

FORESTRY AND KAIÑGINING IN THE PHILIPPINES  
A SELECTED BIBLIOGRAPHY

Prepared by  
Dr. Geoffrey A. J. Scott  
University of Winnipeg, Canada.

The following bibliography lists references under specific environment use related topics for the Philippines. Most references are available in the library at the Forest Research Institute (FORI) and the College of Forestry, University of the Philippines at Los Baños, Laguna RP. In most cases when a reference is first used a short statement about the contents of the article follows. When the reference is referred to again under another topic the reader is informed to turn back to this first use of the reference for full information. Articles are listed under the following section headings:

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For reference materials, encouragement and assistance in preparing this selected bibliography I am greatly indebted to: Dr. Dominador Z. Rosell, President of the Philippine Geographical Society; Dr. Romeo Bruce, Professor of Photogrammetry, UP, Diliman; Dr. Bernardo Jasmine, FORI; Dr. Romeo Raros, Dr. Percy Sajise and Dr. Anacleto Duldulao, College of Forestry UPLB; Gordon Hart, Hilda Koslowsky and Robert Moskal, Winnipeg, Canada.

Copies of this bibliography can be obtained from Dr. G. Scott, Department of Geography, University of Winnipeg, 515 Portage Avenue, Winnipeg, Manitoba, Canada. R3B 2E9. As with other bibliographies it is strongly recommended that the original article be checked rather than quoting information directly from this bibliography.

Araneta, Teodoro C. (1978)

"Zamboanga Forest Managers Corporation Agroforestry Farm Model Project". Canopy, 4(1); 6-7.

Kaiñginero Co-operation Farmers being organized into a farmer production and marketing cooperative. "Seldas" or working families (of seven) are formed to do planting and harvesting. They get one year permit until the company is satisfied that things are going well.

Arañez, German B. and Rogelio B. Baggayan. (1978)

"Reforestation and Afforestation in the Philippines." Paper presented during the First Philippines Forestry Congress, Philippine Village Hotel. Oct. 2-6, 1978.

The problem of reforestation facing the Philippine people is enormous. Salient factors are reviewed that contributed to the destruction of their forest. Other programs have been initiated to beautify the nation incorporating control of environmental and pollution problems.

Baconguis, Santiago R. (1978).

"Enhancing quality of life through watershed and water resources development."

Paper presented at the Fourth Anniversary Symposium. FORI College Laguna. Dec. 18, 1978.

Outline present Philippine problems of floods, drought, and sea intrusion (in the cities of Cebu and Butuan). The destruction of watersheds should be reversed and every Barangay should have specially protected watersheds. Problems of Kaiñgineros and squatters inside the watersheds should be studied.

Baggayan, Regelio B. (1977).

"A Place for afforestation/reforestation in hill-country development." Proceedings International Workshop on Hilly Land Development. 3-6 Aug. 1977. Legaspi City, RP. pp 241-246.

Discusses P.D. #1153 and P.D. 705 Sect. 27. regarding reforestation.

Basada, Romeo M. (1979).

"Fertilization as a forestry tool in the tropics." Canopy, 5(10): 12-14.

The advantages of fertilizing as a means of increasing crop productivity is discussed. Examples of fertilizer applications in specific tropical areas are given and it is concluded that fertilization appears to be a useful silvicultural tool with potential for the Philippines.

Basada, R. N. (1977).

"PICOP'S agroforestry program". Canopy, 3(5):7

This PICOP project blends forestry and agriculture into a single operation working hand in hand towards the attainment of objectives. PICOP needs 430 tons perday to satisfy its pulp and paper mill. Also discusses the newly established Dipterocarp Research Centre (of FORI) located in Bislig Surigao del Sur and whose main thrust is

research on the perpetuation of the dipterocarp forests.

Benge, Michael (1977).-

"Leucaena: a good nurse crop." Canopy, 3(5):6.

This mentions the use of Leucaena leucocephala as a primary reforestation species in 'alang-alang' (cogon) grasslands in Indonesia. Leucaena is also a good nurse crop for coffee, cacao, kapok and vanilla.

Benge, Michael D. (1977).

"The private sector's contribution to reforestation" Canopy, 3(6):4-5.

Mabuhay Vinol has 380 ha in great ipil-ipil to produce charcoal for production of carbide.

Binua, Thomas M. and Moises A. Torio (1979).

"Kaiñgineros as full-time partners in reforestation" Canopy, 5(1):5.

This points out that to reforest the 1,365,205 ha of watershed considered critical in RP would cost ₱ 2,593,887,500 at the rate of ₱ 1,900/ha. Why not pay the kaiñginero to do it, they are available. (Indicates that kaiñgining is a simplistic problem but unfortunately gives an even more simplistic solution).

Bucad, Armando V. (1979)

"The Greeners' North: A model" Canopy Feb. 1979 vol.5. no.2, p.5.

Two hundred metres on each side of the Reforestation Highway, both sides are planted to premium and fast-growing species, nurtured by the latest in water-system technology.

Bucad, Armando V. (1978)

"Private reforestation for the Philippines". Canopy, 4(5): p. 1,11, 12.

A revolutionary idea for reforestation using the private sector is given. Outlines need for increased efforts due to such problems as PCARR (1976) report that 14% field survival is all that is experienced in national reforestation efforts. Proposes the set-up of a Reforestation Board to supervise reforestation companies.

Bueno Jr., Aguinaldo C., (1979).

"Revegetation of mining disposal areas" Canopy 5(8):1,3,5.

The effects of mining on the environment are explored.

Bureau of Forest Development (1979).

"Communal Tree Farm Information-Kit"

The Bureau of Forest Development will provide the technical know-how in the establishment of tree plantations.

Carlos, Juan T. (1977)

"Fruit tree farming - An alternative in Hilly country development." Proceedings International Workshop on Hilly Land Development 3-6 Aug. 1977 Legaspi City, RP. pp 265-271.

The case for fruit tree farming in hilly areas is presented.

Claveria, Jose R. (1953).

"Growing Benguet pine (Pinus insularis Enol C.) in Cebu Province." Philippine Journal of Forestry. 9:57-76

Benguet Pine grows in habitats not altogether the same as original home.

Claveria, Jose R. (1953).

"Hambabalud (Neonauclea formicaria (Flm) Merr.) as a reforestation crop." Philippine Journal of Forestry. 9:145-168.

The vast cogonal and open areas all over the Philippines, estimated to be 17.5% of its total land area, the result of roving system of agriculture or shifting system of cultivation practiced by both nomadic and settled populations, produces a difficult economic problem for the government today.

Corales, Juan and Policarpo de la Cerna. (1950)

"Cebu reforestation project". Philippine Journal of Forestry. 6: 5-22.

The Cebu Reforestation Project or "Forestal" is 2,700 ha in 16 non contiguous blocks.

Dacanay, Placido (1949).

"Utilization of wastelands and the economics and development of reforestation in the Philippines." Philippine Journal of Forestry. 6:199-216.

Kaiñgin form of agriculture is undoubtedly, the largest single cause of forest-destruction in tropical countries. 17.5% has been converted into open and grasslands covered mostly with cogon. The article gives some history of reforestation in the Philippines and includes a map of reforestation projects.

Dimingo, Ireneo L. (1977)

"Industrial forest-plantations in Hilly land development" Proceedings International Workshop on Hilly Land Development, 3-6-Aug. 1977 Legaspi City RP.

The development of industrial forest-plantations is now a major forestry activity in the Philippines.

Duldulao, Anacleto C. (1975)

Kaiñgineros' Perceptions of and Attitudes Towards Forest Conservation in Mt. Makiling, Laguna, Philippines. Ph.D. Thesis. College of Forestry, Los Baños, Laguna R.P.

Duldulao, Anacleto C. (1974).

"Reforestation is not a problem" Forestry Digest 2(3):15-16

The Philippines has suffered more than enough already from floods but it will continue to suffer more if vegetation is not brought back to denuded mountain areas. About 1.5 million hectares of vital watersheds lands need immediate reforestation. It is only a problem if we allow it to be.

Duldulao, A. C; W.C. Depositario; E. A. Llapitan; J. D. Olivar and A. G. Principe. (1977)

"An Integrated Project for Kaiñgin Control in the Philippines: A New Approach to Forest Conservation" UPLB DNR-PCARR Proj. No. 238. Phase I Socio-Economic Profile Survey of Kaiñginero

Co-operatives.

Editorial (1979)

"Reforestation gains are listed." Bulletin Today, 78(8), Feb. 8, 1979.

This recounts hectareage reforested, showing an increase in rate of reforestation on the average deforestation dropped from 170,000 ha in 1973 to 65,958 in 1978 through increased protection of forests. Private citizens also aid in reforestation.

Editorial (1971)

"Firm Enforcement of Conservation. The Anokan Case." Forests and Farms: 6(7):5-6.

FFF (Free Farmers Federation) cut down plantation of Albizia and Lumbang in Anakam-Nasipit reforestation project, Gingoog. in May - June 1971.

Editorial (1970)

"How to solve the Kaiñigin Problem". Forests and Farms 5(10): 13-14.

Kaiñigineros need to be integrated with opportunities to progress. PICOP and Siliman University have demonstrated the agro-forestry technique.

Editorial (1961)

"Extensive Reforestation is Needed" The Lumberman: 7(4):21

Deforestation and open lands are now so widespread that there is no province that does not possess them.

Espinosa, Longinos M. (1952)

"Forestry Problems in Antique". Forestry Leaves, 5(4):25&30.

This pernicious practice which has been long in vogue in this province has converted big portions of the once beautiful and bountiful forest into a vast cogon land of about 51,760 ha or about 19% of the entire area of this province, leaving only scattered patches of forest along the provincial boundaries.

Festin, Seneco D. (1972)

"The Taungya or Shamba System of Land Cultivation" Reforestation Monthly 11(1-3):14-15.

The Shamba System of Kenya is discussed, giving three factors that are necessary for its success. This system is similar to the Tree Farm Lease Agreement which only aggravated the problem.

Fontanilla, Conrad (1977).

"Our problem in reforestation is getting the people involved". Canopy, 3(5):5 & 14.

In the Philippines, the problem in reforestation is getting the people involved in reforestation work.

Fontanilla, Florentine (1971)

"Grazing on Reforestation Plantations" Reforestation Monthly, 10,(2-4): 26-27.

Helps eliminate weeding, and fires and some trees do better e.g. Nasipit in its Lumbang plantations. Suitable when the

trees are tall enough to withstand trampling, but not so big as to shade out groundcover.

Galang, Eduardo (Moderator) (1978).

Abstract of "Economics of wise forest utilization and development." Seminar of First Philippine Forestry Congress Oct. 2-6, 1978. Philippine Village Hotel, Manila.

With the present logging system, it is estimated that about 0.6256 billion cu. m. are lost either to logging wastes or wood residues. The paper expressed need for research on use of these wastes.

Ganapin, Delfin J. Jr. (1978)

"Quo Vadis, Philippine Forests?" Forestry Digest 5(2): 1-16.

Illegal logging is the rich mans' stress on the forest. Kaiñigin is the poor mans' stress.

Gandaman, Alma (1971)

"Tree farming: Answer to reforestation." Philippine Farms and Gardens. 8(3):12.

Lists the usual problems of deforestation and squatting. Areas needed to be reforested is about 5 million ha. In Bislig, Surigao del Sur 70 farmers with 10 ha each planting Albizia.

Garcia, Paulino (1960)

"Forest Conservation, A Responsibility". Philippine Journal of Forestry. 16:203-205.

Generalao, Maximino L. (1979)

"ILCO goes agroforestry" Canopy 5(8):7.

The objectives of the Insular Lumber Company (ILCO) at Hinoboan are outlined.

Generalao, M. L. (1978)

"Land use pattern and its relation to agroforestry" Canopy 4(6):7

The development of combined agriculture and forest resources has necessitated both institutional and economic measures for land management.

Generalao, Maximino L. (1977)

"Agro-forestry for optimum land use and rehabilitation of denuded areas". Canopy 3(8):7

Agro-forestry is stressed as a measure to be taken to help control the bad aspects of kaiñigining as PD 705 does not seem to stress the effects of this practice.

Glori, Antonio V. (1977)

"Direct seeding in the Philippines: A Challenge". Paper presented at the Third Anniversary Symposium FORI, College Laguna, Dec. 18, 1977.

Due to escalating expenses in reforestation direct seeding is suggested as a way of reducing costs by 50%. Possible factors affecting the performance of direct seeding practices are identified and included.

Hilario, Frank A. (1977)

"Reforestation Cities for the Philippines" Canopy 3(4):6,7,10.

Discusses the various approaches both tried and to be tried to reforestation. Then he outlines the method proposed by FORI field members to establish 20,000 ha reforestation companies. It lists the necessary facts, figures and costs.

Lantican, Domingo M. (1974)

"A Better life through forest conservation" Forest Digest 2(3):8-10

Birth of the forest service was in June 1863 with the organization of the "Inspeccion General de Monte". The recommendation of the Bureau of Forestry as optimum forest land is the balance of the province - 26.65%.

Laraya, Sixto (1950)

"Some causes of failures in forest plantations and their solutions." Philippine Journal of Forestry 7:23-29.

At this time (1950) the Bureau of Forestry has 34 reforestation projects throughout RP. Reasons for failures in reforestation ventures are listed.

