

# Digital herbarium database of some rainy season weeds of Khadar area of Hastinapur District, Meerut (U.P.), India

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## Abstract

Digital herbarium database includes virtual images of plant specimens in digital format. This form of digital database herbarium is quite different from the traditional herbarium. In this form, the herbarium data is stored and made available to the taxonomists electronically. The modern database includes the actual herbarium specimens as digital images with all relevant informations available on the herbarium sheet label. The study of digital herbarium database reduces the time and efforts required for collection, identification and study of plants. This form of Floweringora study reduces the cost of large herbarium maintenance. Very large information of plants can be stored in a small space. Digitization replaces the loan methods of herbarium from one institute to another for researches. Digital herbarium database is helpful in maintaining the wealth of plants. Digitized Floweringora can be represented in a compact form, this is very useful for use of forest department, ecological workers and for institutions carrying plant researches in all disciplines. The digital form of Floweringora is very useful as corrections and modifications can be made from time to time as Floweringora is never constant and undergoes changes over a period of time. The stretches of the Upper Ganges Canal is called Khadar. The present paper deals with some rainy season weeds of Khadar area of Hastinapur , district – Meerut (UP), India.

**Keywords:** Digital database , electronically , khadar area

## INTRODUCTION

There are patches of saline and alkaline lands called Bhur areas along the bank of Upper Ganges canal. The stretches of low land along these rivers are called Khadars. The Khadar of Ganges differs greatly from that of Yamuna in not having wide stretches of settled countries and in having a better clay deposit.

Rainy season follows summer and extends from end of June to last of September. South-East monsoon is responsible for rains during this season. The wettest months of season are July and August. Rainy season provides favourable conditions for growth of plants because the relative humidity is high in the season and temperature Floweringuctuations are low. The herbaceous plants show active vegetation growth during the season. The season is very favourable for the germination of seeds of winter annuals.

The important works on Floweringora of northern part of India include Floweringora of British India by Hooker (1872-1897) [1] , Floweringora of upper gangetic plain by Duthie (1903-1929) [2], Floweringora of Delhi by Maheshwari (1963) [3] and Maheshwari (1966) [4], herbaceous Floweringora of Dehradun by Babu [5] , Floweringora of district Meerut has been studied in full and parts by different workers from time to time. Murty and Singh (1961) [6] had worked out the Floweringora of one town Hastinapur.

## MATERIALS AND METHODS

Digital photograph of plants in their natural habitat or in dried form with special attention to some important features for identification and database were prepared by using digital camera, computer and software package DELTA (Descriptive Language for Taxonomy – worldwide accepted package).

When taxonomic descriptions were prepared for input to computer programmes , the form of the coding was usually dictated by the requirement of a particular programme or set of programmes. The DELTA was designed primarily for the easy use by people rather than for convenience in computer programming and is versatile enough to replace the written description as the primary means of recording data. The system is capable of encoding all of the types of character commonly used for identification and classification. The programme possesses intekey file through which, we can distinguish two or more than two taxa based on any defined character. DELTA includes intimate , a programme its purpose is to aid the developer in associating images with particular character or taxon and in the placement of various forms of annotation of these images.

### Systematic Description Family – Fabaceae *Indigofera hirsuta* Linn.

A bushy herb or undershrub, 0.6-1.2 m. tall. Stems with grey or brown pubescence. Leafloweringgets 5-11, opposite, 3-4 X 1.5 cm. Floweringowers densely hairy, pointing downwards. Seeds 2 X 1.5 mm.  
Flowering. : Aug-Oct

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**Tephrosia villosa** Pers. Syn

A small, diffused, branched, undershrub 45 – 100 cm tall. Stem with white silky appressed hair throughout. Leaves, imparipinnate, 3 – 5 cm long; leaflets 11 – 15, oblanceolate, entire, obtuse, narrow at base, 1.5 – 2 X 0.3 – 0.5 cm; stipules deflexed, hairy, 0.4 – 0.5 cm long. Floweringowers pinkish red. Racemes up to 15 cm long, lower floweringower in distant fascicles, lowest in axil of leaves; bracts setaceous, plumose. Calyx 0.5 – 0.6 cm, densely silky, teeth long, setaceous. Corolla exerted; standard hairy outside. Pods 2 – 3 cm long, deflexed falcate, densely clothed with white silky hair.

