

## WEEDS OF DELHI I - CYPERACEAE AND EUPHORBIACEAE

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Plant weeds belonging to families Cyperaceae and Euphorbiaceae were collected from different parts of Delhi and identified. Some of these weeds occurred through out the year, while others for short periods.

**Keywords :** Cyperaceae; Euphorbiaceae; Weeds.

### Introduction

In agricultural lands and forests, weeds compete with the beneficial and desired vegetation, reducing the yield and quality of products. Because weeds compete with crop plants for nutrients, soil moisture and sunlight. Depending upon the degree of competition, weeds reduce the crop yield by 10 to 15%. Crops differ in their ability to compete with weeds. Weeds serve as alternate hosts to several crop insects, nematodes and pathogens. Insects like aphids, thrips and stem flies survive on wild mustard, wild carrot, ragweed, pigweed etc. There is no detailed knowledge of Delhi weeds therefore survey work was taken up. The main aim of this work was to assess weeds which are fast spreading and harmful to the crops.

### Materials and Methods

Serious attempts were made to collect all the Cyperaceous and Euphorbiaceous weeds growing in different parts of Delhi during different seasons. The time of their appearance, reproduction, dissemination were regularly noted through out the year (Table 1). Identification of these weeds were made using standard monographs<sup>1-3</sup>. Observations were also made with respect to presence of any facultative and obligate parasites on these weeds as has been reported by some earlier workers<sup>4,5</sup>. Diseases occurring on these weeds

will be collected with a view to develop mycoherbicides.

### Results and Discussion

Three species of the genus *Cyperus* were collected from different parts of Delhi, namely *Cyperus bulbosus*, *C. triceps* and *C. compressus* (Fig.1 A-C). These species can be distinguished by their floral parts and basal part of the stem. They occur through out the year. But their flowering and seed formation occurs in the months of July, August and September respectively. These plants grow on the road side, garden and in fields.

*Cyperus triceps* is a small 7-15 cm high, glabrous annual. Stem tufted on a short thick root stock obtusely trigonous, smooth. Leaves are long or usually shorter than stem, 2-4 mm broad, linear, acute. Heads usually 3-nate, rarely a few or upto 7, ovoid or cylindrical ovoid, light green sessile, middle one the largest, 5-8 mm long, lateral spikelets 2 mm long. Glumes 4 keeled, lower, lanceolate, acuminate, herbaceous, green, strongly nerved. Stamens 2, stigma bifid. Achenes 1.3-1.5 mm long, ellipsoid, obtuse, yellow brown, compressed.

*Cyperus bulbosus* is a stoloniferous, glabrous, erect perennial with numerous bulbs. Stolons very slender, with brown scales, disappearing as soon as bulbs are formed,

**Table 1.** Weeds of Cyperaceae and Euphorbiaceae during the different months of the year.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
<b>Cyperaceae</b>												
<i>Cyperus bulbosus</i>	+	+	+	+	+	+	+	+F	+S	+S	+D	+S,D
<i>C. triceps</i>	+	+	+	+	+	+	+	+F	+S	+S	+D	+S,D
<i>C. compressus</i>	+	+	+	+	+	+	+	+F	+S	+S	+D	+S,D
<b>Euphorbiaceae</b>												
<i>Acalypha</i>	+	-	-	-	-	+V	+B,F	+S	+S	+F	+S	+S
<i>Euphorbia geniculata</i>	+D	+D	-	-	-	+V	+F,S	+S	+F,S	+F,S	+F,S	+S
<i>E. granulata</i>	-	-	-	-	-	+V	+F,S	-	-	-	-	-
<i>E. hirta</i>	+F	+F	+S	+V	+F	+S	+S	+V	+V	+F	+S	+S
<i>E. prostrata</i>	-	-	-	-	+V	+V	+F,S	+S	+S	+V	+V	+V
<i>Phyllanthus niruri</i>	+S	-	-	-	-	+V	+V	+F,S	+F,S	+F,S	+S	+S

V-Vegetative plant; D-Dispersal of seed; F-Flowering; + for presence; S-Seed formation; - for absence.

close to the end of stolons. Bulbs when ripe ovoid, 1 cm long enclosed in a hard, black striate coat, which splits irregularly into lanceolate leaves. Leaves many, longer than stem, 4 mm wide at the base, tapering whip like.