Laudencia, Pedro N. (1972)

"Soil and Water Conservation Through the Improvement of Soil Cover." Philippine Geographical Journal 16:42-52.

Lizardo, Leonor (1960)

"Results of trial planting of Eucalyptus in the Philippines" Philippine Journal of Forestry, 16:31-45

Eucalyptus deglupta Blume is the only species of eucalyptus found naturally here. Lists eucalyptus species already tried.

Lopez, Melecio and Carlos Cunanan (1954)

"Brief history of the Canlaon reforestation project" Philippine Journal of Forestry 10:15-30.

In the forested area man is considered the most destructive agency.

Lorredo, Jorge Jr. (1974)

"The PICOP Civic Action Program." Forestry Digest 3(1):11-18.

Doña Carmen resettlement project of kaiñgineros PICOP concession land. An initial 189 kaiñginero families out of 2,182 who were squatting inside the forest reserve of PICOP have been relocated. Each has a 600 m<sup>2</sup> house site and 2 ha of land.

Luna, T. W. (1963)

"Land utilization in Ilocos Norte" Philippine Geographical Journal 7(3):133-142.

Kaiñgin is almost exclusively practiced in hilly and mountainous areas where slopes are steep. Increased runoff and sedimentation have turned many permanent deep flowing rivers into intermittent shallow and gravelly rivers. It might be easier to improve the cogonales than reforest them.

Maceren, Felix (1952)

"Reforestation in Bohol" Forestry Leaves 5(3):26

Unfortunate destruction of forests by ruthless cutting and the kaingin system has transformed what was once a source of income for the government into a complicated and expensive problem needing immediate action.

Makil, Jose and Severino T. Ancheta (1953)

"Brief history of the Paraiso reforestation project." Philippine Journal of Forestry 9:11-21

This Ilocos Norte Project started in 1930 was designed to reforest the headwaters of the Laoag - Vintar Irrigation system.

Matela, Arcadio G. (1972)

"DBP Okays First Loan for tree-planting Industry" Permafor. Forest and farms. 7(3):8-9.

Mendoza, Valerio B. (1979)

"How to grow yemane in cogon and Themeda grasslands." Canopy 5(12):10 & 14.

Discusses seed collection, pregermination treatment, sowing, and seedling size for Gmelina arborea (yemane). Also includes information on fertilizers and maintenance of seedlings.

Mendoza, Valerio B. (1978)

"Revegetating Philippine grasslands need ecological approaches". Canopy 4(6):5

Stresses significance of success to the grassland rehabilitation problem. Suggests pathways for Philippine reforestation work- includes natural succession.

Mendoza, Valerio B. (1977)

"Some ecological considerations in the rehabilitation of Philippine grassland areas." Paper presented at the Third Anniversary Symposium FORI College Laguna 18 Dec. 1977.

Different approaches and mechanisms by which plant succession under Philippine conditions can progressively proceed are outlined. Refers to conditions under which cogon can be killed e.g. shading. Rehabilitation of grasslands needs much more study.

Mendoza, V.B. and R.E. de la Cruz (1978)

"Adaptability of six tree species to cogonal areas. III. Field experiment and additional information" Sylvatrop Philippine Forestry Research Journal 3(2):95-106.

Height and diameter growths were not significantly different, but ipil-ipil (L. leucocephala L.) had the highest survival rate. An enormous amount of manpower, money and time is virtually wasted yearly in reforestation activities because of our lack of understanding of the ecology of Philippine grasslands.

Micosa, Rhodora S. (1977)

"Successful reforestation of barren lands" Canopy 3(5):12.

Likes the use of nitrogen producing species in early revegetation of barren areas. Inoculation could well help in areas of poor soils.



- Monsalud, Manuel R. (1971)  
 "Possible Solution to Kaiñgin Problem" Forests and Farms  
 6(6):10-11.  
 Agroforestry - modified and subsidized Kaiñgining.
- Nablo S. U. (1968)  
 "Conservation Activities and Problems in the Republic of the Philippines". in Talbot, L.M. and M.H. Talbot (eds) Conservation in Tropical South East Asia. International Union for Conservation of Nature and Natural Resources, Morges, Switzerland 1968.  
 General list of laws and agencies dealing with conservation.
- Nano, Jose F. (1951)  
 "Brief History of Forestry in the Philippines" Philippine Journal of Forestry 8:9-125  
 Discusses the various attempts throughout history to protect the forests from the Spanish concepts in the early history through to the various laws and projects of the 1900's.
- Oracion, T.S. (1963)  
 "Kaiñgin agriculture among the Bukidnons of South-Eastern Negros, Philippines." Journal of Tropical Geography 17:213-224  
 A Kaiñgin is maintained for at least two years and sometimes for four or five years, but the rapid growth of secondary forest and of cogon grasses limits the Bukidnon's ability to cultivate a plot permanently.
- Ordinario, Felix (1978)  
 "Agro-forestry: a solution" Canopy 4(12):11  
 Agro-forestry is the intensive development of the land by devoting that portion which is suitable to agriculture for the production of farm crops and raising livestock, with sub-marginal areas left to tree farming. This is the best means of preserving the fertility and structure of most tropical soils and produces the greatest return to the farmer in the long run.
- Ordinario, Felix F. (1978)  
 "Agro-forestry for the enhancement of the quality of Life"  
 Paper presented at the Fourth Anniversary Symposium FORI College Laguna Dec. 18, 1978.
- Pablico, Zosimo M. (1971)  
 "Critical watershed areas need reforestation." Forests and Farms  
 6(11):4  
 Reforestation Administration lists nine watersheds as critical in respect to reforestation work.
- Parks and Wildlife Office, Manila, Philippines (1968)  
 "Status of Conservation in the Philippines" pp 468-480  
 in Talbot, L.M. and M.H. Talbot Conservation in Tropical South East Asia. International Union for Conservation of Nature and Natural Resources, Morges, Switzerland.  
 Basic outline of Government Departments and Agencies responsible for conservation in RP. Indicates that the forest cover of the Philippines was 42% in 1964. Gives a list of the most urgent conservation problems in the country and lists the national parks.

Pelson, Dante N. (1978)

"The Crucifixion: 20th Century Version" Forestry Digest:  
5(2): p.o. & 72.

Penafiel, S. R. (1978)

"The ecologic role of fire in resource management for human survival." Paper presented at the Fourth Anniversary Symposium FORI, College Laguna. Dec. 18, 1978.

Outlines the history of fire and its use. Discusses fires in Benguet pine (P. Kesiya), the use of prescribed burning, and grassland management.

Perino, Jemuel M. (1979)

"Replanting degraded slopes" Canopy 5(1):5

Discusses how seedling survival poses a major problem in reforestation. We have had less than 50% seedling survival throughout the country.

Pollisco, F. S. (1975)

"Reforestation and silvicultural techniques for the regeneration of Philippine forests." Canopy, 1(6):1-3 & 6-8

Forestry administration, effect of kaingin-making, reforestation and socio-economics are discussed. The objectives of agro-forestry are also outlined.

Postrado, Biencenido (1972)

"On utilizing the kaingineros as 'reforesters'" Reforestation Monthly, 11(4&5):21-22

DANR has announced they will get kaingineros to plant trees instead of destroying them - agro-forestry - BUT have they carried out a "thorough comprehensive and integrated study conducted on the sociology, economics, and dynamics of kaingin? Have we taken into consideration his mind, desires and response? If we don't plan this properly (kaingin management), it will flop like all the rest.

Regadio, J. P. (1977)

"The family-approach reforestation program in the Philippines" Canopy, 3(4):4-5 & 10.

The scheme of the Family-Approach Reforestation Program in Malaybalay is discussed as to its advantages, schema, implementation and evaluation.

Reyes, Gregorio D. (1978)

"Agri-silviculture: a Multiple use alternative". Canopy 4(5):8-10

Agro-silvicultural methods ( e.g. taungya and its variations) are being implemented in many places. Gives an outline of traditional taungya and their practices already operating in the Philippines.

Reyes, Imelda E. (1975)

"Giant Ipil-ipil: The Marvelous Tree" Forestry Digest 3(3):27-32

In five years it can reach a height of 35-40' with a dbh of 18-20cm. It was introduced by Dole Pineapple in '60's. The ipil-ipil can be used for: fertilizer, forage, feed, food, firebreaks fence, fuel, fiber, posts and poles and as a reforestation species.

Reyes, Martin R. (1978)

"Philippine Forest Resources," The Malaysian Forester, 41(2):104-113  
States that the dipterocarp forests consist of 3.78 ml ha young growth (logged-over areas) and 3-8 ml ha reproduction/brush. The paper concludes with a discussion of reforestation.

Reyes, Martin R. (1978)

"Possibilities of increasing the yields of tropical rainforest in the Philippines." The Malaysian Forester 41(2):167-170  
The rate of forest conversion to non-forest is decreasing due to the determination of the government. Possibilities for improving yields are discussed.

Reyes, Martin R. (1977)

"Recent research advances and prospects in forest production"  
Canopy 3(2):6-7

Fertilization significantly increases survival rate of seedlings particularly in poor cogon soils. Fertilization is still not practiced in these programs yet.

Reyes, Martin R. (1977)

"Recent research advances and prospects in forest production"  
Canopy 3(4):8-10

Good outline of the state of reforestation in RP. Paints a very positive picture of the future.

Reyes, Martin R. (1976)

"FORI and our national reforestation efforts" Canopy 2(4):2

DAP (Development Academy of the Philippines) reports (1976) that the present rate of forest destruction is 570 ha/day or 204,000 ha/year - determined by Inventory of Natural Resources.

Rimando, Fepidio, F. (1977)

"Why agro-forestry?" Canopy 3(1):9

It is a Chinese concept that is more than taungya or shamba system. It embraces not only the block plantation establishment and land which is not suitable for herbaceous crops, but also the cultivation of food and fodder crops. In the Rep. of the Phil. there are two methods; tree farming and modified taungya system.

Rosario, Emilio A. (1978)

"The need for flood plain management." Paper presented at the Fourth Anniversary Symposium FORI, College Laguna. Dec 18, 1978. Published in Canopy 5(2):2-3

Recommends the establishment of a "Flood Plain Management Authority" to have the sole function of managing the development and use of flood plains. A list of steps required to make flood plain management a reality are outlined.

San Buenaventura, P. (1958)

"Reforestation of Imperata Waste Lands in the Philippines."  
Philippine Journal of Forestry 14:67-76

As of 1958 there were 5,073,000 ha of grassland and open lands in the Philippines (17%). A map of the major areas is given. A table is also given of the reforestation projects.

Sanvictores, Ernesto F. and Dominador M. Faustino (1978)

"Forest Protect". Paper presented at the First Philippine Forestry Congress, Philippine Village Hotel, Metro Manila Oct. 2-6, 1978

Long term and short term recommendations for effective protection of Philippine forests is discussed. Kaiñgin destroys 80,000 ha of forest annually.

Sanvictores, Jose G. Sr. (1970)

"Some serious problems in forest conservation" Forests and Farms 5(2):12-13

Agrees with foresters that annual cut is less than regrowth. One evidence that this is correct is the continuous export of large quantities of logs and wood products over the years without apparently causing any visible strain on production.

Sanvictores, Jose G. (1969)

"Prospects and Implications of Sustained Yield Management and Sound Reforestation Practices at Aras - Asan." Philippine Geographical Journal 13:50-54.

Explains effects and problems of deforestation. Blames the foresters and the kaiñgineros but explains they do it because there is little alternative.

Scott, Geoffrey, A. J. (1979)

"The Evolution of the Socio-Economic Approach to Forest Occupancy (Kaiñgin) Management in the Philippines." Philippine Geographical Journal 23(2):~~58-73~~

The socio-economic approach to forest occupancy (kaiñgin) is still in its infancy. The gradual acceptance by the general public that traditional kaiñginig is bad for everyone is now being accepted which will help protect large areas of forests that still remain for future generations. Changes in Kaiñginig is important for this to occur.

Serevo, Tiburcio S. (1960)

"Silviculture of Tropical Rain Forest With Special References To the Philippine Dipterocarp Forest." Proceedings of the Fifth World Forestry Congress 3:1985-1994. Seattle, Washington.

Briefly discusses Philippine Dipterocarp forests, then outlines the silvicultural practices of loggers and "selective logging".

Suiza, Rene B. (1979)

"Agroforestry is recycling, too." Canopy 5(7):11

Compost making fertilizers and waste recycling are considered. Agroforestry is a good pathway in the production of organic fertilizers.

Suiza, Rene B. (1977)

"Lesser-known trees with reforestation potentials." Canopy 3(9):5

Lists some important species which for one reason or another are largely ignored. The geographical distribution of some are described as well as their economic uses.

Solit, C., F. Asiddao and M. R. Reyes (1962)

"Growth of tropical forest with special reference to the Philippine

Dipterocarp Forests." Philippine Journal of Forestry 18: 69-73, 90-91.

Discusses the importance of growth studies on Philippine dipterocarps. Gives measurement techniques used.

Tamesis, F. (1976)

"Forest plantation Development." Philippine Geographical Journal 20:55-60.

Discusses the development of private forest plantations by the Nasipit Lumber Co. Inc. and the Auokan Lumber Co. Lumbang plantations produce oil while ground cover feeds cattle and horses. By the end of 1973 there were 7 million growing trees in the plantation.