Flowering and Fruiting: Aug – Nov

**Family – Onagraceae**

**Epilobium hirsutum** Linn.

An erect, much branched, up to 60 cm tall, annual herb; stem and branches glandular pubescent and with long white hair towards the end of the branches. Leaves alternate except middle cauline ones, 2 – 5 X 0.3 – 0.8 cm, sessile, semiamplexicaul, acute at apex, serrate – dentate, pubescent on both surfaces. Floweringower axillary, solitary; pedicel 0.8–1.2 cm long, pubescent. Sepals 4, oblong, acute. Petals 4, rose-purple, obovate-oblong, 0.6- 0.7 cm long. Ovary inferior, 4-celled; stigma 4, distinct, spreading. Capsule 3.5 – 7 X 0.1 – 0.15 cm, pubescent, 4-angled; seeds numerous, obovoid, not papillose with fulvous white coma.

Flowering and Fruiting : Sept – Feb

**Family – Convolvulaceae**

**Ipomea nil** (Linn.)

A twinning or spreading shrub. Stems retrorsely hairy. Leaves

ovate – cordate, 3 – lobed. Floweringowers deep blue tinged with pink on 1 to 5 – Floweringowered peduncles. Capsules 3 – celled, 6 – ovuled, subglobose or ovoid, glabrous.

Local name : Nilkamli

Flowering and Fruiting : Aug – Oct

**Ipomea pestigridis** Linn.

A prostrate or twining , annual herb. Stem and branches covered with long spreading yellow hair. Leaves orbicular, deeply palmately 5-9 lobed; segments elliptic, lanceolate, acuminate, subequal 2-4. 5 X 1-2 cm, appressed long hairy on both surfaces; petiole 2.5 – 7.5cm long. Floweringowers 3-7 in capitates, involucre cyme; peduncle 2.5-10cm long, densely hairy; bract lanceolate–oblong, hairy, 1-2.5 cm long; outer larger and broader than inner one. Calyx 0.8–1.2cm long, unequal, ciliate, acute. Corolla 2 – 2.5cm bands. Capsule ovoid, glabrous, 0.5 – 0.6cm long, papery, concealed by calyx segments.

Local name : Ghiabati

Flowering. : Sept-Oct ; Fruiting : Oct-Dec

**Ipomea reptans** (Linn.)

A large, trailing, aquatic or amphibious, annual herb. Stem long, spreading, rooting at nodes, fistular, glabrous. Leaves elliptical, oblong or sub deltoid, acute, cordate, hastate or sagittate at base, entire 5.5 – 7.5cm long. Floweringowers in 1 – 5 Floweringowered axillary cymes; peduncle 2.5 – 7.5cm long; bracts minute, subulate. Calyx segments 5, oblong – lanceolate, obtuse, glabrous, funnel – shaped, purple with rose coloured limb; the throat and tube dull purple; lobes shallow. Stamens 5; filaments unequal, woody below. Capsule ovoid, 0.7 – 0.8 X 0.5 cm, glabrous; seeds hairy.