Inflorescence subumbellate, interrupted, rays 6-12 mm long. Bracts 3-6, the lower much exceeding the umbel, ending in whip like structure. Glumes 3 mm long, boat shaped, adpressed, multistriate, reddish margins hyaline in lower part, obtuse or midrib green, produced into a short arista.

*Cyperus compressus* is a glabrous tufted annual. Roots with extensive growth, fibrous. Culms 5-35 cm tall, erect trigonous with rounded, smooth angles, striate. Leaves 1-4 at base of culms, 1.5-3 cm wide as long as culms, flat or conduplicate, margins rarely scabrellate, 1-nerved, acuminate, sheaths purplish brown. Bracts 3-5, unequal upto 10 cm long. Spikelets 3-10, subdigitate at the end of the ray, linear, oblong, subcompressed with a median ridge on each side. Achenes 1-1.3 x 0.8-1 mm, obovoid, trigonous, dark

brown with rather concave side, minutely punctulate some what ribbed at the angles.

The most commonly occurring disease on these weeds are leaf spots caused by *Cercospora caricis* and *Alternaria alternata*, Tarspot caused by *Phyllochora tuwaiti*, Leaf rust by *Puccinia romagnoliana*, Stem and root gall by *Synchytrium cyperit*<sup>3</sup>

From the family Euphorbiaceae the most common weeds encountered were *Euphorbia geniculata*, *E. hirta*, *E. prostrata*, *E. granulata*, *Eclipta alba*, *Acalypha* and *Phyllanthus niruri* (Fig.2 A-D). These plants occurred through out the year. *Euphorbia hirta* is an erect, decumbent, annual herb. Stem simple or dichotomously branched, rather pilose with yellow, spreading pubescence of minute, curved hairs. Leaves very variable in size, opposite, obliquely lanceolate, oblong, acute. Seeds of *E. hirta* germinate immediately after their dispersal. Flowering starts in the month of January and seed formation takes place in march. In April, germination of seeds take place then flowering

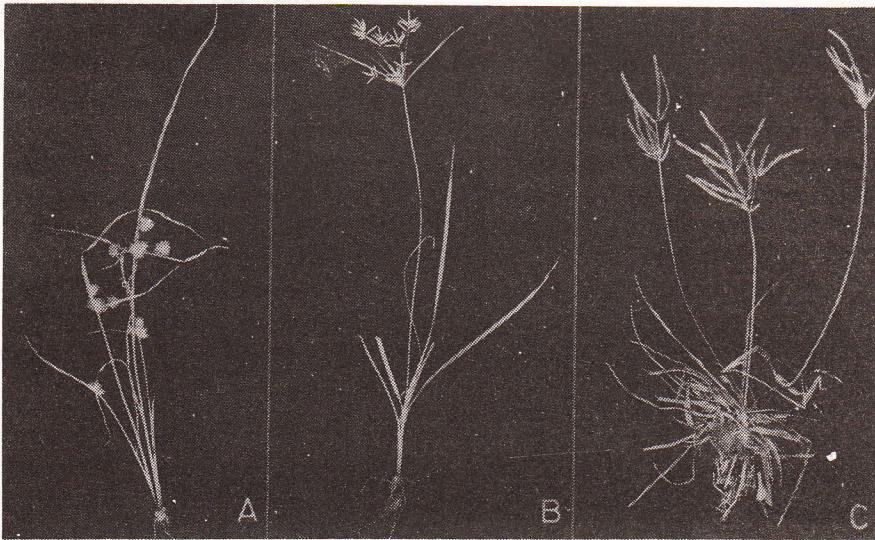


Fig. 1 (A-C), Showing plants of *Cyperus compressus*, *C. triceps* and *C. bulbosus*.

takes place in May and again seed formation takes place during June and July months. This process continues through out the year. Its germination is very quick as well as it is very fast growing. Powdery mildew occurs also, appears on it during the month of October and November.

