

Ecotaxonomical and Pharmacological Studies on Some Weeds and their management, in Bhadohi District, Uttar Pradesh, India

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Abstract

The present paper describes for the first time an illustrated account of some pharmacological weeds and its management in Bhadohi district. A total of 40 species belonging to 37 genera under 20 families have been described with brief notes on salient features of taxonomy of each species. The present communication is an illustrated document of some weeds having medicinal value prevalent in Bahdohi district of Uttar Pradesh, a state situated in northern part of India. Here we have described details taxonomical feature of the weeds and its medicinal usage for various ailments. To mention a few are gastrointestinal and urogenital disorders, anti inflammatory and antibacterial activities, remedy for icteric condition etc. For that reason, we claim that, this communication is an example of its own kind ever described in a brief and crisp manner on a total of forty species of herbs which belongs to thirty seven genera.

Key words: *Pharmacological; Crop plants; Weeds.*

Introduction

Weeds, now referred to as out of place plants, are a hazardous problem in agriculture and tremendously reduce the productivity of agricultural crops. Weeds compete with crop plants for mineral nutrients, water, space and light. They release natural allelopathic chemical substances that inhibit crop growth, physically hindering development, hosting pests or pathogens that may attack crops, promoting disease by restricting air circulation around the crop, interfering with or contaminating crop harvest, reproducing prolifically, parasitizing crops directly dodders, *Cuscuta* spp.; *Striga asiatica*) resulting in a greater weed problem in the future (Grichar, 2006).

Under the favourable conditions of high fertility and abundant soil moisture the chances for luxuriant growth of weed have also increased (Henkel, 1904). One third of the crop loss in India has been caused by weeds. The introduction of new, high yielding varieties of crops, which require comparatively larger amount of fertilizers and water, has its bearing on the agronomic practices too. *Avena fatua*, *Avena ludoviciana*, *Phalaris minor* are rapidly invading wheat fields. Infestation of *Parthenium hysterophorus* has likewise covered vast areas and has attracted the attention as a health hazard (Chhabra, et al. 1999). Similarly *Solanum elaeagnifolium* is spreading throughout Bhadohi causing considerable damage to crops. *Eupatorium odoratum*, *Imperata*,

Pennisetum and *Oxalis* has spread extensively in the orchards and plantation crops forming dense strands are dangerous weeds. In Uttar Pradesh 400,000 ha of cropped area is infested with weeds like *Pluchea lanceolata*, *Cyperus rotundus*, *Saccharum spontaneum*, *Parthenium argentatum*, *Eichhornia crassipes* poses a serious problem (Anonymous, 1986).

Not only weeds reduce crops yield by competing for available nutrient but harbour pathogens harmful to the crops. They harbour rodents, insect pests and diseases and provide ideal conditions for their shelter and proliferation.

Some of the common weeds of Wheat, Paddy fields and sugarcane crop in Uttar Pradesh are: *Cyperus rotundus*, *Cynodon dactylon*, *Digitaria sanguinalis*, *Eleusine indica*, *Saccharum spontaneum*, *Trianthema portulacastrum*, *Euphorbia hirta*, *Portulaca oleracea*, *Eclipta alba*, *Borreria hispida*, *Commelina benghalensis*, *Acanthospermum hispidum*, *Chenopodium album*, *Celosia argentea*, *Echinochloa crusgalli*, *E. colonum*, *Paspalum* sp., *Panicum*, *Fimbristylis miliaceae*, *Cyperus difformis*, *Monochoria vaginalis*, *Ipomoea reptans*, *Sphenoclea zeylanica*, *Ludwigia parviflora*, *Salvinia auriculata*, *Potamogeton pectinatus*, *P.perfoliatus*, *Chara*, *Nitella* etc. *Parthenium*, *Lantana*, *Xanthium* are menace not only in crop field but also in uncultivated wastelands and cover large tracts making their productive use difficult and uneconomical. *Parthenium* was a

menace and chemical sprays were used to bring them under control (Evans *et al.*, 1997). This weed is checked in private lands but grows wild in public lands and the way side and becomes environmentally hazardous.

