

Flowering behaviour of some Tropical deciduous forest tree species in relation to climatic conditions

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Abstract

Phenology is one of the oldest branch of environmental science, Phenological observations have been used for centuries to enhance the agricultural production. Seasonal changes of leafing, flowering and fruiting mainly determine phenological behaviour in tropical trees. The timing of phenological events such as leafing, flowering, fruiting can be very sensitive to climatic condition.

Present study deals with the flowering behaviour of some forest tree species in relation to the time period and climatic conditions.

Key words : Flowering, Forest tree species, Climatic conditions, Phenology.

Detailed and objective studies of phenology particular in the case of forest tree have been initiated in recent times. Shelford¹⁶ first used the term to correlate the appearance of certain seasonal events. The phenological behaviour of forest trees in India has been studied by many workers. Bhatnagar¹ studied the phenology of first tree in dry deciduous forest of Sagar. Blatter⁴ presented an interesting correlation of the flowering time with the climate. Njoku¹¹ pointed out a relationship between flowering and leafing behaviours of tropical rain forests of Nigeria, Holway and Ward⁸ noted a well marked relationship between flowering and leafing responses of alpine forests of Northern Colorado. A

relationship of the flowering with foliage of tree species of Nichlaul forest. Gorakhpur was observed by Singh and Dixit¹⁷. Several studies have shown significant variation in flowering^{5,10}. Lely. Kennedy⁹ and Njoku¹¹ made Observations on the flowering times of the rain forest tree species at Nizeria. They state that the peak flowering is from November to April. Daubenmire² has observed maximum flowering in dry months in the semi deciduous forests of Costa Rica. Ward and Henry¹⁸ have reported that chestnut Oak, scrub-chestnut oak and burr oak showed no seasonal variation in time interval of flowering but in white oak there were three distinct periods of flower emergence. The Studies on phenology of tropical rain forests have been made by Scheffler¹³ in

Africa, Schimper¹⁴ in Java, Wright¹⁹ in Ceylon, Holtum⁷ in the Malay peninsula, Davis and Richards³, Herman⁶ observed the phenological events for the species of Juniper of arctic vegetation. The success of an ecosystem depends on the timing of phenological behaviour, because the Timing of leafing, flowering and fruiting greatly affects the food chain. Fewer seeds and insects for their food. Tree species with similar leaf phenology often have different timing of their flowering and fruiting¹⁵. Many deciduous tree species show flowering and fruiting during the leafless period. Most tropical trees show a fairly well-defined short flowering period during a particular time of the year. Global climate change may force variation in timing, duration and synchronization of phenological events in tropical forests¹².

The present study was carried out in Sagar forest. Forest vegetation of the district can be classified as "Tropical dry Deciduous Mixed" type. Procedure of Phenological

observation was followed after Bhatnagar¹. For the study of Flowering behaviour, forest sites were monthly visited and flowering was noted for individual tree species. It was tabulated and the species of similar characteristics were classified together into suitable correlated groups of identical behaviour.

The field observations about the average period of beginning and completion of flowering for the various tree species are given in Table-1. A perusal of this reveals two Major periods of the Flowering *i.e.* rain flowering and summer flowering.

Period -I Rain flowering :

The period covered the months from June to October. Initiation of flowering may be in July to August, in a few species while in some others it may be in September to October. Species in which flowering appeared during this period were-

Table-1. Flowering behaviour of some tree species.

Species	Month of beginning	Month of completion	Duration of event in month
<i>Acacia catechu</i> Willd.	May	July	3
<i>Anogeissus pendula</i> Roxb.	May	July	3
<i>Cassia fistula</i> L.	May	July	3
<i>Diospyros melanoxylon</i> Roxb.	May	June	2
<i>Lagerstroemia parviflora</i> Roxb.	April	May	2
<i>Ougeinia dalbergioides</i> Edgew	February	March	2
<i>Tectona grandis</i> L.	July	September	3
<i>Terminalia tomentosa</i> Cooke	June	August	3

T. tomentosa and *T. grandis*.

Period II- Summer flowering :

The period covered the months from February to June. Many species started their flowering during early summer but a few species showed flowering during late summer.

Species in which flowering appeared during the period were *A. pendula*, *C. fistula*, *D. melanoxyton*, *L. parviflora* and *O. dalbergioides*.

Flowering studies in other forests have also been done by a number of workers. In tropical rain forests, flowering extends throughout the year with a distinct tendency of flowering in the summer months. In temperate forests, seasonal variation in flowering is not often remarkable, however, the autumnal cooling leads to maximum flowering. Observations of present study revealed that nearly 72% of tree species of the stand showed flowering during summer season.

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