INTERNATIONAL JOURNAL OF PHYTOTHEARPY RESEARCH
ISSN 2278 – 5701

Research Article

Vegetative and Reproductive Phenophase Analysis of *Plantogo ovata* forssk. With Particular reference to Kymore Plateau Region

Ashish Dwivedi and Rajnish Pandey

School of Environment Biology, A.P.S. University, Rewa (M.P.) India

Abstract:

Present paper deals with the study of Vegetative and Reproductive Phenophase parameters i.e. plant height, number of tiller/plant, ear length and number of ears per plant, flowering, fruit initiation and maturity of Plantago ovata forssk. (Isabgol). A medicinally important plant species study site is Rewa, which constitute the significant geographical area of the Kymore Plateau Region. The sampling from three sampling plots identified for the study was done after 45, 60 75, 90 and 105 days of sowing.

The Vegetative and Reproductive Phenophase analysis done in the present investigation reveals that the growth and reproductive performance shows the suitability of the Isabgol species grown in Kymore Plateau Region. The cultivation of this important medicinal material but also helps in the conservation of biodiversity.

Key words: DAS (Days after showing), Vegetative Phenophase, Reproductive Phenophase.

Introduction:

The direct utilization of plant material is a feature of traditional medicines not only in the developing world but also in Europe and the USA e.g.; herbal formulation on health food shops. Preparations of decoctions, tinctures, galenicals and total extracts of plants also form apart of many pharmacopeias of the world.

The current trend of medicinal plants based drug industry is to procure standardized extracts of plants as raw material. Special attention is required on medicinal plants on which significant research leads have been obtained. Medicinal plants continue to be an important resources material for therapeutical agent both in developed and developing countries. Presently, the Indian system of medicine uses over 1100 medicinal plants and most of them are collected from the wild regularly, of which over five dozen species are said to be in great demand. The tribal belt of India is rich in these plants and local tribes mainly depend, for their livelihood, on their collection and trade. However, the supply of raw material for the industry is procured through minor forest produce contractors/dealers.

A vast majority of the world population today are finding themselves unable to afford the products of the western pharmaceutical industry, and they have to depend mainly upon the use of traditional medicines. This reality has been recognized, documented and compiled by the WHO in and inventory of medicinal plants numbering over 200000 species, the world population is expected

to touch 750 crores by the turn of the century and this will further escalate the health budget especially those of the developing countries.

The maker for herbal medicines in the developed courtiers is growing at a faster rate the other pharmaceutical products. The realization that allopathic drugs have harmful side-effects. Allopathic medicines are said to be ineffective against many chronic disease like cancer. Moreover, many people suffering from diabetes, arthritis, respiratory diseases, ailments, gastric problem, jaundice, etc. are said to be turning more and more to ayurveda and Unani for permanent cures. Herbal medicines are comparatively less expensive. The western medical profession has begun to acknowledge the value of herbal medical. This also explains the fact that many purely allopathic units have also adopted the use of formulations which include natural herbal drugs.

The primary objective for the industrial developments of medicinal and aromatic plants species is the yield of active physiochemical compounds. The major landmark for the cultivar of medicinal plants is lack of standards and cultivation package or agro technology and unavailability of cultivars possessing superior quality parameters. The breeding programmed of medicinal and aromatic plants has not received much attention as priority was given to food crops.

RESULTS AND DISCUSSION:

Date for different vegetative and reproductive phenophase parameters i.e. Plant height, number of tiller/plant, ear length and number of ears per plant. Flowering, fruit initiation and maturity of plantago ovata forssk. (Isobgol) Have been presented in Table 2 and Fig. 3.

Vegetative Analysis:

Plant height, Number of tiller per plant, ear length and Number of ears per Plant:

An observation of plant height, Number of tiller per plant, Ear length and number of ear Per plant was studies in the year 2005-06 and 2006-07. It was observed that in all the Plots A , B and C which are considered for the present experiment revels that plant height ranges from 25 to 30.4 cm., and average of 28 cm,. Number of tiller per plant varies from 7 to 9 an average of 8 tiller/plant, ear length ranges from 3.18 to 4.91 cm. an average of 75 ears per plant. (Table-2Fig.-2).

Reproductive Phenophase Analysis:

Flowering, Fruit initiation and maturity: An observation of 50% flowering, Fruit initiation and plant maturity was studied in the year 2005-06 and 2006-07 It was observed theta in all the plots A , B C considered for the present experiment reveal that it takes 40 to 42 days in 50% Flowering with an average of 41 days, 50 to 52 days with 51 days an average required day for fruit initiation and 79 to 84 day for maturity with and average 81.5 days (Table 2 fig. 2.).

Phenology of Isabgol (Plantago ovata forssk.) shows the flowers are bisexual tetramerous, anemophilous and protogynous, favoring out crossing, Carolla is scarious, Fruit ellipsoid capsule, smooth rosy white seeds. The husk is thin, translucent, and odorless with a bland mucilaginous taste.

ISSN 2278 – 5701

Fig. 1 Showing a vegetative Plant of Isabgol

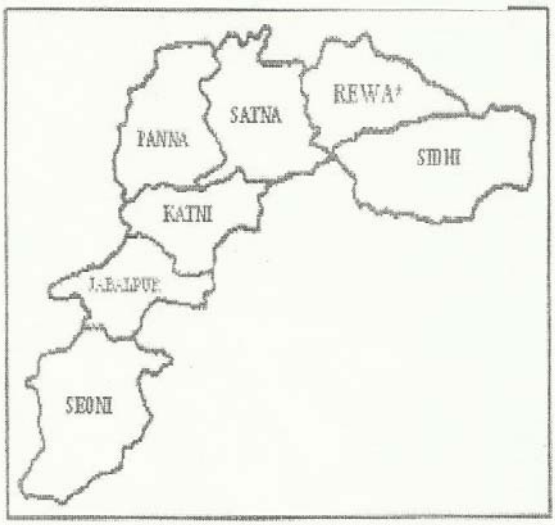


Fig. 2 Showing Geographical districts of Kaymore Plateau Region

Fig.-3 Showing variation in Days to 50% Flowering, Days to Fruit Initiation, Days to Maturity, Plant height (c.m.), Number of tiller/plant, ear length and number of ears per plant.