However, these plants should be managed and removed from agro ecosystems due to their negative impacts on agricultural production systems (Nordblom 2009). The eradication of these weeds is necessary to get a maximum yield from the crop (Marin *et al.*, 2009). Earlier studies on weed control have largely shown that there is no substitute for chemicalisation to control weeds, however, the increasing use of chemical weed control in vegetable crops, effect the nutritive values of vegetables (Dash *et al.*, 2020). To overcome this problem to some extent, it is proposed to use these weeds instead of throwing them (Wang *et al.*, 2000). However, it is matter of interest that some of well-known weeds are well accepted source of herbal and traditional medicines (Tiwari *et al.*, 2016, 2017, 2021). The weeds have certain phytochemicals viz. alkaloids, flavonoids, phenols, terpenes, and saponins etc. which are used to treat health disorders (Mishra *et al.*, 2016, 2017, 2019, 2021, 2023). The demand and importance of natural occurring herbal drugs is rising globally. This is due to their social contentment, easy accessibility, cheapness, effectiveness and no side effect claims. The use of herbs and weeds is based on empirical treatment and experiences from many generations with information accessible solely in literature. These medicines possess numerous biologically active ingredients associated with health disorders. Thus their potential has not been fully explored (Kuhad *et al.*, 2010). There is need to improve the quality and analysis of herbal products to be fabricated with research advancements in their efficacy. The present work identifies weeds having bioactive or phytochemicals present in different plant parts of weeds

are discussed. In addition, the pharmacological beneficial aspects of weed species, their medicinal utility and major concerning issues are also highlighted. Keeping this in view such losses can be compensated by exploring the medicinal utility of such weeds (Singh *et al.*, 2021).

Materials and Methods

The weed species have been collected from different parts of Bhadohi district, namely Bhadohi, Suriyawan, Gyanpur, Deegh, Abholi and Aurai covering three seasons, summer, winter and rainy season (See Fig-1). Collected plants were processed and their herbaria were prepared by standard Lawrance methods (Lawrance, 1951) with slight modifications. Plants were properly dried up by changing a number of newspapers and poisoned with mercuric chloride solution in alcohol. Later on, the dried specimens were mounted on standard herbarium sheets, labelled properly and arranged alphabetically according to their botanical names. For identity of species, digital herbaria (eFloras 2008, WCSP 2012, The Plant List 2013, POWO 2019, GBIF 2020, JSTOR 2020, The Herbarium Catalogue 2021) were thoroughly examined and relevant literature was consulted. All the identified and voucher specimens were deposited in the Department of Botany KN Governmentt. PG college Gyanpur, Bhadohi District.

Results

In the present study, nearly 40 weed species belonging to 20 families and 37 genera, collected from various parts of the Bhadohi district, have been enumerated, documented, tabulated and illustrated below with their taxonomical description, family, botanical name, vernacular name, phytochemicals, parts used and pharmacological uses, See Figure- 1, Table-1 and Plate- 1.