Local name : Sarnali

Flowering and Fruiting : Oct – Dec

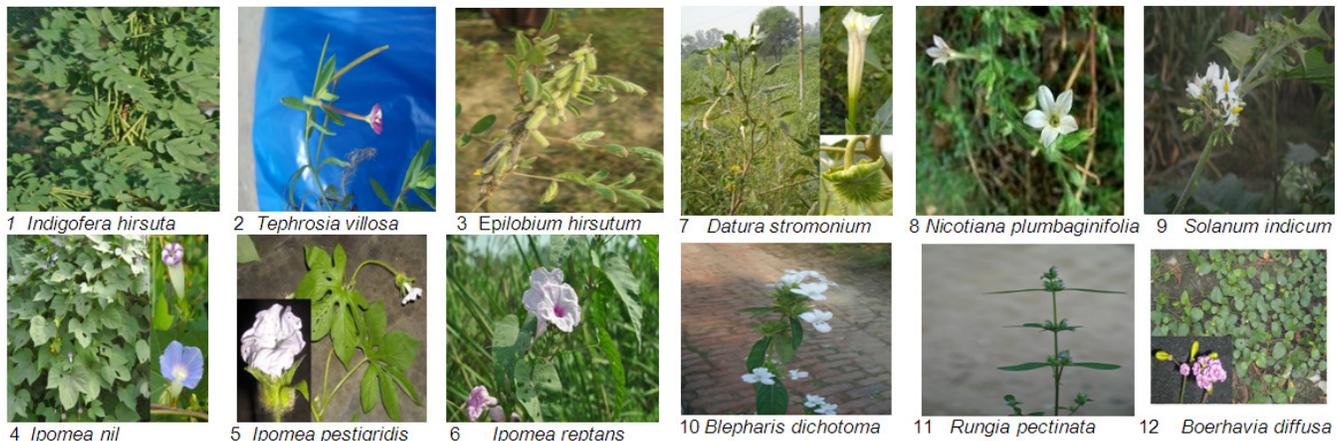


Plate 1. Some rainy season weeds of Khadar area of Hastinapur

**Family – Solanaceae**

**Datura stramonium** Linn.

An erect, 1 – 1.25m. tall, perennial herb. Stem densely pubescent especially on young parts. Leaves ovate – oblong, with unequal sided rounded or cuneate base, acute, entire or sinuate, 6 – 16 X 3 – 6cm, soft pubescent; petiole 1.5 – 3.5cm long, hairy.

Floweringower solitary, axillary pedicel 0.4 – 0.8cm long. Calyx 6 – 8cm long, minutely hairy; teeth 1.5 – 1.8cm long, acuminate, triangular. Corolla 12 – 15cm long, white; lobes 5, obscure with 0.3 – 0.5cm long acumen. Stamens 5, attached near the base of corolla tube. Capsule ellipsoid – oblong, densely covered with 0.6 – 0.8cm long prickles, surrounded below by enlarged retrorse base of calyx.

Local name : Dhatura  
Flowering and Fruiting : March - Nov

### ***Nicotiana plumbaginifolia***

An erect, 30 – 60cm tall, shallow rooted, annual herb. Stem and branches sticky, glandular – pubescent. Basal leaves in rosette, obovate, narrowed at base up to 15cm long with decurrent petiole; cauline leaves elliptic – ovate or obovate, sessile with semiamplexicaul base, acute or obtuse, 4 – 8X3-5cm; upper most one passing into bracts; all leaves entire, papery, glandular, glabrous. Floweringowers in 8 – 15cm long terminal lax racemes; pedicel 0.4 – 0.6cm long, enlarged in fruits. Calyx 1 – 1.2cm long, 10 ribbed, glandular hairy; segments 5, lanceolate – subulate, unequal, equally the tube. Corolla 2.5 – 3.4cm long, bluish-white, narrower linear; limb 0.8 – 1cm across; lobes 5, triangular ovate, obtuse. Stamens included. Capsule ovoid, 1 – 1.2X0.4-0.6cm, glabrous. Seed small, light brown rough.

Local name : Jangali Tambaku  
Flowering. : Apr – June ; Fruiting : May – June

### ***Solanum indicum* Linn.**

An erect, 1-1.5m tall, perennial under shrubs. Stem branches and inFloweringorescence covered with stellate tomentum, prickly with 0.3 – 0.5cm long thick based, hooked spines. Leaves oblong – ovate, sinuate pinnatifid, base rounded, unequal sided, acute, entire, 5 – 8.5X2.5 – 5.2cm, stellate pubescent, sparsely prickly along midrib on both sides; petiole 2 – 3.5cm long. Floweringowers on extra axillary cymose corymb; peduncle 0.1 – 0.15cm long; pedicel 0.5 – 1.2cm long. Calyx 0.5 – 0.6cm long densely stellate pubescent, with short straight spines; segments 5, triangular, acuminate, much shorter than calyx tube. Corolla 1.5 – 2.2cm across blue, densely covered with purple tomentum; tube 0.3 – 0.4cm long, segments 5, oblong elliptic, obtuse. Filaments short ovary glabrous; style minutely stellate hairy. Berry orange – yellow, globose, 1.2 – 1.5cm across, glabrous. Seeds 0.2cm across, granulated.