Tamesis, F. (1969)

"The development of the Nasipit tree farm." Philippine Geographical Journal 13:4-11.

Cut-over areas were checked for suitability for agriculture and found not suitable for agriculture due to poor soils. An agriculturalist suggested either basic kaiñgin and fallow works or tree farming; the latter was accepted.

Tamesis, Florencio and Valentin Sajor (1953)

"Forest grazing in the Philippines" Philippine Journal of Forestry 9:1-8

Grazing is regulated by the Pasture Land Act. Approximately 97.5% of the forest is government owned and administered by the bureau of forestry.

Tomboc, C. C. (1978)

"Research on the production of dipterocarps and the dipterocarp forest of the Philippines" Canopy, 4(5):7; 4(6):11; 4(7):13; 4(12):6-7.

The study is concerned with the growth and yield determination of second-growth forests. The studies under biometrics have to do with the multiple correlation in predicting the growth of many-aged apitong stands, the effect of logging injury on the growth and yield of logging residuals. The dipterocarp should remain to be the major source of raw materials of the wood industry, the habitat for wildlife and an important watershed of the country.

Uichanco, L.B. (1971)

"Should Laguna de Bay and Pasig river be left to their doom?" Philippine Geographical Journal 15:84-89.

Through ruthless deforestation resulting from the illegal activities of kaiñgineros and unlicensed loggers, the watersheds of the rivers and springs feeding the lake have been laid bare. Consequently, the lakes' volume was reduced and the water level lowered.

Umali, D. L. (1970)

"Approaches to forest Conservation" Forests and Farms 5(8):14&17.

The positive approach does not work. Kaiñgineros are really victims of social injustice and economic destitution. They troop to the forest, the department of last resort.

Upland Hydroecology Research Program (1978)

"Summary Results, Policy Implications and Recommendations (1976-1978)" University of the Philippines of Los Baños, College Laguna July 1978.

Summary results, policy implications and recommendations (1976-78) for upland resource development are discussed with respect to the influence of physical, biological and socio-economic factors.

Viado, Jose B. (1973)

"Reforestation programs in the Philippines" Forestry Digest 1(2):20-23

General discussion of the history of reforestation, applied research on reforestation, some successes and the value of reforestation.

Viado, Jose (1972)

"RP Forests: The best legacy for tomorrow's generation" Reforestation Monthly 11(1-3):12-14.

There is very little probability that the remaining virgin forests will last beyond 33 years. They also warn that it is very doubtful whether the yield capacity of the productive forest land which has been utilized in the last decades will be sufficient to maintain the log production after the virgin forests have been exploited.

Viado, J. and L.D. Angeles (1966)

"The Planning, Organization and Implimentation of a Large-scale Afforestation and Reforestation in the Philippines." Proceedings at the Sixth World Forestry Conference. Madrid (1966) pp.735-749.

Covers the environment of the Philippines, the history of forestry and reforestation, and the objectives of the Reforestation Administration. Its work is discussed and tables of values are given for vegetation cover as they relate to the plans of the Administration.

Vilar, Crisostomo B. (1968)

"Kaiñgin making: Roadblock to reforestation." Philippine Forests 2(2):26 and 61.

"A monstrous evil," Based on the findings of the National Economic Council, 172,000 ha are laid waste annually. Of this 40,000 ha are due to kaiñgining.

Wright, Timothy W. (1978)

"Querencia Calamianes: A Geographic approach to Intergrated Regional Conservation and Development in Calamianes, Palowan, Philippines. Ph.D dissertation in Geography U. Hawaii.

## DEFORESTATION

Achacoso, Isabela (1951)

"Food production does not mean forest destruction". Forestry Leaves 5(1):13 & 17.

Kaiñgin is "an evil practice, which is largely responsible in the conversion of our once extensive and valuable forest into open and denuded mountain ranges." Make more use of land already classified as agricultural this will reduce need to use the forests.

Agaloos, B. C. (1964)

"Forest Resource Statistics for Western Mindanao" U.S. AID/NEC Forest Development Project, Bureau of Forestry, Manila

Forests now occupy 1,111,000 ha or 59% of the land area in Western Mindonao. The area of old-growth timber in Western Mindonao has been deminishing at the average annual rate of 25,000 ha per year during the last eleven years.

Aguhob, Enriquita C. (1977)

"A forest is cut: what happens" Canopy 3(5):11

Discusses the effects of forest cutting on soils, soil erosion, runoff and water supplies. Stresses that streamflow increases are proportional to area of forest in watershed cut down.

Anonymous (1972)

"Where are the Kaiñgins?" Permafor Forests and Farms 7(6):12-13

Of the 51 districts surveyed, a total of 148,423 ha are being illegally occupied by kaiñgineros. Large areas at present occupied by kaiñgineros still remain unreported. Current estimates place the yearly destruction of forests by kaiñgineros and other forest vandals at about 172,000 ha yearly.

Araneta, Salvador (1970)

"Should we export log or pulp?"<sup>3</sup> Forestry Digest 1(2):54-55

It is more profitable per m<sup>3</sup> to ship pulp - also tress can be suitable and different.

Aranez, German B. and Rogelio B. Baggayan (1978)

- see Aforestation.

Arnold, J. E.M. And Jules Jongma (1977)

"Fuelwood and charcoal in developing countries" Unasylva 29(118):2-9.

Arroyo, Cesar A. (1978)

"Development of mangrove resources for the enhancement of the quality of Human life." Paper presented during the Fourth Anniversary Symposium FORI College Laguna Dec. 18, 1978.

Of the original 400,000 - 600,000 ha of mangrove, we have today perhaps 100,000 ha - it is being removed at the rate of 29,000 ha/yr so it may not last long. Stress the uses made from mangrove swamps both for wood products, agriculture and others.

Baconguis, Santiago R. (1978)

- see Aforestation

Baja-Lapis, Aida (1976)

"Effects of logging injury on sustained yield." Canopy 2(4):11

Sustained yield of forest resources is the key word for continuous forest production. Observations have indicated that unscrupulous logging operations have caused great damage to residuals despite government directives. What is a tolerable level of injuries? Research is needed to find out.

Bedard, Paul W. and Tiburcio S. Serevo (1955)

"Feasibility of Selective logging in Dipterocarp forests."

Philippine Journal of Forestry 11:203-209

Defines selective logging. The objective of forest management in dipterocarp forests should be the maintenance of the stand in continuous production through natural regeneration. Stresses the need for the logging industry to use this system in stands with a fairly even distribution of all-size classes, particularly of the smaller size.

Bruce, Romeo (1977)

"Save our forest today and live better tomorrow". Centre for Development Information. Development Academy of the Philippines Oct. 1977 Mineo.

Full data on area of provinces, forest area agricultural area, etc.

Budowski (1977)

The Melanesian Environment

Burley, T. M. (1973)

"The Philippines. An Economic and Social Geography G. Bell and Sons Ltd. London pp. 375

Population pressure and/or commercial incentive resulting from either the establishment of regular barter trading or the practice of *kaiñgin* agriculture as a supplementary source of income by more sophisticated Filipinos has resulted in the permanent establishment of large areas of second growth forest or cogan grasslands.

Cacanindin, D. C.; L. S. Micoso; J. P. Benson & E. S. Asilo (1976)

"Prediction function for the estimate of clear-cut areas in selectively logged-over dipterocarp forest." Sylvatrop Philippine Forest Resources Journal 1(4):297-302.

Claveria, Jose R. (1953)

"Growing Benguet Pine in Cebu Province."

- see Aforestation

Corales, Juan and Policarpo de la Cerna (1950)

- see Aforestation

Cortez, Corazon (1977)

"The Green Inferno: How to fight it" Canopy 3(5):4.

Forest fires discussed, lead to nothing but deterioration of the human environment.



Dacanay, Placido (1949)  
-see Aforestation

Dalisay, A. M. (1972)

"Conservation and the Kaiñgin Problem." Permafor. Forests and Farms 7(6):1-2

Purposes included: the development of a program that will provide employment and income for the kaiñgineros; the adoption of an agro-forestry program that is pioneered by PICOP; the promotion of planting fast growing trees; organizing kaiñgineros into multi-purpose cooperatives.

Del Castillo, Romula A. (1973)

"Causes and Effects of Forest Destruction" Forestry Digest 1(2):13-19.

The causes and effects of forest destruction are discussed regarding climate, man, insects and erosion.

de los Santos, A. E. (1978)

"Small scale forest-industries for forest land dwellers." Paper presented at the Fourth Anniversary Symposium FORI College Laguna Dec. 18, 1978

The Kaiñgin problem is discussed as a politico-socio-economic cancer that can't be solved by punitive measures. Different government agencies have coordinated intensive research efforts on production, management, labor-saving production and marketing techniques, storage and quality control.

Department of Natural Resources (1976)

"Inventory of Philippine Natural Resources Vol.1" Published by DNR in co-operation with Developmental Academy of the Philippine Publications Office May 1976.

The report showed that from 1969-74 the public forests declined by as much as 2,961,100 ha.

Duldulao, Anacleto C. (1978)

"Kaiñgin, Erosion and Kaiñgin Management." Forestry Digest 5(2):52-63.

Kaiñgin-making can be viewed as a socio-economic system brought about by the interplay of land resources, population and social systems. It is no wonder people who are engaged in it look at it as a legitimate activity. The number is increasing at an increasing rate.

Duldulao, Anacleto C. (1977)

"Physical Characteristics of Hill country areas and How to make them contribute to Socio-economic Development." pp. 112-116 Proceedings International Workshop on Hilly Land Development 3-6 Aug., 1977 Legaspi City.

During 1969-74 commercial forests reduced from 31.4% to 26.14% of land, and all forest from 55.5% to 45.63%.

Duldulao, Anacleto C. (1975)

-see Aforestation

Duldulao, A. C., et. al. (1977)

-see Aforestation

Eckholm, Erik P. (1976)

"Losing Ground. Environmental Stress and World Food Prospects"  
W. W. Norton & Co. Inc. New York p.223

Editorial (1976)

"Effects of logging injury on sustained yield" Canopy 2(4):11  
Research on the effects of different logging injuries on the growth, yield and development of residuals is still needed.

Editorial (1974)

"Round-up of Kaiñgineros, illegal loggers ordered" Philippine Lumberman 20(10):4

It has been ordered that there should be a roundup of kaiñgineros and illegal loggers - prompted by a Bureau of Forestry report that the province is now in danger of flood-drought situations.

Editorial (1971)

-see Aforestation

Editorial (1971)

"Just how much forest have we left?" Forests and Farms 6(3):3  
The question posed is difficult to answer. It calls for an audit committee to find out the truth.

Editorial (1967)

"Kaiñgineros, Squatters Responsible for Huge Timber Loss." Philippine Lumberman 13(2):30

Too much blame has been upon legitimate loggers for forest desolation, yet the figures clearly show that most destruction is caused by land clearing, kaiñgins and squatting.

Editorial (1961)

-see Aforestation

Enabor, Ephraim E. (1977)

"International trade in tropical forest development." Sylvatrop Philippine Forest Resources Journal 2(1):9-22.

In 1974 it still has 84% of total volume of world exports of tropical hardwoods. The need is to phase out log exporting and move toward manufacturing their own wood products.

Espinosa, Longinos M. (1952)

-see Aforestation

Fernandez, S. P. and A. J. Evangelista (1952)

"Illegal Kaiñgin: A National Arson." Forestry Leaves 5(4):23-24,30.

Dr. Karl Pelzer, found that the natural resources of the oft-dubbed "Land of Opportunities", enormous as they are, are not inexhaustible, and warned that 20 to 30 years from now, Mindanao will have been depleted completely of commercial timber unless reforestation work is immediately undertaken in the region.

Florido, L. V. (1979)

"Implications of timber harvesting ban on watersheds." Canopy 5(11):5-6.

The abundance of water resources in RP is threatened

by the present critical condition of watershed brought about by practices which include timber harvesting. Guidelines are proposed for logging operations harvesting in watershed area.

Fox, R. B. (1960)

"Ancient Filipino Communities." Symposium on the Impact of Man on Humid Tropics Vegetation Goroka, PNG.

Gives good discussion of kaiñging as it must have been practiced in areas away from the coast in pre-Spanish Philippines.

Galang, Eduardo (Moderator) (1978)

-see Aforestaion

Ganapin, Deltin J. Jr. (1978)

-see Aforestation

Gill, Tom (1960)

"What is happening to Philippine Forests?" Philippine Journal Forestry, 16:17-30

The forests are discussed as to what they represent to the country, what is happening to them and what the consequences are likely to be.

Guerrero, Perfecto K. & Salita, Domingo C. (1977)

"Mineral Resources - Impact of Exploitation on Environment in the Phillipines." Philippine Geographical Journal 21:39-45.

Outlines the four major problems of mining and the effects on the environment.

Hernanadez, S. C. (1949)

"The menace of Soil Erosion in Cebu" Journal of the Science Society of the Philippines 1(3):103-108

The farmers of Cebu through the kaiñgin method of farming have unknowingly misused the land by clearing forest land including the steep slopes. Various remedies are suggested.

Jasmin, B. B. (1975)

"Effects of Grassland Uses Upon Surface Run-off and Sediment Yield." Paper presented at the Philippines Forest Research Society Symposium, Dec. 1975 College Laguna.

The higher slopes are continuously grazed. Every dry season these grasslands are burned to do away with old growth and grow young grass for cattle.