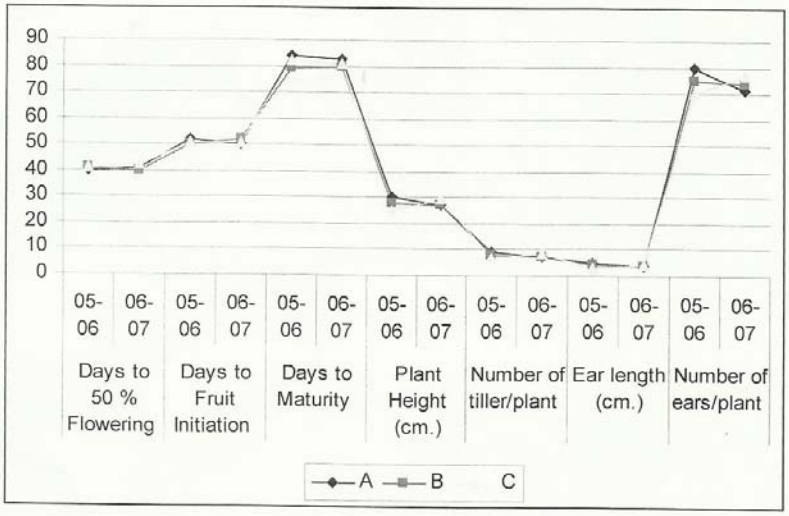
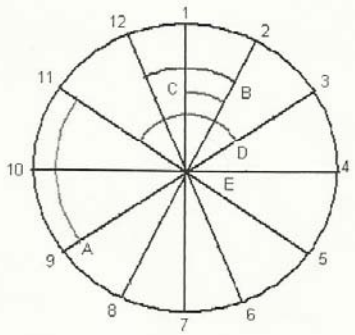


Fig. 4 Phenogram of *Plantago ovata* Forssk.



A – Sowing- October - November
B – Flowering – December – January
C – Fruiting – January
D – Vegetative Phase – November – February
E – Maturity – February – March
From 1 to 12 – January to December.

Table 1- Showing General feature of Isabgol cultivation.

S.No.	Features	Isabgol
1.	Variety	JI-4
2.	Plot size	10m x 10 m
3.	Date of sowing for the years 2006 and 2007	15th October (Plot B) 30th October (Plot A) 14th November (Plot C)
4.	Method of sowing	Line sowing
5.	Seed rate	1 Kg./hac.
6.	Manure	Cow dung @ 10 tonnes/hac. at the time of Land preparation.
7.	Irrigation	One month after sowing
8-	Cultural operation	thinning and weeding as and when required.

Table-2 Showing variation in **Days to 50% Flowering, Days to Fruit Initiation, Days to Maturity, Plant height (cm.), Number of tiller/plant, ear length and number of ears per plant.**

S.N	Plot	Days to 50% Flowering		Days to Fruit Initiation		Days to Maturity		Plant height (cm.)		Number of tiller/plant		Ear length (cm.)		Number of ears per plant	
YEAR		05-06	06-07	05-06	06-07	05-06	06-07	05-06	06-07	05-06	06-07	05-06	06-07	05-06	06-07
1	A	40	41	52	50	84	83	30.40	27.45	9.33	7.33	4.91	3.83	79.83	71.00
2	B	41	40	50	52	79	80	27.95	27.05	8.00	7.50	4.28	3.88	74.66	73.83
3	C	41	42	51	51	82	81	25.00	29.50	6.83	8.16	3.18	4.33	70.33	76.50
AVERAGE		40.33	41	51	51	83	81.3	27.78	28.00	8.05	7.66	4.12	4.01	74.94	73.77

CONCLUSIONS:

The performance of Isabgol reveals better vegetative and reproductive phenophase performance of the plant in Kymore plateau region. It can thus be recommended that based on vegetative and reproductive phenophase analysis large scale cultivation of Isabgol should be undertaken in Kymore plateau region.

REFERENCES

1. Beniwal B.S. Phenological study of trees in Arunanchal Pradesh. Indian Forester, 1987; 113 (12): 779-791.
2. Bisht R.P. K.R. Verma and O.P. Toky, Phenology of Evergreen Vs deciduous Trees of central Himalaya J. Tree Sci., 1986; 5 (2) 126-130.
3. Dwivedi A Ecophysiological study of some medicinal Plants grown in Kymore Plateau Rgion. Ph.D thesis A.P.S. University, Environmental Biology Department Rewa (M.P.).
4. Ganapathya, P.M. and M. Rangorajaan, A Study of phenology and nursery behavior of Adman timber specie. Indian Forester, 1964;90(11) : 758-763 .
5. Kaul V. and R. Raina. The Phenology of woody angiosperm in Srinagar. Indian Foreser, 1980;106 94-101
6. Novchoo I.A. and P. Kachroo, Phenology of Vegetation of Pulwama Indian Forester, 1986; 112(9); 833-839.
7. Sagreiya K.P. How to collect Phenological records for shrubs and oranamental trees. Indian forester 1942; 68(5):245-246.