Figure 1. Map of Study Area Showing Bhadohi District

Table- 1

Family	Botanical name	Vernacular name	Phytochemicals	Parts used	Pharmacological uses
Malvaceae	<i>Abutilon indicum</i> (L.)	Kanghi, Atibala	glucosides, gossypectin	leaves	diuretic and anti-inflammatory activities, piles, ulcers, fever
Euphorbiaceae	<i>Acalypha indica</i> L.	Kuppi	Herb, sterols, kaempferol	leaves	leprosy, jaundice, skin cure, arthritis
Amaranthaceae	<i>Achyranthus aspera</i> L.	Chirchira, latjira	Achyranthin, saponin, oleonilic acid	Leaf, root	Toothache, cough, cold, Relief during delivery, Amenorrhoea
Asteraceae	<i>Ageratum conyzoides</i> L.	Goat weed	Flavonoides, aurone, chalcone, flavonol	leaves	Used in burns, headache, analgesic, asthma, spasmotic
Amaranthaceae	<i>Amaranthus spinosus</i> L.	Chaulai	Spinasterol,	Root	Gonorrhoea, Menorrhoea
Primulaceae	<i>Anagallis arvensis</i> L.	Dharti- dhak	Rutin, quercetin	leaves	Used in curing cuts, ulcers, pimples
Papaveraceae	<i>Argemone maxicana</i> L.	Peelikateri, satyanashi	Succinic acid, angoline, coptisine, allocin	Leaf	Cures Leucorrhoea, appetizer, diuretic, aphrodisiac
Acanthaceae	<i>Andrographis paniculata</i> (Burm. F)Wall. Ex. Nees	Kalmegh	Andrographin, caffeic acid	root, leaf	Cures fever, dysentery, dyspepsia, snake bites, liver
Oxilidaceae	<i>Biophytum sensitivum</i>	-	glucosides	root	Tonic, stimulant, cramps, convulsions
Nyctaginaceae	<i>Boerhaaviadiffusa</i> L.	Punarnava	Punarnavine, b-sitosterol, glucosides	Stem, root, Leaf	Relief delivery, cures dyspepsia, tumours, anaemia, jaundice
Asclepiadiaceae	<i>Calotropis procera</i> (Alton)	Madar	Calotropin, calotoxin, uscharidin	Root	Cures leprosy, leucoderma, ulcer, piles Contraceptive
Cannabinaceae,	<i>Cannabis sativa</i> L	Bhang	Cannabidiolic acid, eugenol, cannabinol	leaves	Smoking, antiepileptic, anti-inflammatory
Chenopodiaceae	<i>Chenopodium album</i> L	Bathua	Saponins, glucosides	herb	leaf
Cleomaceae	<i>Cleome viscosa</i> (Linn.)	hurhur	Rutin, glucosides, tannins, saponins, terpenoids	seed	Seeds are used for treating cough, cures wounds, ulcers, earache
Euphorbiaceae	<i>Croton oblongifolious</i> L.	bhutankusa	saponins	seed	Seed oil is purgative
Cuscutaceae	<i>Cuscuta reflexa</i> L.	amarbel	eugenol	Whole plant	Paste of whole plant applied to cure swelling of testicles, headache
Poaceae	<i>Cynodon dactylon</i> L	doob	glucosides	leaves	Dropsy, ophthalmia
Cyperaceae	<i>Cyperus iria</i> L.	Gal motha	phytosterol		Act as stimulant, tonic, astringent, stomachic
Cyperaceae	<i>Cyperus rotundus</i> L.	motha		root	Used in scorpion sting bite, bowel irritation
Solanaceae	<i>Datura metal</i> L.	Dhatura	Hyoscyamine, daturanolone, Atropine	Root, whole plant	Cures sterility, rheumatism, anaemia, narcotic, antiseptic

Fabaceae	<i>Desmodium triflorum L.</i>	kudaliya	nerolidol	leaves	Leaves used for dysentery, galactagogue
Asteraceae	<i>Eclipta alba(L.)Hassk</i>	bhringraj	Palmitic acid, nicotine, ecliptin, phytosterol	Leaves, stem	Emetic, purgative, anodyne, asthma, treat liver, jaundice
Euphorbiaceae	<i>Euphorbia indica (Lamk.)</i>	Chotiduddhi	Euphorbol,	Root	Root is used in curing leucorrhoea
Euphorbiaceae	<i>Euphorbia hirta L.</i>	Duddhi	sitosterol	leaf	asthma and urinogenital disorders.
Verbenaceae	<i>Lantana camara L.</i>	Ghaneri papardani	Terpineol, caryophellene, nerolidol	roots	Cures gonorrhoea, cough, mumps, malaria, influenza
Asteraceae	<i>Launaea asplenifolia, hook</i>	Ban-gobhi	Limonene, caryophylle	root	Antibacterial activity against gram positive and negative bacteria
Fabaceae	<i>Melilotus indica L.</i>	Ban-methi, senje	Coumarin, saponins, sitosterol, glucosides	Stem. root	Plant is emollient, cures swellings, poultice, diarrhoea
Asteraceae	<i>Parthenium hysterophorus L.</i>	Gajar ghas, carrot grass	glucosides		Anti inflammatory, anti-insecticidal
Papaveraceae	<i>Papaver somniferum L.</i>	Afeem	glucosides	fruit	analgesic, narcotic and hypnotic activity.
Euphorbiaceae	<i>Phyllanthus niruri L.</i>	Bhui-amla	Gallic acid	Leaf, root	dropsy, jaundice
Acanthaceae	<i>Ruellia tuberosa L.</i>	Fever root	Ellagic acid, catechol, gallic acid, tannic acid	Lef, stem	Diuretic, treat kidney disorders antipyretic
Acanthaceae	<i>Rungia parviflora L.</i>	kharmor	Iridoids, alpha-amyrin	leaves	Used in skin disorders, urinary disorders
Malvaceae	<i>Sidacordifolia (Linn.)</i>	Khareti/ herb	Gallic acid, solanine, carpesterol	Seeds , roots	Seeds treat leucorrhoea, astringent, demulcent, diuretic
Solanaceae	<i>Solanum xanthocarpum (Burm.)</i>	bhatkataiya	solanine	root	Cough is cured by root extract
Solanaceae	<i>Solanum nigrumL.</i>	Mokoiya	Soladulcidine, tomatidine	berries	Laxative, liver ailments fever, piles
Asteraceae	<i>Xanthium strumarium L.</i>	Chota dhatura	Xanthostrumarin, xanthin, stigma-sterol	leaves	Treat diarrhoea, fever, headache, anodyne
Asteraceae	<i>Vernonia cinerea</i>	sahadevi	sterol	Whole plant	Plant juice is given in piles, roots in dropsy

