

Seedling dynamics under canopy gap in dry evergreen forest at Sakaerat.

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ABSTRACT

Study on seedling dynamics under the canopy gap in dry evergreen forest at Sakaerat was conducted from July, 1982 to June, 1983. One hectare sample plot was divided into 100 subplots of 10X10 m². Total height, position and crown diameter of the upper tree layer were measured for the analysis of crown projection area, number and distribution of canopy gap size. All canopy gap area was delineated into five classes but the actual canopy gap size could be grouped into only four classes; class 1 (0.10-31.88 m²), 2 (31.88-63.66 m²), 3 (63.66-95.44 m²) and 5 (127.22-159.00) m². Forty two subplots of 1X1 m² were randomly laid out under each canopy gap size with 10, 20, 8 and 4 subplots for classes 1, 2, 3 and 5 respectively and 8 subplots of the same size were also laid out under the closed canopy for the comparison. The number of all plant species below 1.30 m. height was recorded at approximately one month interval for calculating the species density, the survival rate and the ratio of change of the seedling population. Total height of all tree seedlings was also measured to estimate their monthly growth rate. Seasonal change of top soil moisture content was studied by using the soil core of 84 cm³ collection at the same interval and one meter apart in each canopy gap and the closed canopy.

Maximum number of species of tree seedling was found under canopy gap size classes 2 and 3 (21 species) and the minimum number was found under canopy gap size class 5 (8 species). The maximum number of species of climber was found under canopy gap size class 3 (13 species), while the minimum number was found under canopy gap size class 1 and 5 (11 species). The maximum and minimum number of species of herb were found under canopy gap size classes 2 (8 species) and 5 (2 species) respectively. The density of tree seedlings was the highest under canopy gap size class 2 in October and November and the lowest under canopy gap size class 5 in May and June. The density of climbers was the highest under canopy gap size class 1 and the lowest under canopy gap size class 5 while the density of herbs was the same as for tree seedlings.

Maximum natality of tree seedlings was found under canopy gap size class 2 in September and maximum mortality was found under canopy gap size class 1 and 2 in April and October respectively. The maximum natality of the climbers was found under canopy gap size classes 1 and 2 in November and September respectively, and maximum mortality was found under canopy gap size class 2 in March. The maximum natality and mortality of herbs were found under canopy gap size classes 2 and 1 in August and January respectively.

Maximum annual survival rate of the tree seedlings were found under canopy gap size class 2 while the maximum annual survival rate of climbers and herbs were found under canopy gap size class 5.

The heighest and lowest growth rate of tree seedlings were found under canopy gap size classes 2 and 5 respectively.

Maximum ratio of change of tree seedlings was found under canopy gap size class 2 from August to March. The maximum ratio of change of climbers was found under canopy gap size class 1 from August to March, while the ratio of change of herbs was nearly constant all year round (July – April).

The highest and lowest of soil moisture content in all gap size class and the closed canopy were found in October and April respectively. Maximum soil moisture content was found under canopy gap size class 5 while the rest showed the same pattern.

The study suggested that the establishment and growth of the seedlings were found to be favourable under canopy gap size class 2 particularly soil moisture condition was optimum while climbers and herbs preferred gap size class 1 and 5 with less and abundant soil moisture content respectively.