 tons per year together. The work on research is mainly directed towards evolution of clones resistant to SALB disease. The Fx clones (Ford) and the IANs (Instituto Agronomico do Norte) have been unsuccessful as they were poor producers. Research on a more vigorous and intensive scale has been started by IPEAN (Instituto de Pesquisas e Experimentacão Agropecuarias do Norte) in the states of Para, Bahia and São Paulo. The Brazilian Agricultural Research Enterprise (EMBRAPA), a public corporation with resources totalling $65 million at its disposal, is vigorously pursuing a research programme on rubber and other crops on a national cooperative scale with the states, universities and private enterprises participating.

India

The Rubber Research Institute of India has been engaged in various aspects of research and some clones capable of yielding over 3,000 lb/ac have been evolved. The national average yield has gone up to 750 lb/ac from 310 lb in 1955. Present production is 136,000 tons.

Attempts are now being made to expand rubber cultivation into non-traditional areas and to bring down the very high cost of production. To achieve this, research is being directed towards exploitation techniques, new clones, polyploid material, planting techniques and protection. Diversification programmes, processing improvement, treatment of effluents from processing factories and the industrial utilization of rubber wood are other subsidiary programmes.

Since 1940 the replanting programme has been carried out in smallholdings and estates. The total acreage replanted up to 1975 is only 108,000 ac, which gives an average of only 3,100 ac per year, thus emphasizing the need for more intensive activity in this branch of rubber extension. Price subsidies and land reform laws have increased new plantings.

Indonesia

Considerable scope prevails in Indonesia for the development of the rubber industry. UNDP/FAO projects have been active in the country and some of them have recently completed the formulation of long-term research programmes for rubber.

Already the existing research institutes of the plantation sector with the assistance of the FAO advisers have undertaken work on the major aspects of research dealing with plant science, agronomy, nutrition, protection, economics and technology and the basis for a Rubber Research Institute has been initiated.

The rubber smallholdings producing approximately 2/3 of the total rubber production await development by way of provision of credit facilities, improved planting material and other inputs supported by on the spot advice on such matters as nursery establishment, land clearing, bud grafting, alang alang control, legume cover and general upkeep. The smallholdings' yields are low (400 lb/ac) and 80% of this area need replanting.

Malaysia

With the success of the replanting (1953) and the Standard Malaysian Rubber Schemes, research development and crop expansion have progressed into areas which were not envisaged earlier. New trends and vistas for rubber uses are ever opening up and being the major natural rubber producer, Malaysia plays a leading role in production research, technology and marketing. The smallholdings sector is being revitalised in keeping with estate development and replanting. Before long, the Malaysian Rubber Development Corporation, with the assistance of the Government operated factories and group processing and marketing schemes is expected to raise the output beyond 350,000 tons per annum.

Sri Lanka

Since we will be listening to a great deal about Sri Lanka's rubber research and development programmes in the course of this Conference, it would be prudent for me to be brief on the subject of smallholdings. Its smallholder replanting scheme, which has covered more than half the productive acreage, yields 1,300 lb per acre. With the prospects of better incomes from rubber, it may perhaps be possible to double the rate of replanting in the future. FAO assistance in block rubber processing has been made available and the recently concluded agreement for World Bank assistance for the Rubber Research Institute will further strengthen the research capacity and plans for future development.

Thailand

FAO assistance for rubber development has been granted to Thailand through several phases of work. This has involved a number of undertakings in agronomic research, social and economic studies, processing and marketing investigations and the formulation of programmes for training, exchange of technical information and finally a plan for replanting with World Bank support. Considerable supplementary assistance for group training programmes and fellowships will also be provided by the Freedom from Hunger Campaign.

The tempo of replanting under the new project is expected to be increased to 120,000 ac/yr during the period 1976 - 1980 from the current level of 50,000 ac/yr. Over a million ac of rubber above 30 years old will come under replanting, to be followed by 1·7 million ac of low yielding nondescript rubber of varying types planted 13 – 30 years ago. The yield level is expected to rise to 1,600 lb/ac, about six times the present average. The income of a typical smallholder cultivating 5 ac would increase from US $ 350 to US $ 1,750 per year at full maturity of rubber trees. With an economic rate of return estimated at 20%, the incremental annual production would average 190,000 MT between 1984 - 99. This would generate about US $ 120 million for the economy. This undertaking, when completed, will be a landmark in the achievements of the development projects supported by UNDP/FAO assistance.

Review and Outlook

According to the studies carried out by FAO (1975 - 76) the share of the natural rubber in the elastomer market has risen to 33·6% and the increase in prices of synthetic rubber following the oil crisis favoured the demand for natural rubber and a better price relationship. Currently the position of natural rubber prices remains strong.

Total elastomer demand for the decade 1975 - 85 is projected to increase by 7% per year from 9·9 million tons in 1975 to 14 million tons in 1980 and 20 million tons in 1985.

During 1980 - 85, the supply of natural rubber is projected to grow by slightly less than 6% per annum, which is lower than projected expansion in demand. Assuming the realization of current planting and replanting programmes (trees which will come into production in 1985 must be planted during the next two years) and current technology, output should rise to 5·9 million tons in 1985, compared with 3·3 million tons in 1975. This implies a decline of about 4% in natural rubber's share of the total market between now and 1985, strictly because supplies will be insufficient. In order to allow natural rubber to retain its present one third share — a feasible objective both technically and economically [1] — producers would have to expand their production at an annual rate of 7%, about the same as over the past decade. If, on the other hand, natural rubber's share is to be raised to the 40% which represents the aim of the newly agreed Rubber Price Stabilization Scheme, a more rapid increase of over 9% per year will be required. The achievement of either objective calls for an immediate decision to expand investment in natural rubber beyond that currently envisaged before the end of the present decade.

Price outlook for natural rubber would appear to be very favourable, based on shift on radial tyres in USA and the competitive level in price with that of synthetic rubber. The future prospects depend on keeping prices competitive with synthetics and maintaining sufficient supplies to allow for utilization to expand. A price stabilization agreement currently being finalised by natural rubber producing countries is an important step in this direction, taking into account a supply rationalization scheme and an internationally managed buffer stock, satisfactory to both producers and consumers.

APPENDIX

RUBBER PRODUCTION ESTIMATES FOR 1980

	1971	1980 (estd. in 1971)
	000 MT.	
Malaysia	1,324	2,500
Indonesia	834	1,055
Thailand	316	485
Sri Lanka	141	195
Vietnam	35	82
India	90	200
Papua N. Guinea	7	11
Other S. E. Asia	19	25
Liberia	83	140
Nigeria	65	116
Zaire	40	40
Cameroon	11	25
Ivory Coast	11	20
Other Africa	2	2
Brazil	25	52
Other L. America	7	7
Total	2,900	5,000

REFERENCES

ANON (1974). Agricultural development in Nigeria, 1973 — 1985. The Federal Ministry of Agriculture and Natural Resources, Joint Planning Committee, Lagos. 1974.

ANON (1976). Thirty eighth Annual Report, MRPRA, July 1976.

FAO (1975-76). *FAO Commodity Review and Outlook*, 1975 - 76.

SEKHAR, B. C. (1973). Natural rubber, Shape of things to come. *Commerce* **15**, 12.

[1] Assuming that prices of natural rubber do not remain substantially above those of SBR for any length of time.