***Acalypha indica L.* Euphorbiaceae Juss, Kuppi**

Taxonomical description: Erect, annual herb, 30-70cm height, with many spreading or ascending branches, leaves membranous, 5x4cm, ovate or rhomboid ovate, serrate, cuneate at base, arranged in a mosaic; flowers small, greenish, in lax erect, axillary, spikes; male

clustered towards the top; females solitary or paired, each enclosed by a foliar, 6x6mm bract, capsular concealed by persistent bracts, seeds ovoid, pale brownish, shining. **Flowering & fruiting** sept – jan

Phytochemicals: kaempferol, b-sitosterol, y-sitosterol, acalyphine, acalyph-amide, quinines and glycosides.

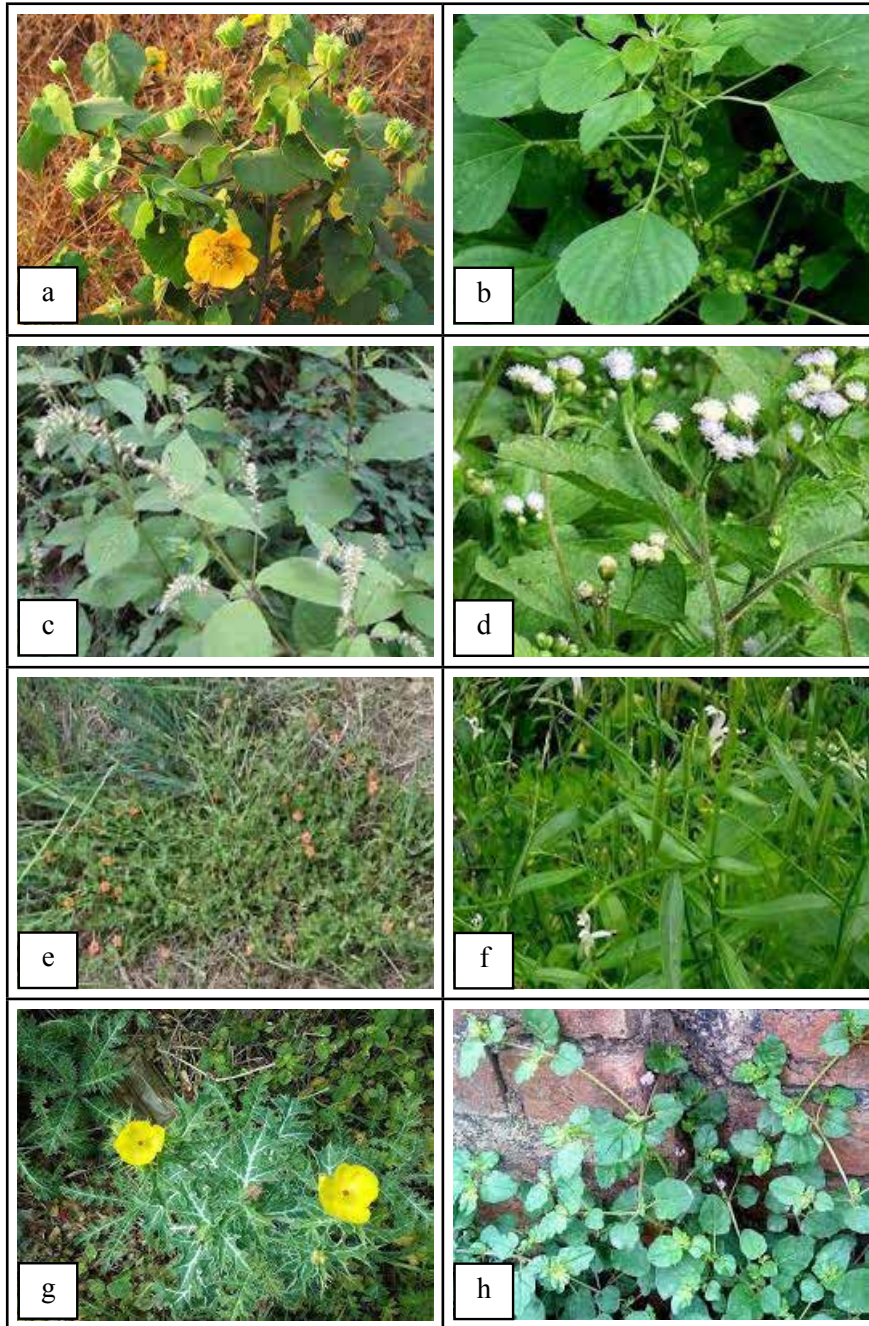


PLATE -1. Fig a. *Abutilon indicum* L. b. *Acalypha indica* L. c. *Achyranthus aspera* L. d. *Ageratum conyzoides* L. e. *Anagalis arvensis* L. f. *Andrographis paniculata* Burm. g. *Argemone maxicana* L. h. *Boerhaavia diffusa* L.

Pharmacological uses: the entire plant including leaves of the plant are used to cure treat bedsores, wounds, skin disorders, eye, ear diseases, leprosy, jaundice and heart diseases.

Achyranthes aspera L. **Amaranthaceae** Juss Chirchita, **Apamarg**

Taxonomical description: Erect annual herb, leaves large, ovate, acute or acuminate, glabrous. Flowers

greenish white, deflexed, in terminal spikes elongating in fruits, bracts and bracteoles persistent, ending in a spine, utricle oblong, seeds sub cylindrical, brown

Phytochemicals: achyranthin, saponin A&B, ecdysterone, ecdstone, inokosterone and aminoacids.

Pharmacological uses: Plant is carminative, diuretic, purgative, bitter and pungent. Whole plant is used in snake bite and also cure from poisonous insects. The powder from the root is used in wounds, sores, toothache, leprosy, ulcer and menstrual disorders.