Local name : Kateli, Baigankateli  
Flowering. : June ; Fruiting : July

### **Family – Acanthaceae**

#### ***Blepharis dichotoma* Roxb.**

An erect, 40 – 80cm tall, perennial undershrub. Stem branched dichotomously, woody, obscurely 4 gonous, strigose. Leaves ovate or elliptic, acuminate, base decurrent, less hairy on upper surface, more hairy on nerves and veins on under surface, 5 – 15X5 – 8 cm; petiole 2 – 3.2cm long. Floweringowers white, in 3 – 5 Floweringowered, once forked cincinni; bracteoles 1 – 1.2cm long, ovate, hairy on back, margins ciliate. Outer calyx segments broadly ovate rounded, obtuse, strigose, 1.5 – 2.2cm long; inner 1 – 1.5cm long, linear, acute, appressed oblong, obtuse. Capsule 1.5 – 1.8cm long, glabrous, 4 seeded. Seeds appressed silky hairy.

Local name : Safed Cheeta  
Flowering. and Fruiting : Sept-Jan

### ***Rungia pectinata* (Linn.)**

A procumbent – ascending, up to 30 cm tall, annual herb. Stem much branched from the base, angular, pubescent. Leaves

very variable in shape and size lanceolate – oblong or elliptic, acute at apex and base, entire, appressed hairy, 2.5 – 4.5X0.8 – 1.8cm; petiole 0.2 – 2cm long. Floweringowers on 0.8 – 1.8cm long, one sided spikes, often 2 – 3 together at the end of branches, bract dimorphic, barren one 0.4 – 0.5X0.2 – 0.3cm, lanceolate, acuminate, with scarious margins; fertile one 0.3 – 0.35X0.25 – 0.3cm, orbicular, acuminate, ciliate. Corolla 0.3 – 0.35cm long, bluish – violet, 2 lipped; upper lip entire; lower lip 3 lobed. Stamens 2; anthers with 2 superposed cells; lower cell white tailed. Capsule 0.2 – 0.3cm long, ovoid, acute, compressed, hairy at apex. Seeds minutely echinate. Flowering. and Fruiting : Nov – Feb

### **Family – Nyctaginaceae**

#### ***Boerhavia diffusa* Linn.**

An erect or diffused, 60 – 90cm tall, perennial herb. Stem terete, viscid, swollen at nodes, purple-tinged. Leaves opposite, in very unequal pairs, ovate-oblong or suborbicular, acute or obtuse, rounded at base, 1.5 – 4.5X0.8 – 3.5cm, thick glabrous above, pale beneath; petiole 1 – 3.5cm long. Floweringowers 4 – 10 together, in sub capitates small umbels forming axillary and terminal panicles; peduncle 1 – 4cm long; bract 0.1 – 0.2cm long, ovate, acuminate; pedicel 0.05 – 0.1cm long. Perianth pinkish-purple, 0.2 – 0.25cm long, constricted below the middle, gland hairy below; limb 0.2cm across; lobes 5. Stamens 2 or 3, scarcely exerted; filaments

### **CONCLUSION**

The present study is based on the study of weeds of Khadar area of Hastinapur, Meerut during July 2009 – September 2010. These weeds were collected during vegetative and reproductive periods, take onsite photographs and studied their characteristics to prepare a digitized data. The specimens were critically examined and identified with the help of the available Floweringoras such as Floweringora of Upper Gangetic Plain and of the Adjacent Siwalik and Sub-Himalayan Tracts, Floweringora of Garhwal, Floweringora of Delhi, Floweringora of Pauri, Floweringora of Dehradun, Floweringora of Udampur and Floweringora of the Indian Desert etc. The critical herbarium specimens were matched with the authentic specimens lodged at Forest Research Institute, Dehradun and Botanical Survey of India, Dehradun.

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