Lantican, Domingo M. (1977)

"Educating for forest industires in the Philippines." Unasyuva 29(117):20-24.

A report of forest resources.

Lantican, Domingo M. (1974)

-see Aforestation

Laudencia, Pedro N. (1972)

-see Aforestation

Lopez, Melecio and Carlos Cunanan (1954)

-see Aforestation

Luna, Telesforo W. Jr. (1975)

"Problems and status of Environmental Quality in the Philippines." Philippine Geographical Journal 19:105-114.

Repeats the UN Developmental Programme (1970) report on "Land Use Economics in the Philippines." which says there is no justification for turning forest into farmlands. HYV - high yield varieties should be used instead to increase production.

Martinez, Millet G. (1972)

"Our Ravaged Forests." Reforestation Monthly 11(1-3):7-8.

For the last 10-15 years kaiñgin accounts for 40% of the total forest destruction. By 1985, we shall have reached the point of 'irreversible descent', and we shall be forced to import \$221 million worth of logs for our local consumption.

Mendoza, Valerio B. (1979)

"Deteriorating forest environment: a serious ecological problem." Canopy 5(9):3&4.

Tremendous problems on environmental rehabilitation face people in the Philippines today. **Forestry**, shifting cultivation and resources are discussed with recommendations.

Mercado, Juan L. (1971)

"RP Loggers face a dead end." Philippine Farms and Gardens 8(14):2.

Quoting UN Dev. Program it says there is very little possibility that the virgin forests of RP will last more than 33 years. Forest statistics in the Philippines are nationally inaccurate. The area annually cut-over may be more likely 130-190,000 ha.

Mondala, Connie A. (1977)

"How the problem of forest conservation has come about." Canopy 3(5):10&12.

Lists the reason for the need to conserve the forests now. These include: population pressure, technological program, timber famine, politics and environmental degradation.

Nablo, Severino U. (1975)

"Not Export Ban. Selective Logging will enhance forest Conservation." Forest and Farms 8(12):4-9.

Points out that a total ban on log exports would be bad for business after a period of depression in the industry. Most loss of forest land is a statistic due to land reclassification.

Nablo, S. U. (1968)

-see Aforestation

Nano, Jose F. (1951)

-see Aforestation

National Conference on the Kaiñgin Problem (1965)

"Conference Recommendations" U. P. College of Forestry, College Laguna, March 12-13, 1964.

In the Philippines, shifting cultivation, called kaiñgin has outlasted its usefulness. This article also discusses the conclusions of the conference.

- Olivar, Jose D. (1974)  
 "Forestry Extension: An Approach to Forest Conservation."  
Forestry Digest 2(3):26-28.  
 It is through forestry extension that the people will become aware of the importance of forest to the national well-being and of the need for their protection and perpetuation.
- Oracion, T. S. (1963)  
 -see Aforestation
- Ordinero, Felix (1978)  
 "Agro-forestry: A solution."  
 -see Aforestation
- Pablico, Zosimo M. (1971)  
 -see Aforestation
- Palaypayon, W. R. (1977)  
 "A biological perspective of deforestation." Canopy 3(2):13-14  
 Four causes of forest destruction are fire, wind, animals and man.
- Parks and Wildlife Office, Manila, Philippines (1968)  
 -see Aforestation
- Pecson, Dante N. (1978)  
 -see Aforestation
- Pendleton, Robert L. (1942)  
 "Land Utilization and Agriculture of Mindanao, Philippines."  
The Geographical Review 32:180-210  
 As a result of kaingin, or shifting cultivation, grassy plains and slopes of vast extent are found. They are useful for cattle. Cogon burns rapidly, even when green. When it is burned annually, as is usually the case, it becomes thicker and thicker and only a very few kinds of small 'fire proof' trees survive.
- Pendleton, R. L. (1940)  
 "Soil Erosion in the Tropics." Journal of Forestry 38:753-762.  
 The steep slopes are used to grow maize, and often have been cultivated until the soil has been entirely eroded away, leaving exposed the whitish coralline rock.
- Rabor, D. S. (1971)  
 "Wildlife Conservation in the Philippines." Philippine Geographical Journal 15:46-63.  
 RP really no longer is rich in wildlife resources. The laws read well but they are not enforced. Deforestation, regardless of what the supposed forestry experts say, has already reached dangerous proportions.
- Rabor, D. S. (1959)  
 "The Impact of Deforestation on Birds of Cebu, Philippines, with new records for that Island." The Auk 76:37-43.  
 Of the original ten endemic forms (of bird) which were once there, only one has continued to exist at present. The single

remaining form has become adapted to a bambo-grove type of habitat; but it is very rare.

Raros, R. S. (1979)

"Cropping systems research and development of hillyland rehabilitation." SEARCA Professional Chair Inorganic Lecture. June 15, 1979, UPLB College of Forestry, Los Baños, Philippines.

There is a trend to move to upland locations among lowland communities. Technology is not suitable. It is important to sustain lowland crop production, expand the agricultural base, to assist rehabilitation of uplands. Mixed cropping systems are desirable, if they can be introduced to communities in a socio-economically viable way.

Reyes, Martin R. (1978)

"Possibilities of increasing the yields of tropical rainforest in the Philippines."

-see Aforestation

Reyes, Martin R. (1978)

"Natural forests need attention." Canopy 4(12):3.

With guidance and supervision by foresters whose real place of work is in the forest, selective logging can succeed as a practice of forestry - science, art and business, serving the peoples economic and environmental needs."

Reyes, M. R. (1959)

"Natural Regeneration of the Philippines Dipterocarp Forest." The Philippine Journal of Forestry, 15:39-59.

After a discussion of the economic importance of the dipterocarp forests is given a description of the major species and their distribution. Discussion of regeneration in logged-over areas follows and government measures are listed. To date some 7,700 ha have been suitably logged leaving good residual growing stock in Minidanao.

Roberto, Leonardo R. (1970)

"Solution to forest fires and kaiñgin making- Naval stores." Philippine Forests 4(2)12-13&31.

You cannot make people forest conservation conscious unless they have an alternative to earn a living. Pine imparts acidity to the soil so is considered by the farmers to be a jinx. Produce resin for vaval stores here instead of imports. One company imports about ₱ 2 million/year for sizing and for the paint and allied industries. The native can tap resin and make above the national average in 8 month season.

Roberto, Leonardo (1970)

"Kaiñgineros threaten Mt. Makiling." Forests and Farms 5(10):8-9&21.

3,910.7 ha in Makiling is forest. Only transferred to UP in 1962. Water is drying up in the creeks of Colamba and almost 1/3 of forests is threatened by kaiñgineros.

Rosario, Emilio A. (1979)

"Environmental considerations in multiple-use forest management planning in the Philippines." Canopy 5(9):8-12.

The environmental impact of man on the physical, chemical, biological, cultural and socio-economic elements are reviewed.

Sajise, P. E. (1975)

"Ecology in the Philippine setting: issues and challenges." Philippine Geographical Journal 19:99-104.

Thirty percent of South East Asia is grassland. R. P. originally was forested.

Sanchez, Eduardo R. (1971)

"Grim future for RP Forests." Philippine Farms and Gardens 8(15):15.

If the present trend is not reversed, the Philippines will have to import ₱ 3 billion worth of logs for domestic consumption alone by the year 2000. Kaiñgineros cut 80,000 ha/year.

Sanvictores, B. F. (1975)

"Moving away from log exports." Unasyuva 27(2):10-14

By 1973 only 33% of the countries timber was being processed locally into lumber. Sawmills were operating at about 25% of operating capacity. Government policy is to phase out exports of logs until it enforces a total ban on January 1, 1976.

Sanvictores, Ernesto, et. al. (1978)

-see Aforestation

Sanvictores, Jose G. Sr. (1970)

-see Aforestation

Serevo, Tiburcio S. (1964)

"Some aspects of the Philippine Forest Situation." Philippine Journal of Forestry 20:111-128.

Due to the decreasing area of volume of standing timber, Serevo suggests a realistic re-appraisal of Philippine forest policies. He states that there are 9.3 ml ha of commercial forest and 3.8 ml ha of non-commercial forest. He gives a favorable picture of both the volume of stands and the length of time they will last. Points to the low budget of the Bureau of Forestry as a problem.

Serevo, Tiburcio S., Florencio Asiddao and Martin R. Reyes (1961)

"Forest-Resources Inventory in the Philippines." The Lumberman 8(1):16-24.

Changes from 1935 to 1957 are not all due to cutting, but reclassification. Figures on kaiñgins are far from accurate.

Serna, Cirilo B. (1972)

"Kaiñgins: Facts, Figures and Why." Reforestation Monthly 11:3-5

Statistics are confused because no actual survey of kaiñgin occupancy has been done and there are differences in definition of the term. The total forest area depletion in the country is an average of 204,000ha/yr. It is due to agricultural expansion and shifting cultivation possibly accounts for about 26% of this total.

Serrano, Rogelio C. (1978)

"Preserving the Philippine Mangrove Swamps." Canopy 4(7):6-7  
Lists common trees and fishes associated with RP mangrove stands. Also lists minor forest products and volume produced in those areas. Stresses the ecological values of mangrove swamps and problems in their preservation.

Sims, B. D. (1975)

"Man-induced fluvial erosion in the Upper Pampanga and Talavera Basins." Paper presented at the Philippine Forest Research Society Symposium on Watershed Management, Dec. 1975. UPLBCF, College, Laguna.

Spencer, J. E. (1957)

"Philippine soil, water and wood are worth maney now."  
Philippine Geographical Journal 5:57-69.

Former immigrants brought in the kaiñgin - an agricultural system that evolved which still plagues the country. With the coming of the Spanish many kaiñgineros became sedentry farmers. The Spanish, however, little understood the problems of soil erosion or forest-disappearance and did little to promote conservation in any of its aspects.

Sulit, Carlos, (1948)

"The farmer and the forest." News Bulletin. Philippine Department of Agriculture and Natural Resources. (Sept.- Oct. 1948) pp. 39-40.

General discussion of the effects of deforestation on the landscape. Grasslands develop which became the breeding place for locusts. Stresses that the farmer needs the forest so they 'save' each other.

Tamesis, Florencio (1976)

-see Aforestation

Tamesis, Florencio (1947)

"Forestry problems of the Republic." Philippine Journal of Forestry 5:3-6.

Brief discussion of Philippine forest problems and particularly the problem of wastage, kaiñginning and agricultural development.

Uichanco, L. B. (1971)

-see Aforestation

Ulibassy, Manolito (1979)

"Logging roads (what have they done?)" Canopy 5(10):5

Incidental to the establishment of logging roads to extract logs, the roads open up the region to landless people and kaiñgin-making. They also contribute to erosion and sedimentation and impair revegetation.

Umali, D. L. (1970)

-see Aforestation

Upland Hydroecology Research Program (1978)

-see Aforestation



Uriarte, Nicolas S. (1978)

"Determination of relative clear-cut areas in selectively logged over forests." Paper presented at the Fourth Anniversary Symposium FORI College Laguna Dec. 18, 1978.

Deals with the Forestry Administration Order No. 23 and No.74.

Vandermeer, Canute (1967)

"Population patterns on the Island of Cebu, the Philippines: 1500-1900." Annals of the Association of American Geographers 57:315-337.

Prior to 1900 the population growth of Cebu was higher than that of the whole Philippines because of a relative absence of malaria and the presence of the good harbour at Cebu City. Cebu once supported a fairly complete natural cover of hardwoods forest. Today, however, forests occupy only 2-3 % of the total land area.

Velasco, Abraham B. (1970)

"Help save the forests of Abra." Forests and Farms 5(5):4-5.

The three main culprits of the forests are wood gatherers, (for fire-wood for the flue-curing barns of the tobacco industry), kaiñgineros, and ranchers.

Veracion, Vicente P. (1978)

"Managing mountain watersheds to benefit human society."

Paper presented at the Fourth Anniversary Symposium FORI. College Laguna Dec. 18, 1978.

Outlines the mountain watershed as an ecosystem and the hydrologic effect of cover change. Repeats the results of other effects. He then outlines a management approach for sound sustained watershed management in mountain watersheds.

Veracion, V. P. and A. C. B. Lopez (1975)

"Rainfall interception in a thinned Benquet Pine Forest stand." Sylvatrop, Philippines Forest Research Journal 1:128-134.

Thinning a 30 year old natural Benquet Pine stand increases the amount of rainfall that reaches the ground which eventually becomes part of the ground water supply for human consumption and utilization. Different types of forest thinning and consequences of each type is discussed.

Viado, Jose B. (1973)

-see Aforestation

Whitford, H. N. (1921)

"Forests and Human Progress." Journal of Forestry 19:58-64.

Man with primitive methods of agriculture has dominated nearly three fourths of the virgin forest area of the Philippines. Here is a case where the grass and not the forest has dominated primitive mankind!

Wright, Timothy W. (1978)

-see Aforestation

Zon, R. (1920)

"Forest and Human Progress." Geographical Review 9:139-166.

It is estimated that kaiñgin-making has destroyed over half the original forest cover. Abandoned areas are covered by cogon grass.

FOREST LAWS/AGENCIES

Anonymous (1974)

"The Role of Local Government in forest Conservation." Forest Digest 2(3):17-18.