***Abutilon indicum* (L.) Sweet, Malvaceae Juss, Kanghi**

Taxonomical description: A robust shrub or undershrub, branches many, leaves ovate to orbicular-cordate, soft. Flower buds drooping. Flowers orange-yellow on long pedicels. Ripe carpels 15-20, black at maturity, reniform, short beaked, seeds black, tubercled.

Flowering & Fruiting Sept-Mar

Phytochemicals: Gossypetin-8 and 7-glucosides, cynadin 3- rutinoside, alkanol, b-sitosterol, tocopherol, asparagines and p-coumaric acid.

Pharmacological uses- plant is used as tonic, anthelmintic, febrifuge, diuretic and anti-inflammatory activities. Plant is prescribed for piles, lumbago, urinary discharge, dysentery, bronchitis and stones of urinary bladders.

***Ageratum conyzoides* L. Asteraceae Dum., Sarhand**

Taxonomical description: Erect, branched, hairy herb upto 90cm high. 5.0-8.0x2.5-5.5cm, crenate, ciliate, densely pilose beneath. Corolla purple, infundibuliform, 5 lobed. Style branches slightly exserted. Pappus scales 5.1.5- 3.0 cm long; tipped with scabrous setae. Achenes black, sharply angled. **Flowering and fruiting** throughout the year.

Phytochemicals: flavonoides, aurone, chalcone, flavones, flavonol, leucoanthocyanins, glycosides, saponins, tannins, phenols, steroids, cumarins, 6-vinyl-7-methoxy-2, 2-dimethyl chromene, dihydroencecalin,

dihydrodemethoxyencecalin, demethoxy-encecalin, demethylencecalin and 2- 2methyl-6, 7-dimethoxychromene.

Pharmacological uses: Plant is used in treatment of various ailments, such as burns and wounds, headaches pneumonia, analgesic, inflammation, asthma, spasmodic.

