

Economic assessment of forest resources in the SERS.

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Forest research bulletin number 76 December, 1990., 1980.

ABSTRACT

Economic assessment of forest resources was conducted in the Sakaerat Environment Research Station (SERS) which is located in Amphoe Pak Thong Chai, Changwat Nakhon Ratchasima, in the Northeastern region of Thailand. The period of this investigation was from 1978 to 1979. The designated objectives of this project were; a) to assess the economic values of the productivities of the native dry-evergreen forest (DEF) and the dry-dipterocarp forest (DDF) and compared these to the productivities of the two agricultural lands (formerly, the DEF and the DDF) which are adjacent to the SERS, and b) to evaluate the succession and natural evolution of vegetation in the agricultural lands which are still in man-activity and in abandoned fields of different ages after the last cropping.

A sample plot of 50x50 m was, randomly, established in the dry-evergreen forest on mountainous area. The stand is mature and relatively undisturbed and occupies on relatively deep soil. Diameter at breast height (DBH 1.30 m. above ground level) and total height of each individual tree of above 1.50 m in height, were measured. The computation was done using allometric relationships. The results show that total biomass production of all tree species is 394.05 tons/hectare, of which 261.23 tons is stem biomass, 124.58 tons branch biomass and 8.24 tons leaf biomass. *Hopea ferrea* Pierre is the highest biomass contributor per hectare which has 312.21 t/ha of total biomass. The total annual biomass increment of all tree species is 7.7401 t/ha, of which 4.9497 tons in contributed by stem, 2.6637 tons by branch and 0.1267 ton by leaves. *H. ferrea* is still the highest biomass contributor per hectare which has 6.8153 t/ha of total annual biomass increment. Merchantable volume of stem (in this case, to be close to the merchantable volume of log) or V_s , was calculated from each individual tree of above 10 cm in DBH. V_s of all tree species is 313.28 m³/hectare. *H. ferrea* yield the highest V_s which has 248.08 m³/ha. The total annual increment of V_s of all tree species is 5.60 m³/ha. *H. ferrea*, is again, the highest V_s contributor which has 4.96 m³/ha. Assessing from the annual increment of V_s of each tree species, the economic value of the standing trees of the dry-evergreen forest is, at least, 8,520 baht/ha/yr.

A sample plot of 50 x 50 m was, randomly, laid out in the dry-dipterocarp forest on mountainous area. The stand is also mature and relatively undisturbed. It occupies on the shallow soil and outcrop. Forest fire is annually set by the local people. DBH of each individual tree of above 1.50 m in height was measured. The results from the computation show that total biomass production of all tree species is 183.61 t/ha, of which 130.40 tons is stem biomass, 48.35 tons branch

biomass and 4.86 tons leaf biomass. *Shorea talura* Roxb. is the highest biomass contributor per hectare which has 70.97 t/ha of total biomass. The total annual biomass increment of all tree species is 2.21 t/ha of which 1.51 tons is contributed by stem, 0.66 ton by branch and 0.04 ton by leaves. *Pentacme suavis* A.DC. and *S. talura* are the high biomass contributors per hectare which have 1.34 and 9.84 t/ha, respectively. Merchantable volume of log or V_L was calculated from each individual tree of above 10 cm in DBH. V_L of all tree species is 89.64 m³/ha. *S. talura* and *P. suavis* yield the high V_L which have 45.12 and 14.24 m³/ha, respectively. The total annual increment of V_L of all tree species is 1.88 m³/ha. *P. suavis* and *S. talura* are also the high contributors. Evaluating from the annual increment of V_L of each tree species, the economic value of the standing trees of dry dipterocarp forest is, at least, 3,384 baht/ha/yr.

In the Guatemalan corn field (formerly, the dry evergreen forest) and in the cassava field (formerly, the dry dipterocarp forest), three sample plots, each of 10 X 10 m, were laid out, randomly, in each field. The Guatemalan field covers covers 25 rais of land and occupies an hilly area. The cassava field covers 20 rais of land and occupies an relatively flat area of rather deep soil near A 304 road. At the time of local harvesting, total production of the corn field is 13.18 t/ha/yr air-dry weight. Out of this figure, only 2.85 t/ha/yr is for the grain. The total production of the cassava field is 39.52 t/ha/yr fresh weight and 16.26 t/ha/yr air-dry weight. Out of this figure of the green weight, only 21.15 t/ha/yr is the storage root. Evaluating from the grain production (air-dry weight) of the corn field and the root storage production (fresh weight) of the cassava field, the economic values of the grain production and the root storage production are 3,990 baht/ha/yr and 27,495 baht/ha/yr, respectively.

The succession and natural evolution of vegetation in the corn field and in the cassava field, were evaluated by establishing, randomly. Twelve plots of 1 X 1 m in each field. The aboveground biomass of weedy species in the is 5.116 t/ha/yr. *Imperata cylindrica* Linn. P. Beauv. and *Penisetum pedicellatum* Trin., the more prevalent of all weedy species, are the high biomass contributor which have 1.542 and 1.336 t/ha/yr, respectively. The above ground biomass of all weedy species in the cassava field is 0.156 t/ha/yr. No species is considered to be the dominant one.

Cited after Drew et al.(1978), in a series of abandoned fields from 1 to 20 + years which were in the dry – evergreen forest, the above ground biomass varies with the age of fields. In 20 + years plot, it is found a few valuable timber species which is the member of the mature dry – evergreen forest. This indicates the biological loss which is considered to be important one. Natural succession of the abandoned fields to attain a comparable stage of development found in the dry evergreen forest, requires a very long period of time. Data from the abandoned field in the dry dipterocarp forest, is not obtainable.