Local government should do much more about fires and kaiñgins. Probably it can be surmised that local governments are not too keen about forest conservation, because they do not get sufficient shares by way of income from our forest resources.

Arañez, German B. and Rogelio B. Baggayan (1978)

-see Aforestation

Arroyo, C. A. (1978)

"Man-made forest: implications and needs." Canopy 4(6):8

Timber licences, B.F.D. and other interested parties should combine their efforts to formulate the most appropriate system for the developement of industrial forest plantations.

Bureau of Forest Development (Mar.7, 1979)

"Additional Guidelines in the Implementation of the Forest Occupancy (Kaiñgin) Management Program." BFD Circular n. 14 Ministry of Natural Resources; RP Diliman, Quezon City.

Guidelines are set out to further improve forest occupancy management plans. An approval sheet, survey, application permit for a kaiñgin, occupancy evaluation sheet and other reports are included at the back.

Cruz, Virgilio C. Dela (1979)

"Shall we adopt the stumpage sale method in awarding timber licenses?" Canopy 5(2):4

Stumpage is standing timber which can be cut down and made into any of various wood products. The article evaluates stumpage.

Cruz, Virgilio C. Dela (1979)

"Production standards in the harvest of pine forests."

Canopy April 1979 p. 14.

Information on time consumption for any given forestry work is of vital imporatnce to managers in the production standards on efficiency of their various production units.

Dacanay, Placido (1949)

-see Aforestation

Duldulao, Anacleto C. (1978)

-see Deforestation

Duldulao, Anacleto C. (1975)

-see Aforestation

Duldulao A. C. et. al. (1977)

-see Aforestation

Editorial (1972)

"FAO On Kaiñgin Management." Permafor Forests and Farms  
7(6):13-17.

Discusses Forestry Administrative Order No. 62 - subject being kaiñgin management and land settlement regulations.

Editorial (1969)

"The revised Kaiñgin law (Republic Act No 3701) Permafor Forests and Farms 4(3)

Discusses exceptions to penalties etc. for those occupying, in good faith, for more than five years.

Editorial (1947)

"The Reforestation Act of 1947." Philippine Journal of Forestry  
5:143-144.

This act established a permanent source of funds for reforestation in RP. Seven other forest laws passed by the First Congress of the Republic are discussed.

Fernandez, S. P. and A. J. Evangelista (1952)

-see Deforestation

Ganapin, Delfin J. Jr. (1978)

-see Aforestation

Laudencia, Pedro N. (1972)

-see Aforestation

Makil, Jose (1952)

"An Effective And Practical Forest Policy." Forestry Leaves  
5(4):20-22.

Discusses various acts dealing with forestry policy, including Organic Act of 1902, Act 2711 of 1917 and others.

Nablo, S. U. (1968)

-see Aforestation

Nano, Jose F. (1951)

-see Aforestation

Nano, Jose F. (1939)

"Kaiñgin laws and penalties in the Philippines." Philippine Journal of Forestry 2(2):87-92

Some actual laws and penalties are described to curb kaiñgin which will stop (slow down) cogon.

Oracion, T. S. (1963)

-see Aforestation

Parks and Wildlife Office, Manila, Philippines (1968)

-see Aforestation

Pelson, Dante N. (1978)

-see Aforestation

Pelaez, Emmanuel (1960)

"The Framework of a Forest Conservation Act." Philippine Journal of Forestry 16:171-177.

In the present situation of increased drainage of forest resources it is necessary to make an effort to curtail this rate. The proposed Act, suggests that the present system of timber cutting concessions should be replaced with a system of long-term leases. Present laws do not place responsibility with the local governments.

Qureshi, Ata H. (1978)

"Sustained Yield From Tropical Forests: A Practical Policy for Resource and Environment Management?" Research Prospectus, East-West Environmental and Policy Institute E-W Center, Honolulu.

Qureshi, A. H.; L.S.Hamilton; D. Mueller-Dombois; W.R. H. Perera and R. A. Carpenter (1980)

"Assessing Tropical Forest Lands: Their Suitability for Sustainable Uses." East-West Environment and Policy Institute, East-West Center, Honolulu, Hawaii.

Reyes, M. R. (1959)

-see Deforestation

San Buenaventura, P. (1958)

-see Aforestation

San Pedro, R. (1934)

"Illegal Kaiñgin-making in the Province of Tayabas." Makiling Echo 13(3):197-198.

All perpetrators are convicted and seldom pleaded innocent, as guilt pleabrought 5-15 days in jail. After release they are free to go back to their land and continue cultivation.

Serevo, Tiburcio S. (1964)

-see Deforestation

Serevo, T. S. (1961)

-see Aforestation

Serevo, T. S. (1959)

"Classification of Public Forests based on Use." Philippine Journal of Forestry 15:73-85.

Table 2 shows classification of lands between commercial timberland and alien, or disp. lands of land classified from all over RP. Table 1 shows area contained by various sub-classes of timberland, unclassified public land, and alienable or disposable areas.

Tamesis, Florencio & Valentin Sajor (1953)

-see Aforestation

Uriarte, Nicolas S. (1978)

-see Deforestation

Vandermeer, Canute (1967)  
-see Deforestation

Vendiola, Lydia L. (1969)  
"Water Rights - Its Legal Source and Limitations."  
Philippine Geographical Journal 13:95-101  
The importance of water rights and its increasing importance  
is discussed.

Viado, Jose B. (1973)  
-see Aforestation

VEGETATION COVER OF R.P.

Acuna, Ramon A. (1953)

-see Mangroves

Agaloos, Bernardo C. (1964)

-see Deforestation

Aranez, German B. and Rogelio B. Baggayan (1978)

-see Aforestation

Arroyo, Cesar A. (1978)

-see Deforestation

Atlas of South East Asia (1964)

"Maps of the Philippines: Climate, Vegetation and Land Use"

Includes maps of rainfall patterns, gradations in annual rainfall, agricultural projects, and a general map of vegetation cover. Often difficult to interpret due to black and white xerox of coloured originals.

Barrera, Alfredo (1972)

"Soil and Native Vegetation of the Philippines." Philippine Geographical Journal 4:72-77.

Gives the areas of major vegetation types for 1911 and 1946. Lists the major species associated with each major vegetation type. Shows photos of kaiñgin on Mt. Canlaon.

Bruce, Romeo (1977)

-see Deforestation

Burley, T. M. (1973)

-see Deforestation

Claveria, Jose R. (1953)

"Growing Benguet pine (Pinus insularis Enol C.) in Cebu Province."

-see Aforestation

Conklin, H. C. (1957)

-see Fallow/Parang

Dacanay, Placido (1949)

-see Aforestation

Eckholm, Erik P. (1976)

-see Deforestation

Editorial (1971)

"Just how much forest have we left?"

- see Deforestation

Espinosa, Longinos M. (1952)

-see Aforestation

Fox, R. B. (1960)

-see Deforestation

- Ganapin, Delfin J. Jr. (1978)  
-see Aforestation
- Jasmin, B. B. (1975)  
-see Deforestation
- Lachowski, H. M.; D. L. Dietrich; R. M. Umali; E. A. Aquino and U. A. Basa. (1978)  
" Assisted Forest Inventory of the Philippine Islands."  
NRMC Research Monograph No. 4 series of 1978.  
The use of satellites in obtaining an inventory of forest species is viewed and discussed.
- Laudencia, Pedro N. (1972)  
-see Aforestation
- Lizardo, L. (1954)  
"The Philippine Pine Forests." Proceedings of the IV World Forest Congress. Vol. III General and Special Papers on Tropical Forestry. pp. 459-472.  
Gives the basic description of Philippine pine forests, their history, extent and volume etc. Gives a figure of about 179,000 ha of pine forest.
- Lopez, Melecio and Carlos Cunanan (1954)  
-see Aforestation
- Mabesa, Calixto (1954)  
"The Philippine Forests (with special reference to Dipterocarp Forests.)". Proceedings of the IV World Forestry Congress 3:57-87.  
Detailed list of species commonly found in each major vegetation type in R.P. Dipterocarp succession is also detailed, as are cutting methods, injury and protection, volume and yield.
- Merin, Juanito R. (1954)  
"Aerial photography for Philippine forest inventory."  
Philippine Journal of Forestry 10:81-111.
- Ministry of Natural Resources (1976)  
"Our Forests." p. 3-14.  
A monograph on the Philippine forests is presented to the reader.
- Nablo, S. U. (1968)  
-see Aforestation
- Nano, Jose F. (1951)  
-see Aforestation
- Parks and Wildlife Office, Manila, Philippines (1968)  
-see Aforestation
- Pelson, Dante N. (1978)  
-see Aforestation

Pollisco, F. S. (1975)

-see Aforestation

Quisumbing, E. (1960)

"The vanishing species of plants in the Philippines."  
Symposium on the Impact of Man on Humid Tropics Vegetation,  
Goroka, PNG. pp.344-349.

Lists factors possibly responsible for the extinction of endemic and indigenous species of plants: forest fires, grassland fires, kaingin, forestry, grazing, hydro-electric projects, swamp draining or impounding, and the war. Some natural causes are also discussed.

Rabor, D. S. (1971)

-see Deforestation

Raros, R. S. (1979)

-see Deforestation

Reyes, Martin R. (1978)

-see Aforestation

Reyes, M. R. (1959)

-see Deforestation

Robequain, C. (1958)

Malaya, Indonesia, Borneo and the Philippines; a Geographical Economic and Political description of Malaya, the East Indies and the Philippines. Translated by E. D. Laborde, Longmans, New York.

General discussion of the Philippine Vegetation with a basic map.

Sajar, Valentin and Teofilo Santos (1957)

"Grasses in the Philippines." Philippine Journal of Forestry 13:213-220.

Brief discussion of Philippine grasses followed by a breakdown of endemics, indigenous and exotic species. A table of the uses made of these grasses is given.

Sajise, P. E. (1975)

-see Deforestation

Sajise, P. E.: N. M. Orlido; J. S. Lalas; L. C. Castillo and R. Atabay (1976).

"The Ecology of Philippine Grasslands: Floristic composition and community dynamics." The Philippine Agriculturist 59:317-334.

Sample plots from various areas of the Philippines were examined and using quantitative vegetation analyses, gives four major grassland types. Environmental factors important in differences between them are discussed.

San Buenaventura, P. (1958)

-see Aforestation



- Serevo, Tiburcio S. (1964)  
-see Deforestation
- Serevo, T. S. et. al. (1962)  
-see Deforestation
- Serrano, Rogelio C. (1978)  
-see Deforestation
- Spencer, J. E. (1957)  
-see Deforestation
- Steere, Joseph B. (1888)  
"A Month in Palawan." American Naturalist 22:142-145.  
Points out that the biota of Palawan is more similar to that of Borneo than the rest of the Philippines.
- Tamesis, Florencio and Valentin Sajor (1953)  
-see Aforestation
- Torres, Monina G. (1977)  
"Countryside development through multiple-use forest management." Paper presented at the Third Anniversary Symposium, FORI, College Laguna 18 Dec. 1977
- Vandermeer, Canute (1967)  
-see Deforestation
- Villamar, Cesar A. (1977)  
"Improved pasture: A key to Countryside Development." Paper presented at the Third Anniversary Symposium Rerest Research Institute, College Laguna Dec. 18, 1977.  
The need for increased protein production requires improved pastures.
- Wernstedt, F. L. and J. E. Spencer (1967)  
"The Philippine Island World. A Physical, Cultural and Regional Geography." University California Press, Berkley.  
The basic economic strength of the nation rests with the proper cultivation and utilization of soil resources.
- Whitform, H. N. (1911)  
The Forest of the Philippines. Part I. Forest Types and Products  
Bulletin No. 10 Dept. of Interior. Bureau of Forestry. Manila  
There is little question that practically the entire land area of the Philippines, from sea level to the highest mountains, was originally covered with unbroken forest growth of some kind. Cogonales are mainly the result of shifting system of agriculture.
- Wright, Timothy W. (1978)  
-see Aforestation

PARANG - FALLOW

Ardieta, Rodrigo R. (1956)

"Determination of Yield of Cut-over Forest areas on Mount Makiling at known periods after clearing." Philippine Journal Forestry 12:133-147.

Discussion on growth yield in two abandoned kaiñgins.

Brown, William H. (1919)

"Vegetation of the Philippine Mountains. The relation between the environment and physical types of different altitudes." Pub. #13. Dept. of Agriculture and Natural Resources Bureau of Science, Manila.

Makes special reference to parang with discussion of its occurrence on Mt. Makiling. Lists species involved as well as a discussion of grasses associated with it. Lists species of tree invading grass areas no longer subject to burning.

Brown, W. H. and D. M. Matthews (1914)

Philippine Dipterocarp Forests. Philippine Journal of Science Section A 9:413-561.

Discusses secondary growth which grows quickly, in areas cleared but not used for agriculture. Refers to kaiñgin as a primitive method and discusses cogon and talahib invading patches of it on Mt. Makiling.

Burley, T. M. (1973)

-see Deforestation

Conklin, H. C. (1957)

Hanunoo Agriculture: A Report on an Integral System of Shifting Cultivation in the Philippines. F. A. O. Development Paper #12.

Detailed discussion of kaiñgin in Mindoro. Outlines the partial and the integral system used in the Philippines.