*E. geniculata* is an erect annual, 5-9 dm high. Stem glabrous, terete, somewhat sulcate when dry, internodes gradually shortening towards apex, with a pair of branches coming from the axil of opposite leaves. Leaves elliptic, oblong, obovate, lower rarely alternate, upper forming an open rosette margins. Cymes densely corymbose, involucre shortly pedicellate. *Melampsora heliscopiae* disease is found on this weed during the winter season<sup>6</sup>. Further, *E. granulata* is a small, hispidly herb. Stems many annual, prostrate, spreading in all directions. Leaves opposite, obliquely

obovate, obtuse, rounded at apex, petioles short, stipules subulate. Involucre axillary short, subsessile, short, leafy raceme like branchlets. *E. prostrata* is an annual weed. Stem several spreading upto 2 dm long, branches alternate, usually slightly flattened from above, glabrous with the line of puberulent hairs on the upper side. Leaves oblong, opposite, rounded at the apex. Inflorescence short axillary, leafy raceme like branches with one.

*Acalypha indica* is an erect, annual herb, 8-10 dm high. Stem simple with numerous branches, angular, sulcate when dry, shortly crisped, pubescent rarely woody at the base. Leaves rhomboid ovate, acute, serrate, glabrous on both surfaces except at the midrib and lateral nerves, lateral nerves raised and pubescent on both surfaces. Inflorescence axillary, solitary or geminate, upto 8 cm long with 5-12 rather distantly

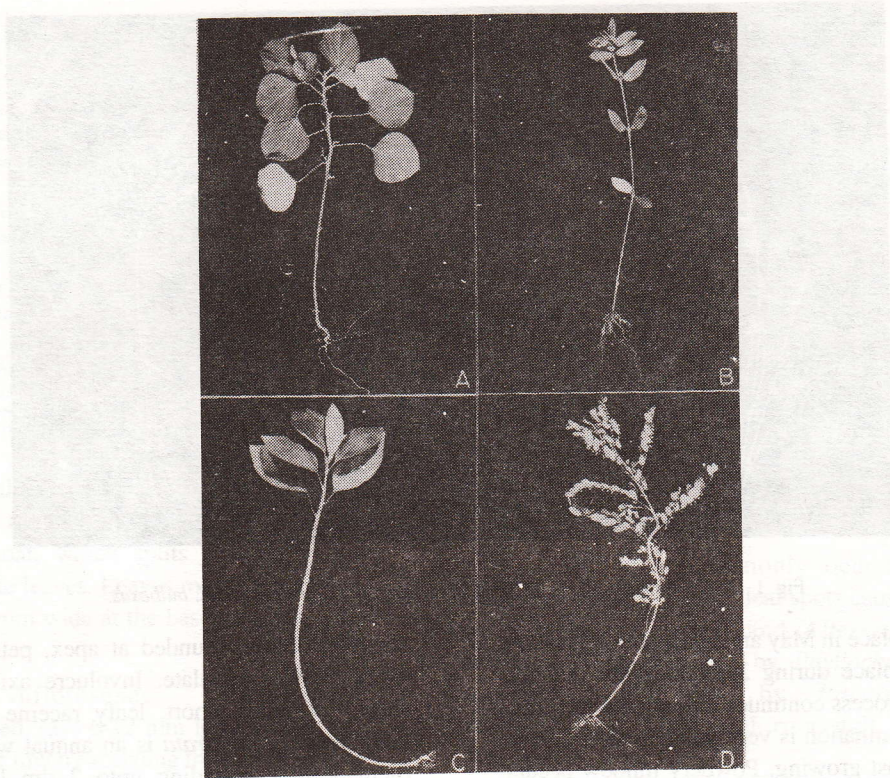


Fig. 2 (A-D). Showing plants of *Acalypha indica*, *Euphorbia hirta*, *E. geniculata* and *Phyllanthus niruri*.

ranged females in the lower part, males very few and terminal.

*Phyllanthus niruri* is a small shrub, often herb like. Leaves alternate in two rows, sessile or nearly so, glabrous entire. Flowers small clustered or solitary male and female on the same plant. Sepals 6, oblong obtuse. Most commonly occurring diseases on the *Phyllanthus* are Leaf spot caused by *Cercospora phyllanthis*, Fruit rot by *Aspergillus niger*, *Cladosporium herbarum* and *Penicillium islandicum*. Leaf rust caused by *Ravenelia emblicae*.

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