***Amaranthus viridis* L. Amaranthaceae Juss Chaulai**

Taxonomical description: Erect or ascending herbs, upto 1.25m high. Stem striate, often purple-tinged, hairy on young parts. Leaves ovate-lanceolate to oblong, acute or decurrent below; petiole variable in length. Flower clusters dense, lower ones exclusively female. Spikes with upper flowers all male and female flower inter-mixed, green or crimson. Bracts and bracteoles broad or deltoid-ovate, pale, membranous. Tepals elliptic or oblong-elliptic, narrowed above. Stigmas 3, erect or recurved. Capsule ovoid-urceolate, with a neck below style base. Seeds lenticular brown or black, shining. **Flowering & fruiting** July- Nov

Phytochemicals : stigmasterol, campesterol, b-sitosterol, glycosides, a-spinasterol, octacosanoate, oleanolic acid, saponin and D-glucuronic acid.

Pharmacological uses: whole plant is used for snake-bite, burning sensation, dyspepsia, gonorrhoea and menorrhoea.

***Ammania buccifera* L. Lythraceae, jangli mehdi**

Taxonomical description: an erect, glabrous herb, stem and branches angular, purplish, leaves opposite, narrowed to the base. Flowers in condensed axillary racemes or cluster, capsules red when ripe, glabrous. **Flowering & fruiting** – Feb – September

phytochemicals- rutin, quercetin, kaempferol, betunilic acid

pharmacological uses: leaves are generally used in cough, swelling, itching and rheumatic pain.

***Andrographis paniculata* (Burm. F) wall.ex.Nees. acanthaceae Juss., Kalmegh**

An erect annual herb, 40-100cm in height, branches herbaceous, greenish, sharply 4- angled or winged. Leaves 5-10 x 2.0-2.5cm, ovate, lanceolate, inflorescence a lax, axillary and terminal, unilateral raceme, forming a panicle, flowers whitish, spotted with rose- purple, bracts opposite, paired, capsules tapering at ends. **Flowering & fruiting** Oct- Mar.

Phytochemicals: andrographin, panicolin, b-sitosterol, glucoside, polyphenol, caffeic acid and panicolide.

Pharmacological uses: plant is used to cure fever all types especially intermittent fever, dysentery, dyspepsia and spleen complaints used as curative or preventive in snake poisoning.

***Argemone mexicana* L. Papaveraceae Juss., Satyanashi**

Taxonomical description: Undershrub, stems, woody, herbaceous, leaves glaucous, prickly, sinuate-pinnatifid, flowers yellow, stigmas red, capsules erect prickly, dehiscent by valves, seeds black. **Flowering & fruiting** April- Sept.

Phytochemicals: protopine, berberine nitrate, ceryl alcohol, b-sitosterol, succinic acid and tartaric acid.

Pharmacological uses: latex of the plant is applied externally to treat various skin disorders particularly ring worm. Roots and seeds are mixed with mustard oil to treat pyroheia and mouth ulcers.

***Cannabis sativa* L., Cannabinaceae Auctt., Bhang**

Taxonomical description: A robust annual herb, leaves 3-8 foliate, long petioled; lobes lanceolate, plants flowers dioecious, male plant flowers are axillary, short paniced cymes, and the female plant flowers crowded with leafy bracts, style arms 2, filiform, nuts crustaceous. **Flowering and fruiting** Nov-April.

Phytochemicals: cannabidiolic acid, canabidiol, cannabinol, tetrahydro-cannabinol, trans-cinnamic acid, n-nonacosane, eugenol and guaiacol.

Pharmacological uses: plants have antidiuretic, antiemetic, antiepileptic and anti-inflammatory properties. Tribal people used its leaves for smoking.

***Calotropis procera* (L.) R.Br. Asclepiadaceae R.Br., Madar**

Taxonomical description: Large shrub, reaching small tree size. Leaves elliptic to obovate, 10-20 cm long, amplexicaul or cordate at base, with a ring of glandular lateral hairs at the base of lamina. Flowers white, sub umbellate cymes. Sepals cottony. Corolla campanulate, divided more than half- way down, lobes revolute and twisted in age. Follicles in pairs, boat shaped, with a hooked tip, cottony pubescent. Seeds with long silky coma. **Flowering and fruiting** throughout the year.

Phytochemicals: calotoxin, calotropin, syriogenin, proceroiside, uscharidin, voruscharin, theaspiron and calactinic acid.