Cuevas, Virginia C. and Percy E. Sejise (1978)

"Litterfall and lay litter decomposition in a Philippine secondary forest." Kalikasan Philippine Journal of Biology 7(2):99-109

Annual litter fall is estimated at 13.48 t/ha. Mature trees produce three times more litter than do young trees. Only about 48% of the litter decomposes in one year.

Duldulao, Anacleto C. (1978)

"Resettlement within the concept of human settlement and kaiñgin management." Paper presented at the Third Kaiñgin Management Seminar-Workshop of the Bureau of Forest - Development Training Center at Camp 7, Minglanilla, Cebu City. Dec. 6, 1978.

Points to the cost of ₱ 23,000 per family for resettlement. States that the integrated socio-economic approach may be best because it is designed to achieve the objectives of the government and the kaiñgineros.

Maturan, E. G. (1976)

"A Sociological analysis of the Kaiñgin problem in Negros Oriental." Sylvatrop Philippine Forestry Research Journal 1(4):237-248.

Describes various types of kaiñgins. Emphasis on the fact that kaiñgin making is a way of life, is traditional and the kaiñgineros have a cultural attachment to the land.

Nano, Jose F. (1951)

-see Aforestation

Oracion, T. S. (1963)

-see Aforestation

Pendleton R. L. (1940)

-see Deforestation

Reyes, M. R. (1959)

-see Deforestation

Scott, William Henry (1975)

History on the Cordillera - Collected Writings on Mountain Province History. Baguio Printing and Publishing Co. Inc. Baguio RP

Kaiñgin was the major method used when the Spanish arrived. A description of kaiñgin making in the Mountain Provinces is given. Fallow of 3 - 5 years is allowed.

Tamesis, F. (1969)

-see Aforestation

Upland Hydroecology Research Program (1978)

-see Aforestation

Wallace, Ben J. (1970)

Hill and Valley Farmers. Socio-Economic Change Among a Philippine People. Schenkman Publ. Co. Inc. Cambridge, Mass.

Informants say that a good burn of a new site is necessary for the healthy growth of the crops.

Wallace, Benny Joe (1970)

"Shifting cultivation and plow agriculture in two pagan Gaddang settlements." Manila Bureau of Printing p.117.

Wright, T. W. (1975)

Calamian Field Station M. A. Thesis, Geography University of Hawaii. May 1975.

KAIÑGIN / KAIÑGINEROS

Achacoso, Isabelo (1951)

-see Deforestation

Allison, W. W. (1963)

"A compound system of swidden (kaiñgin) Agriculture." Philippine Geographical Journal 7:159-172.

A discussion of swidden (kaiñgin) agriculture in Bukidnon, Mindanao. Here both the 'integral' and the 'partial' systems discussed by Conklin are practiced here side by side so really a 'compound' system of kaiñgining.

Anonymous (1972)

-see Deforestation

Aranez, German B. and Rogelio B. Baggayan (1978)

-see Aforestation

Ardieta, Rodrigo R. (1956)

-see Parang - Fallow

Aspacio, Leonardo (1969)

"The Evils of Kaiñgin." Forests and Farms 4(1):16-18.

Kaiñgining is destructive due to loss of timber, soil, loss is soil fertility, destruction of wildlife, flood and drought.

Baconguis, Santiago R. (1978)

-see Aforestation

Barrera, Alfredo (1952)

"Palawan - The New Frontier." Journal of the Soil Science Society of the Philippines 4:(4) 242-245.

A large portion of the farming is done under the so-called kaiñgin system. Under this method the forest is continually being 'burned out.'

Beattie, Byran (1969)

"The Problem of Shifting Agriculture." Forests and Farms 4(12):4-5&14.

There are three categories of shifting agriculture - nomadic kaiñgineros, settled kaiñgineros and immigrant kaiñgineros. About 40,000 ha fall to them each year. Plans to offer socio-economic improvement are both costly and ambitious. There is a strong emphasis on cottage industries.

Burley, T. M. (1973)

-see Deforestation

Calanog, Lope A.; O.T. Duplito and P. M. Atienza (1979)

"Prejudice against kaiñgineros: An inquiry." Canopy 5(3):5,6.

The effects of kaiñgineros are explored.

Calanog, Lope A. (1977)

"The Kaiñgin Management Project: A Socio-Psychological Analysis." Paper presented at Third Anniversary Symposium FORI, College Laguna Dec. 18, 1977.

Investigates the kind of attitudes held by Norzagaray settlers towards the BFD's kaingin management project. It was found that for several reasons, the settlers had an undecided attitude towards the project.

- Clavera, Jose R. (1953)  
-see Aforestation
- Conklin H. C. (1957)  
-see Parang - Fallow
- Corales, Juan and Policarpo de la Cerna (1950)  
-see Aforestation
- Dacanay, Placido (1949)  
-see Aforestation
- Dagdag, Baldomero C.; Camilo G. Galamay and Jose P. Mamadag (1963)  
Soil Survey of Nueva Vizcaya Province, Philippines. Dept. of Agriculture and Natural Resources, Bureau of Soils, Manila. Soil Report 32.
- Dalisay, A. M. (1972)  
-see Deforestation
- Del Castillo, Romulo A. (1973)  
-see Deforestation
- de los Santos, A. E. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1978)  
-see Parang - Fallow
- Duldulao, Anacleto C. (1975)  
-see Aforestation
- Duldulao, A. C. (1970)  
"The Kaiñgineros Viewpoint." Forests and Farms 5(7):14&21.  
Unless the government could provide a better alternative for earning a living, the kaiñgineros are here to stay.
- Duldulao, A. C. et. al. (1977)  
-see Aforestation
- Editorial (1974)  
-see Deforestation
- Editorial (1967)  
-see Deforestation

Editorial (1962)

"Kaiñgin is a human problem." The Lumberman 8(6):4&45.

Kaiñgining is not merely a forest problem, but also a human problem. The problem is what to do to stem their effect on resources. "Setting up" reservations for the non-Christian tribes of Mindanao are already underway. The Manoba tribe are considered the most destructive. The Aras Asan Timber Co. has taken an approach of employing and getting local cooperation from the government and kaiñgineros.

Espinosa, Longinos M. (1952)

-see Aforestation

Fernandez, S. P. and A. J. Evangelista (1952)

-see Deforestation

Fox, R. B. (1960)

-see Deforestation

Galang, Eduardo (1978)

-see Aforestation

Ganapin, Delfin J. Jr. (1978)

-see Aforestation

Gillis, J. R. and Carlos Sulit (1922)

"The Kaiñgin Menace." The Makiling Echo 1(1&2):11-17. Bureau of Forestry, Manila.

Problem of kaiñgin destroying forests, soils and as a home for agricultural pests (in cogonales). Value of forest given as an excuse for not granting permits to kaiñgineros.

Guerrero, Perfecto K. and Domingo C. Salita (1977)

-see Deforestation

Hernandez, S. C. (1949)

-see Deforestation

Hilario, Frank A. (1976)

"How the Thais are solving their Kaiñgin Problem." Canopy 2(4):7&10  
Discusses the Taungya system of agriculture which was introduced to Thailand. Taung is the Burmese word for hilly and Ya means field. In Thailand the aim by the government is to get the Thais to plant teak.

Hilario, Frank A. (1970)

"Kaiñgineros' defenders assailed." Forests and Farms 5(12):8-9  
University of Eastern Philippines professor says kaiñgining is the best cropping system in the world. Hilario lists six reasons why he disagrees.

Jasmin, B. B. (1975)

-see Deforestation

Laudencia, Pedro N. (1972)

-see Aforestation

- Librero, A. R. (1977)  
 "Socio-Economic Considerations in Hilly land development."  
Proceedings International Workshop on Hilly Land Development.  
 3-6-Aug. 1977. Legaspi City, RP. pp. 193-199.  
 Paper on how many kaiñgineros and where they are found.
- Llapitan, Eduardo A. (1977)  
 "The impact of Shifting Cultivation in Hilly Country." pp. 235-  
 240: in Proceedings International Workshop on Hilly Land Develop-  
ment. 3-6 Aug. 1977. Legaspi City, RP.  
 In May 1977 379,372 kaiñginero families occupying an area  
 of about 2 million hectares of forest land. Lists the Kaiñgin  
 Management Projects already set up.
- Lopez, Melecio and Carlos Cunanan (1954)  
 -see Aforestation
- Lorredo, Jorge Jr. (1974)  
 -see Aforestation
- Luna, Telestoro W. Jr. (1975)  
 -see Deforestation
- Maceren, Felix (1952)  
 -see Aforestation
- Maniago, Lydia Y. (1979)  
 "BFD outsets forest occupancy management program." Freeport  
Mail. Butuan Independent Newsweekly. Vol. 25 Jan.11, 1979.  
 Program aims to transform kaiñgineros to respectable and  
 useful agents of forest protection and conservation in order to  
 improve their socio-economic quality of life. Kaiñgineros are  
 supplied with information and guidelines for their enlightenment.
- Manipol, Leon M. (1979)  
 "Former Kaiñgineros threaten to return." Bulletin Today 76(6):1  
 800 kaiñgineros threaten to return to their old homes on  
 Makiling due to a poor treatment at the hands of the Mt. Makiling  
 settlement committee.
- Maturan, E. G. (1976)  
 -see Parang - Fallow
- Nablo, S. U. (1968)  
 -see Aforestation
- Nano, Jose F. (1951)  
 -see Aforestation
- Nano, Jose F. (1939)  
 -see Forest Laws/Agencies
- National Conference on the Kaiñgin Problem (1965)  
 -see Deforestation

Olofson, Harold (1977)

"Time Orientation among Shifting Cultivators: A Pre-Adaptation to Change?" Paper presented at the Third Anniversary Symposium FCI College Laguna, Dec. 18, 1977.

Stresses that pre-adaption is possessed by shifting cultivators in S. E. Asia and that kaiñgineros are prepared for change. Tries to dispel the belief that shifting cultivators are tied to the moment and unable to plan for the future. Points out that the word 'abandon' is misused. We should take note of this future orientedness in our plans to get him to adapt to a more sedentary condition.

Gracion, T. S. (1963)

-see Aforestation

Ordinario, Felix F. (1978)

"Agroforestry for the enhancement of the quality of life."

-see Aforestation

Palaypayon W. R. (1977)

-see Deforestation

Parks and Wildlife Office, Manila, Philippines (1968)

-see Aforestation

Pendleton, Robert L. (1942)

-see Deforestation

Pendleton, R. L. (1940)

-see Deforestation

Pflueguer, O. W. (1929)

"The Kaiñgin problem in the Philippines and a possible method of control." Makiling Echo 3(1):14-24.

Lists reasons why kaiñgin continues. The best solution appears to be by educating the people and convincing them of the evil effects of this practice. This is a slow process so in the mean time they could impliment a system of making kaiñgins under contract which is practically a method of forest colonization.

Punsri, Paya and Sathit Wacharakitti (1977)

"Land use in hilly areas and development programs in Thailand." Canopy 3(9):4

Thailand's' hilly land is developed with the problems of hill tribe settlement, illicit opium growing and trade, and conservation and land use planning.

Rabor, Dioscoro S. (1977)

"Notes on the Ecology of the Sulu Archipelago." Pterocarpus 3(1):33-41

Kaiñgin has produced considerable secondary growth. Grasslands are extensive in the hills and mountains.

Raros, R. S. (1979)

-see Deforestation

Roberto, Leonardo R. (1970)

-see Deforestation



- Roberto. Leonardo (1970)  
-see Deforestation
- Sanchez, Eduardo R. (1971)  
-see Deforestation
- San Pedro R. (1934)  
-see Forest Laws/Agencies
- Sanvictores, Ernesto F. et. al. (1978)  
-see Aforestation
- Sanvictores, Jose G. (1969)  
-see Aforestation
- Scott, William Henry (1975)  
-see Parang - Fallow
- Serevo, Tiburcio S. (1964)  
-see Deforestation
- Serna, Cirilo B. (1972)  
-see Deforestation
- Spencer, J. E. (1975)  
"The rise of maize as a major crop plant in the Philippines."  
Journal of Historical Geography 1:1-16.  
Maize holds second place as a crop in RP. The primary 'corn rice' producing areas of RP are in the Visayas. Gives the history of its adaption and use.
- Spencer, J. E. (1957)  
-see Deforestation
- Tamesis, Florencio (1976)  
-see Aforestation
- Uichanco, L. B. (1971)  
-see Aforestation
- Upland Hydroecology Research Program (1978)  
-see Aforestation
- Vandermeer, Canute (1967)  
-see Deforestation
- Velasco, Abraham B. (1979)  
"What is the typical Filipino Kaiñginero?" Canopy 5(12):4-7&14.  
Details fully presentations given at the FORI Symposium on "Forest Research: Focus on the Kaiñginero." Four papers are discussed.
- Velasco, Abraham B. (1976)  
"A rationale for a study on the social psychological aspects of kaiñgin farming in the Philippines." Canopy 2(4):6&11.  
Outlines the reasons for studying the social psychological

aspects of the kaiñginero. Stresses that this study must focus on the individual: his thoughts, his motives and needs, his values, aspirations and goals.

