Phenological study of some species of fabaceae from Akola district, Maharashtra, India

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Abstract
Phenological study is useful to understand regularities in the course of life of plants depending on external conditions of the environment. It is a valuable source of information on the onset and duration of growing seasons in various climatic regions. Plant Phenological study has great significance because it not only provides knowledge about plant growth pattern but also provides an idea about the effect of environment and selective pressure on flowering and fruiting behavior. So present study was carried out to analyze the phenological characters of 15 species of Fabaceae from Akola district Maharashtra. Leaf initiation, flowering and fruiting were studied during June 2015 to December 2016. From this study it is found that leaf initiation started in the month of March to August with peak in June-August. Flowering started in the month of March to November and peak in January to March, whereas fruiting started in the month of May to January and peak in November to January.

Keywords: Phenological, fabaceae, leaf initiation, flowering, fruiting

1. Introduction
Phenology is the calendar of event in the life history of the plant. The study of the periodicity or timing of recurring biological events is called as phenology. Study of phenology are important from the point of view of the conservation of tree genetic resources and forestry management as well as for a better understanding of the ecological adaptation in the community are based on the knowledge of seasonal production of plant parts [1]. Seasonal and climatic changes are some of the non-living or abiotic component of the environment that impact the living or biotic component [2]. Plant phenological study has great significance because it not only provides knowledge about plant growth pattern but also provide the idea on the effect of environment and selective pressure on flowering and fruiting behavior [3]. Climate change is one of the most important ecological problems of our times (IPCC 2007). It is of great significance because it affects the living conditions of the whole global society [4]. The general phenological aspects of leafing flowering and fruiting in tropical tree species are fairly known [5]. Observing the importance of phenology of the species in the present locality, the work was carried out during the year June 2015 to December 2016. The aim of the present study is to analyze the phenological pattern of some species of Fabaceae from Akola District, Maharashtra.

2. Material and Method
Akola is the third largest city in Vidarbha region after Nagpur and Amravati. Akola district is bordered on the north and east by Amravati district, on the north, Akola is bordered by the Melghat Hills and forest region. On the south by Washim district, and on the west by Buldhana district. Akola is located at 20.7° latitude North and 77.07° longitude East.The phenological observation was made of 15 species of the family Fabaceae from Akola district, Maharashtra. The detailed observations were carried out at monthly intervals over a period of one and half year (June 2015 to Dec. 2016) for the above species. The records of leaf initiation, flowering and fruiting were observed during the period.

3. Results and Discussion
The Phenologial observations of leaf initiation, flowering and fruiting were recorded month wise, as shown in the table 1. Total 15 plants species of Family Fabaceae were studied and arranged with alphabetical order. From the table it is observed that the leaf initiation was found variedly from species to species and started in the month of March to August with peak in June-August (4 Species), Jun-Jul (2 species), Mar-Jun (2 species), followed by variedly in other species. Flowering continued in different species in different month and it is observed that Jan-Mar (4 Species), Oct-Nov (3 species), Apr-Jun, Aug-Oct (2 species each), and remaining species have shown variation in the month for its flowering. The fruiting period was observed Nov-Jan (4 Species), Mar-Apr (3 species), Jul-Aug (2 species), and remaining species have shown variation in the month for its fruiting.

Table 1: Month wise phonological observation

Sr. No	Name of Species	Leaf Initiation	Flowering	Fruiting
1.	*Acacia nilotica*	Mar-Jun	Mar-Jul	Sep-Jan
2.	*Albizia lebbeck*	Mar-Jun	Apr-Jun	Jul-Aug
3.	*Bauhinia racemosa*	Jun-Jul	Mar-May	May-Jul
4.	*Butea monosperma*	Mar-Jul	Jan-Mar	Apr-May
5.	*Cassia fistula*	Apr-May	Apr-Jun	Jul-Aug
6.	*Crotalaria retusa*	Jun-Aug	Sep-Jan	Feb-Mar
7.	*Erythrina suberosa*	Feb-Mar	Apr-Sep	Nov-Jan
8.	*Hardwickia binata*	Jun-Aug	Oct-Nov	Nov-Jan
9.	*Mucuna pruriens*	Jul-Aug	Oct-Nov	Nov-Jan
10.	*Ougeinia oojeinensis*	Sep-Nov	Jan-Mar	Mar-Apr
11.	*Prosopis juliflora*	Jun-Aug	Oct-Nov	Dec-May
12.	*Pithecellobium dulce*	Oct-Nov	Jan-Mar	Mar-Apr
13.	*Psoralea corylifolia*	Jun-Aug	Aug-Oct	Nov-Dec
14.	*Sesbania sesban*	Dec-Jan	Jan-Mar	Mar-Apr
15.	*Tephrosia villosa*	Jun-Jul	Aug-Oct	Nov-Jan

4. Conclusion

This type of study can provide important insights into the biology of the plants concerned and reveal phenological pattern of surveyed species. It will help in knowing the timing of different phenophases of the studied plants which can be of interest to people of this region. From this study it is concluded that maximum leaf initiation was found in the month of June-August (4 Species), Jun-Jul (2 species), Mar-Jun (2 species), followed by variedly in other species. Maximum flowering period was observed in the month of Jan-Mar (4 Species), Oct-Nov (3 species), fruiting is found in the month of Nov-Jan (4 Species), Mar-Apr (3 species). These data obtained from these studies have botanical importance, particularly in the field of forest and Ecology.

5. References

1. Desai PB, Patel NK, Phenological study of trees species of Satara range forest (North Gujarat), Life Science Leaflets 2010; 3:41-46.
2. Kasarkar AR, Kulkarni DK. Phenological studies of family Zingiberaceae with special reference to Alpinia Zingiber from Kolhapur region (M.S.) India. Bioscience Discovery. 2011; 2(3):322-327.
3. Zhang GQ, Song, Yang D. Phenology of *Ficus racemosa* in Xishuangbanna, Southwest China, Biotropica. 2006; 38:34-341.
4. Harnos ZS, Gaál M, Hufnagel L. (szerk.) Klímaváltozásról mindenkinek, Budapesti Corvinus Egyetem, Budapest, 2008.
5. Borchert R. Phenology and control of flowering in tropical trees. Biotropica. 1983; 15:81-89.