Velasco, Abraham B. (1970)

-see Deforestation

Viado, Jose (1972)

-see Aforestation

Vilar, Crisostomo B. (1968)

-see Aforestation

Wallace, Ben J. (1970)

-see Parang - Fallow

Wallace, Benny Joe (1970)

-see Parang - Fallow

Whitford, H. N. (1911)

-see Forest Laws/Agencies

Wright, Timothy W. (1978)

-see Aforestation

KAIÑGIN MANAGEMENT

Araneta, Teodoro C. (1978)  
-see Aforestation

Baggayan, Regelio B. (1977)  
-see Aforestation

Basada, R. N. (1977)  
-see Aforestation

Binua, Thomas, and Moises A. Torio (1979)  
-see Aforestation

Bondoc, Corazon L. (1971)  
"A solution to the kaiñgin problem." Philippine Farms and Gardens. 8(7):20.

A more positive approach to help solve kaiñgin problems is to enjoin kaiñgineros to subscribe to the modified and subsidized or improved kaiñgin system of agriculture. Plant trees in rows 5 m apart. In 3 - 5 years as shading increases on his crops below he can start again in a new area leaving behind a wooded area and not a barren patch.

Bureau of Forest Developemtn (1976)  
"Preparation, Submission and Implementation of Kaiñgin Management plans." BFD Circular No. 11 Ministry of Natural Resources, RP Diliman, Queran City.

The major strategies under the kaiñgin management program are listed.

Calanog, Lope A. (1978)  
"Samahan ng mga magkakaiñgin: will it work?" Canopy 4(7):1,12&14.  
Stresses that the cooperative approach to kaiñgin management has potential. FORI to start two five year studies.

Calanog, L. A. (1977)  
"The government kaiñgin management project." Canopy 3(3):6-7.  
Outlines the BFD's approach to kaiñgin management in areas of critical watersheds. Discusses the BFD's project in the Angot Watershed and the problems of lack of co-operation by the local residents.

Calanog, Lope A. (1977)  
-see Kaiñgin/Kaiñgineros

Carlos, Juan T. (1977)  
-see Aforestation

Dalisay, A. M. (1972)  
-see Deforestation

de los Santos, A. E. (1978)  
-see Deforestation

- Dones, E. E. (1979)  
 "Solving the kaiñgin problem the kaiñgineros' way" Canopy  
 5(8):6.  
 The effects of the kaiñgineros on a lumber companies lumber production is explored. Apparent programs and achievements have cut down the detrimental effects of the kaiñgineros on the lumber industry.
- Duldulao, Anacleto C. (1978)  
 -see Parang - Fallow
- Duldulao, Anacleto C. (1978)  
 -see Deforestation
- Duldulao, Anacleto C. (1977)  
 -see Deforestation
- Duldulao, A. C. (1970)  
 -see Kaiñgin/Kaiñgineros
- Duldulao, A. C. et. al. (1977)  
 -see Aforestation
- Editorial (1972)  
 -see Forest Laws/Agencies
- Editorial (1970)  
 -see Aforestation
- Editorial (1969)  
 -see Forest Laws/Agencies
- Festin, Seneco D. (1972)  
 -see Aforestation
- Fontanilla, Conrad (1979)  
 "How would you solve the problem of the Kaiñginero?" Canopy  
 5(1):12-13; 5(2):12-13.  
 Discusses world monetary problems. Indicates that kaiñgining is a reflection of the social order of the country and if we establish a socio-economic set up that obviates the need for kaiñgining, the problem will be solved.
- Fontanilla, Conrad (1977)  
 -see Aforestation
- Generalao, Maximino L. (1977)  
 -see Aforestation
- Makil, Jose (1952)  
 -see Forest Laws/Agencies
- Maniago, Lydia Y. (1979)  
 -see Kaiñgin/Kaiñgineros
- Manipol, Leon M. (1979)  
 -see Kaiñgin/Kaiñgineros

- Matela, Arcadio G. (1972)  
-see Aforestation
- Maturan, E. G. (1976)  
-see Parang - Fallow
- Monsalud, Manuel R. (1971)  
-see Aforestation
- National Conference on the Kaiñgin Problem (1965)  
-see Deforestation
- Ordinario, Felix (1978)  
-see Aforestation
- Ordinario, Felix F. (1978)  
-see Aforestation
- Pflueguer, O. W. (1929)  
-see Kaiñgin/Kaiñgineros
- Pollisco, Filiberto (1971)  
"An Educational Approach to Forest Conservation." Forests and Farms 6(8):5-6&21.  
Conservation is here defined as "wise use". 170,000 ha are destroyed each year. The causes are kaiñgineros, lack of knowledge of the forest, and people do not value it.
- Postrado, Bienvenido (1972)  
-see Aforestation
- Pusung, Perfecto C. Jr. (1977)  
"The INCA coffee - Leucaena agro-forestry project." Canopy 3(10):3 & 10.
- Rebugio, Lucrecio L. (1976)  
"Shifting cultivation: some implications for socio-cultural change." Sylvatrop Philippine Forest Research Journal 1:73-80  
Conceptualizing shifting cultivation as a complex system, (with three elements: technological, social and ecological) enables us to examine the relevant componenets and their subtle interrelationships, thereby facilitating a more meaningful understanding of the practice.
- Rebugio, Lucrecio L. (1972)  
"Socio-cultural factors and forest resources conservation." Reforestation Monthly 11(7-9):13-14&17.  
Discusses the various factors to blame for the forest destruction, some of the myths that are held, and calls for an integrated approach to solve the problems.
- Regadio J. P. (1977)  
-see Aforestation
- Reyes, Gregorio D. (1978)  
-see Aforestation

- Rimando, Fepidio F. (1977)  
-see Aforestation
- Roberto, Leonardo R. (1970)  
-see Deforestation
- San Pedro, Rafael (1934)  
-see Forest Laws/Agencies
- Sanvictores, Ernesto F. et. al. (1978)  
-see Aforestation
- Sanvictores, Jose G. Sr. (1970)  
-see Aforestation
- Serevo, Tiburcio S. (1964)  
-see Deforestation
- Tadle, Josue F. (1973)  
"With the Sibuyan Island "Mangyans" prognosis is good for kaiñgin management." Philippine Lumberman 19(12):32-33.  
In 1960 53 ha tribal reservation was set aside. Then they were left to their own. The result was that they settled down. The lowlanders helped by not landgrabbing and made the tribe feel secure.
- Torres, A. P. (1975)  
"Shifting cultivation denudes Mt. Makiling." Forests and Farms 8(7):12.  
Recommends the implimentation of the kaiñgin law be accompanied by a strong socio-economic program designed to give the kaiñgineros a better source of living to improve their ecomomic life.
- Umali, D. L. (1970)  
-see Aforestation
- Velasco, Abraham B. (1976)  
-see Kaiñgin/Kaiñgineros
- Vergara, N. T. (1976)  
"Shifting cultivation in the humid tropics: analysis and control."  
Philippine Lumberman 22(7):25-30  
Outlines control measures and long term prevention measures.
- Viado, Jose (1972)  
-see Aforestation

MODIFY LAND USE

- Arroyo, Ceasar A. (1978)  
-see Deforestation
- Atabay, Remilio C. (1979)  
"Hilly lands for resettlement". Canopy 5(6):3.  
Strategies are discussed that can make the uncultivated  
marginal hilly lands suitable for resettlement.
- Baconguis, Santiago R. (1978)  
-see Aforestation
- Corales, Juan and Policarpo de la Cerna (1950)  
-see Aforestation
- de los Santos, A. E. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1975)  
-see Aforestation
- Duldulao, A. C. et. al. (1977)  
-see Aforestation
- Ganapin, Delfin J. Jr. (1978)  
-see Aforestation
- Granert, Bill (1979)  
"Multi-Story Spatial Farming for denuded hillsides." Canopy  
March 1979, p. 2,3  
Multi-story Spatial Farming (MSF) is examined and is one of the  
many possible methods which can be employed to both save Philippine  
forests and increase living standards.
- Lopez, Melecio and Carlos Cunanan (1954)  
-see Aforestation
- Mariano, Juan A. (1964)  
"Soil Conservation and the land reform Program." The Philippine  
Journal of Soils. 5:49-60.  
Does soil conservation pay? Problems of getting conservation  
accepted. An outline of the Land Reform Program as it relates  
to agriculture. It is considered that the making of landowners or  
leasees out of tenants is a major step in the campaign to adopt soil  
conservation techniques.
- Olofson, Harold (1977)  
-see Kaiñgin/Kaiñgineros
- Oracion, T. S. (1963)  
-see Aforestation

- Ordinario, Felix F. (1978)  
"Agroforestry for the enhancement of the quality of Life."  
-see Aforestation
- Raros, R. S. (1979)  
-see Deforestation
- Sanvictores, Ernesto F. et. al. (1978)  
-see Aforestation
- Spencer, J. E. (1957)  
-see Deforestation
- Torres, Monina G. (1977)  
-see Vegetation Cover of RP
- Torres, A. P. (1975)  
-see Kaiñgin Management
- Upland Hydroecology Research Program (1978)  
-see Aforestation
- Wallace, Ben J. (1970)  
-see Parang - Fallow
- Wallace, Benny Joe (1970)  
-see Parang - Fallow
- Wright, Timothy W. (1978)  
-see Aforestation



## CONSERVATION

- Anonymous (1974)  
-see Forest Laws/Agencies
- Arañez, German B. and Rogelio B. Baggayan (1978)  
-see Aforestation
- Arroyo, Ceasar A. (1978)  
-see Deforestation
- Baconguis, Santiago R. (1978)  
-see Aforestation
- Blanche, Caralino, A. (1975)  
"Ecosystem Approach to Conservation." Forestry Digest 3(3):49-53.  
States that it is not "forest conservation" but "biophere conservation" or "ecosystems conservation." Gives many definitions for conservation. Outline the ecosystems approach to conservation and the economic view of conservation.
- Claveria, Jose R. (1953)  
"Growing Benguet pine (Pinus insularis Enol. C. ) in Cebu Province."  
-see Aforestation
- Corales, Juan and Policarpo de la Cerna (1950)  
-see Aforestation
- Dagdag, Baldomero C.; Camilo G. Galamay and Jose P. Mamadag (1963)  
-see Kaiñgin/Kaiñgineros
- Dalisay, A. M. (1972)  
-see Deforestation
- Department of Agriculture and Natural Resources, Philippines. (1959)  
"Conservation on Natural Resources in the Philippines."  
Proceedings at the Ninth Pacific Science Congress 7:32-33.  
Bangkok, Thailand (1957)  
Lists the area of critical watersheds in the Philippines and the problems of watershed management such as kaiñgining, destructive logging, and a lack of forest conservation - consciousness among the general public. Also lists problems of soil, water and wildlife conservation.
- Duldulao, Anacleto C. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1978)  
-see Parang - Fallow
- Duldulao, Anacleto C. (1975)  
-see Aforestation

- Duldulao, Anacleto C. (1974)  
-see Aforestation
- Duldulao A. C. et. al. (1977)  
-see Aforestation
- Editorial (1979)  
-see Aforestation
- Galang, Eduardo (1978)  
-see Aforestation
- Ganapin, Deltin J. Jr. (1978)  
-see Aforestation
- Glori, Antonio V. (1977)  
-see Aforestation
- Laudencia, Pedro N. (1972)  
-see Aforestation
- Lorredo, Jorge Jr. (1974)  
-see Aforestation
- Mariano, Juan A. (1964)  
-see Modify Land Use
- Mendoza, Valerio B. (1977)  
-see Aforestation
- Mendoza, V. B. and R. E. de la Cruz (1978)  
-see Aforestation
- Mondala, Connie A. (1977)  
-see Deforestation
- Nablo, S. U. (1968)  
-see Aforestation
- Nano, Jose F. (1951)  
-see Aforestation
- Olivar, Jose D. (1974)  
-see Deforestation
- Parks and Wildlife Office, Manila, Philippines (1968)  
-see Aforestation
- Pelson, Dante N. (1978)  
-see Aforestation
- Pendleton, R. L. (1940)  
-see Deforestation

- Rabor, D. S. (1978)  
"Philippine Wildlife: Their Preservation, Conservation and Management." Forestry Digest 5(2):17-24.  
Birds in Cebu are dying due to deforestation.
- Rabor, D. S. (1971)  
-see Deforestation
- Reyes, M. R. (1959)  
-see Deforestation
- San Buenaventura, P. (1958)  
-see Aforestation
- Sanvictores, Ernesto F. and Dominador M. Faustino Jr. (1978)  
-see Aforestation
- Upland Hydroecology Research Program (1978)  
-see Aforestation

WATERSHED PROBLEMS/FLOODS

Angeles, L. D. (1963)

"Infiltration Studies on a Grassland Watershed in Northern Nueva Ecija." Philippine Geographical Journal 7:102-113

An experiment designed to examine the influence of land use practices on infiltration rates, comparing rates between the grazed and protected areas. Mean infiltration rates for the protected and non-protected areas are 1.58 and .49 literes/hour respectively. Relates these results to run-off.

Baconguis, Santiago R. (1978)

"Rainfall - suspended sediment relationship of annually burned grassland watershed." Sylvatrop Philippine Forest Research Journal 3(2):85-94.

Burning of grasslands in the Philippines is an old practice of herders in order to rejuvenate old, unpalatable forage. Watershed values are never looked into. 64 - 72.25% of the variation in stream sediment for a 4 year period could be explained by linear regression with rainfall as the independent variable.

Baconguis, Santiago R. (1978)

-see Aforestation

Bruce, R. (1978)

"Watershed as a planning unit." Philippine Geographical Journal 22:161-170

Discusses the physical characteristics of a watershed and stress the value of watersheds in economic development and policy. Gives maps of the political and water resource regions of the Philippines.

Dacanay, Placido (1949)

-see Aforestation

Dagdag, Baldomero C., et. al. (1963)

-see Kaiñgin/Kaiñgineros

Del Castillo, Romulo A. (1973)

-see Deforestation

Department of Agriculture and Natural Resources, Philippines (1959)

-see Conservation

Duldulao, Anacleto C. (1978)

-see Deforestation

Duldulao, Anacleto C. (1978)

-see Parang - Fallow

Duldulao, Anacleto C. (1974)

-see Aforestation

- Eckholm, Erik P. (1976)  
-see Deforestation
- Espinosa, Longinos M. (1952)  
-see Aforestation
- Florido, L. V. (1979)  
-see Deforestation
- Ganapin, Delfin J. Jr. (1978)  
-see Aforestation
- Jasmin, B. B. (1975)  
-see Deforestation
- Laudencia, Pedro N. (1972)  
-see Aforestation
- Luna, Telestoro, W. Jr. (1975)  
-see Deforestation
- Luna, T. W. (1963)  
-see Aforestation
- Nablo, S. U. (1968)  
-see Aforestation
- Nano, Jose F. (1951)  
-see Aforestation
- Peñafiel, S. R. (1978)  
-see Aforestation
- Pendleton, R. L. (1940)  
-see Deforestation
- Rosell, Diminador Z. (1976)  
"Natural Resource Conservation: Geographer's View." Philippine Geographical Journal 20:94-103.  
The role of the geographer in Natural Resources (exploitation and conservation) is looked at. Inventory of, function of, multiple purpose of resources plus watershed and animal conservation is discussed in some detail.
- San Buenaventura, P. (1958)  
-see Aforestation
- Serevo, Tiburcio S. (1964)  
-see Deforestation
- Serrano, R. C.; T. R. Villanueva and B. D. Sims (1976)  
"Surface run-off and sedimentation under Albizia falcataria (L.) Fosb. Anthocephalus chinensis (Lamk.) Rich. ex. Walp Dipterocarp and mixed secondary stands." Pterocarpus 2:35-46.

Moluccan sau was found to be the best protective cover, yielding only 1,044 ml/m<sup>2</sup> total runoff and 1.62 gr/m<sup>2</sup> sediment yield. Figures are also given for mixed secondary forest, dipterocarp and kaotoan bangkol.

Spencer, J. E. (1957)

-see Deforestation

Uichanco, L. B. (1971)

-see Aforestation

Upland Hydroecology Research Program (1978)

-see Aforestation

Veracion, Vicente, P. (1978)

-see Deforestation

Viado, Jose B. (1973)

-see Aforestation

SOIL EROSION/MASS WASTING

- Angeles, L. D. (1963)  
-see Watershed Problems/Floods
- Baconguis, Santiago R. (1978)  
-see Watershed Problems/Floods
- Burley, T. M. (1973)  
-see Deforestation
- Claveria, Jose R. (1953)  
"Growing Benguet pine (Pinus insularis Enol. C. ) in Cebu Province."  
-see Aforestation
- Dagdag, Baldomero C., et. al. (1963)  
-see Kaiñgin/Kaiñgineros
- de los Santos, A. E. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1978)  
-see Deforestation
- Duldulao, Anacleto C. (1975)  
-see Aforestation
- Duldulao, A. C. et. al. (1977)  
-see Aforestation
- Eckholm, Erik P. (1976)  
-see Deforestation
- Guerrero, Perfecto K. and Domingo C. Salita (1977)  
-see Deforestation
- Jasmin, B. B. (1976)  
"Grassland uses: Effects on surface runoff and sediment yield."  
Sylvatrop Philippine Forestry Research Journal 1:156-172  
Erodibility of soil is discussed according to vegetation cover, burning and grazing of plots.
- Jasmin, B. B. (1975)  
-see Deforestation
- Laudencia, Pedro N. (1972)  
-see Aforestation
- Luna, Telestoro W. Jr. (1975)  
-see Deforestation

Malay, P. C. (1957)

"A geographical summary of Cebu Province." Philippine Geographical Journal 5:75-76.

The steeper hills are abandoned when yields of corn become too low. Dry farming is practiced on the steeper slopes, with the result that the soil is exposed to severe erosion in 9/10 of the area. The low yield of corn attests to the barrenness of the soil and lack of scientific agricultural practices.

Mamisao, J. P. (1963)

"Soil Conservation Trends in the Philippines." Philippine Geographical Journal 7:56-64.

Lists a breakdown of land use for all of RP with detailed breakdown of agricultural land. 67-85% of the agricultural land needs careful conservation with mechanical and vegetative erosion control measures.

Nablo, S. U. (1968)

-see Aforestation

Nano, Jose F. (1951)

-see Aforestation

Pelson, Dante N. (1978)

-see Aforestation

Peñafiel, S. R. (1978)

-see Aforestation

Pendleton, R. L. (1940)

-see Deforestation

Raros, R. S. (1979)

-see Deforestation

Serrano, R. C.; et. al. (1976)

-see Watershed Problems/Floods

Uichanco, L. B. (1971)

-see Aforestation

Upland Hydroecology Research Program (1978)

-see Aforestation

Vandermeer, Canute (1967)

-see Deforestation

Veracion, V. P. (1979)

"Towards the rational management of watersheds." Canopy 5(2):6-7

Watershed management is discussed-reference to soil erosion and sedimentation, floods, streamflow, alteration of the micro climate or climate reversals and diseases.



Veracion, V. P. (1978)

"Hill goat farming in Benguet Pine Forest." Canopy 4(5):3  
The multiple use of the Benguet Pine forest regarding  
timber and herding on the forest hills is briefly discussed.

Veracion, Vicente P. (1978)

-see Deforestation

Wernstedt, F. L. and J. E. Spencer (1967)

-see Vegetation Cover of RP

IPIL - IPIL (Leucaena)

Ardieta, Rodrigo R. (1956)  
-see Parang - Fallow

Balmocena, Rodrigo, B. (1979)

"Rodents threaten ipil - ipil project in Mindanao." Canopy 5(4):13  
The study of ipil - ipil is aimed at determining the growth, yield and economic rotation of giant and native species at different spacings and site classes for various end uses.

Bawagan, Pancraeio V. and Jose A. Semana (1976)

"Utilization of Ipil - ipil for wood." Paper presented at the International Consultation on Ipil - ipil Research, Sept. 2-4, 1976  
UPLB College Laguna, RP.

The heating value is lower, but still satisfactory. Potential fuel for woodburning, power stations as well as lead poles, lumber and parquet. Estimated annual increments of giant ipil-ipil are 24 to 312 m<sup>3</sup>/ha/hy.

Benge, Michael (1977)  
-see Aforestation

Benge, Michael D. (1977)  
-see Aforestation

Benge, M. D. and H. Curran (1976)

"Bayani (Giant Ipil-ipil (Leucaena leucocephala)) A Source of Fertilizers, Feed and Energy for the Philippines." USAID Agricultural Development Series. United States Agency for International Development, Manila.

Outlines the uses of giant ipil-ipil and the economic advantages of growing it.

Brewbaker, James L. (1975)

"Giant Ipil-ipil promising source of fertilizer, feed and energy for the Philippines." Mimeo. AID Agricultural Seminar Series. USAID/Manila, June 20, 1975.

Brief outline of the history of giant ipil-ipil of Central American origin. Gives benefits of its use.

Brewbaker, J. L.; D. L. Blucknett and V. Gonzalez (1972)

"Varietal Variation and Yield Trials of Leucaena leucocephala (Koa Haole) in Hawaii." Research Bulletin 166. Hawaii Agricultural Experimental Station. University of Hawaii.

Discusses the various strains of L.leucocephala.

Bueno, P. B. (1978)

"Dissemination and utilization of information on giant ipil-ipil (Leucaena leucocephala Lam. de Witt) in the Batangas Greening Movement." Sylvatrop Philippine Forest Research Journal 3(2) 65-84.

A model is presented to solve the problem of dissemination and utilization of innovation (ipil-ipil). The findings indicate that ready acceptance of giant ipil-ipil was a function of its good characteristics, multiple uses and existing needs and

problems of the Batangas farmers.

Corales, Juan and Policarpo de la Cerna (1950)

-see Aforestation

de los Santos, A. E. (1978)

-see Deforestation

Duldulao, Anacleto C. (1978)

-see Parang - Fallow

Duldulao, A. C. et. al. (1977)

-see Aforestation

Escolano, E. O.; E. N. Gonzales, and J. A. Semana (1978)

"Proximate Chemical Composition of Giant Ipil-ipil Wood from Different Sources." Forpride Digest 7:18-22

The giant ipil-ipil has multiple uses. The leaves are utilized as animal feeds, and as organic fertilizers. The tree can also be used for erosion control and as windbreak while the wood is used for charcoal production and as fuel wood. It is also good for pulp and paper manufacture.

Flores, L. B. (1975)

"Ipil-ipil: New, Promising Fertilizer." Forest and Farm 8(8):4  
Discusses the use of ipil-ipil as fertilizer.

Ganapin, Delfin J. Jr. (1978)

-see Aforestation

Gray, S. G. (1968)

"A review of research on Leucaena leucocephala" Tropical Grasslands 2:19-30.

History of leucaena leucocephala. Its use for cattle feed in tropical and subtropical regions through forage. Mycorrhizal relationship to Rhizobium. Facts about where it may be used.

Lopez, Melecio and Carlos Cunanan (1954)

-see Aforestation

Mamisao, J. P. (1963)

-see Soil Erosion/Mass Wasting

Manas, Adelina E. (1978)

"Production and utilization of Tannin from ipil-ipil (Leucaena leucocephala (Lam.) de Wit.) Barks." Forpride Digest 7:69-70

The ipil-ipil are widely distributed all over the Philippines and are used variously for fuel and for reforestation purposes. The bark of this species contains more than 10% tannin.

Mendoza, V. B. and R. E. de la Cruz (1978)

-see Aforestation

Pendleton, R. L. (1940)

-see Deforestation

Quiniones, S. S. (1978)

"A new disease of ipil-ipil (Leucaena leucocephala Lam. de Witt) in Munoz, Nueva Ecija." Sylvatrop Philippine Forest Research Journal. 3(2):131-133.

The trees are wilting and dying due to infection with fungus. It shows by yellowing and wilting of the leaves.

Reyes, Imelda E. (1975)

-see Aforestation

San Buenaventura, P. (1958)

-see Aforestation

Upland Hydroecology Research Program (1978)

-see Aforestation

Veracion, Vicente P. (1978)

-see Deforestation

Villanueva, Eduardo P. and Nieva F. Banaag (1964)

"A Study of the destructive distillation characteristics of Ipil-ipil (Leucaena leucocephala (Lam. de Witt) wood." Philippine Journal of Forestry 20:163-177.

Makes good quality charcoal. Comparitively fast growth short rotation age and ease of propogation.

Wright, Timothy W. (1978)

-see Aforestation

## MANGROVES

Acuna, Ramen A. (1953)

"Mangrove Swamps. For Protection, Firewood and for Fishpond Purposes." Forestry Leaves 6(1):35-42.

Mangrove swamps are being used either for firewood or fishponds. The mangrove is valuable for its edible fruit, useable bark, wood and roots.

Arroyo, Cesar A. (1978)

-see Deforestation

Bumarloug, A. A. and Virgilio C. de la Cruz (1976)

"Tannin from our mangrove species." Canopy 2(4):9

Tannin from the bark of mangroves are briefly discussed as to its usefulness and effects of different methods of harvesting tan barks on tree survival.

Cortiguerra, Adelina G. (1979)

"Mangrove and estuarine ecology in the Philippines." Canopy 5(10):8-10,14.

Discusses the extent and distribution of mangrove forest in RP and the fauna, aquaculture, flora, uses, rules and regulations, allocation and zonification, pollution of and research being carried out on mangroves. Useful bibliography.

Encendencia, Eppie M. (1979)

"Featuring the twins of the mangrove swamps." Canopy 5(5):11

The "opi-opi" tree is examined as to its economic uses and occurrence in the habitat.

Melana, Dioscoro M. (1979)

"Shall we plant the shallow water mud tideflats of Pagbilao Bay?" 5(4):4-7. Canopy

Marine life is examined in mangrove swamps as many oceanic fish are dependent on mangrove areas as nurseries for their young. Inland fisheries are discussed.

Melana, Dick, M. (1979)

"Bacauan, mangroves' aggressive colonizer." Canopy 5(9):12.

The environment of the mangrove swamp forest is discussed. Mangroves are traced through their growth cycle.

Micosa, Rhodora S. (1977)

-see Aforestation

Serrano, Rogelio C. (1978)

-see Deforestation

Vathana, Aik (1979)

"Some ecology of the mangrove swamp." Canopy 5(11):16&13.  
General Discussion of the evergreen forest type, mangrove forest. Indicate that few tree species dominate and strict zonation usually occurs. Discusses this zonation in some detail.

Velasco A. B. (1979)

"Socio - economic factors influencing the utilization of mangrove resources on the Philippines: fishpond vs. other uses." Canopy 5(6):6,7,15; 5(7):5; 5(8):11,12.

Artificial fish production versus the mangroves are examined. The pros and cons are discussed.