Pharmacological uses: plant is used in cure of leprosy, leucoderma, ulcer, tumour, piles and spleen disorders. Root- bark is ametic, diaphoretic, alterative and purgative.

***Chenopodium album* L. Chenopodiaceae Vent., Bathua**

Taxonomical description: Erect, branched herb, upto 1m or sometimes more tall. Stems angular, ribbed with dark green and red streaks densely covered with powdery vesicles on younger parts. Leaves ovoid rhomboid; coarsely dentate or lobulated in lower parts; upper leaves smaller, elliptic oblong almost entire. Flowers pentamerous, arranged in paniced cluster. Perianth lobes connate at base, concave. Stamen slightly exerted. Ovary depressed- globose stigmas 2. Utricle enclosed between perianth lobes, finally pappilose, seed lenticular. **Flowering and fruiting:** Sept- May.

Phytochemicals: ecdysteroids, b-edysone, polypodine, ascorbic acid, b-carotene, catechins, caffeic acid, p-coumaric acid, ferulic acid, b-sitosterol, stigmasterol.

Pharmacological uses: plants are used as a tonic, laxative, blood purifier, anthelmintic and diuretic. Seeds are used for liver and spleen enlargement.

***Cleome viscosa* L., Cleomaceae Horan, Hurhur**

Taxonomical description: Pubescent herb, very variable in size, flowers whitish- yellow, solitary, viscid pubescent, stamens 12 or more. Fruit 1.5-7.5 cm reniform. **Flowering and fruiting** April- Oct.

Phytochemicals: rutin, b-sitosterol, d-glucoside, tannins, saponins, flavonoids, steroids, alkaloids, phenols, terpenoids, flavonoids- Q and kaempferol.

Pharmacological uses: plants are rubifacient, vesicant, subodorific and are used for external application on wounds, ulcers, chronic painful joints and earache.

***Datura metel* L. Solanaceae Juss Dhatura**

Taxonomical description: Erect, perennial, widely branched herb, stem flexuous, nearly glabrous or short hairy; lenticillate. Leaves ovate- triangular to elliptic, obliquely rounded at base, acute or acuminate, repand-dentate to lobed, short hairy and glabrous. Petiole 1-15 cm long, flowers 0.5-1cm long pedicels, calyx subterete, 5-6 cm long; lobes triangular, acuminate, corolla white or purple; lobes 5, with an acumen of 1-2 cm long; fruit pendulous, globose, glabrous or hairy, with conical prickles. Flowering and fruiting throughout the year.

Phytochemicals: hyoscyamine, hyoscine, meteloidine, tropine, pseudotropine, scopolamine, hyoscine, hyoscyamine, daturanolone and fastusidine.

Pharmacological uses: plant is bitter, acrid, astringent, anodyne, antiseptic, narcotic, sedative and used in cure of ulcer, leprosy, earache, dysuria, piles, anaemia and rheumatism.

***Eclipta alba* (L.) Hassk. Asteraceae Dum., Bhringraj**

Taxonomical description: Prostrate, decumbent-ascending or erect, annual herb, stem often creeping and rooting at the base, appressed- pubescent. Leaves subsessile, ovate lanceolate, elliptic- oblong, acute or obtuse, narrowed to the base, entire- faintly serrate, appressed- hispidulous. Heads axillary and terminal, 0.6-1cm across, on 5-7cm long peduncles. Marginal

flowers with white, 2- dentate, 0.25cm long ligules. Corolla of disc- flowers 0.2 cm long. Achenes oblong-turbinate, tuberculate, with a thickened margin, 0.2-0.25cm long. **Flowering and fruiting** April- Dec.

Phytochemicals: stigmasterol, a-ter-thienylmethanol, ecliptine and nicotine.

Pharmacological uses: whole plant is bitter, acrid, hot, emetic, purgative, anodyne and used in cure of jaundice, asthma, ulcers and wounds.

***Euphorbia hirta* L. Euphorbiaceae Juss., Badidudhi**

Taxonomical description: An annual, prostrate, hispid herb, leaves dark green or reddish, white- villous beneath elliptic or ovate- oblong with oblique bases. Cythea axillary and terminal, clustered in dense, crowded cymes. Involucre stalked, cup shaped, capsule breaking in to 3 cocci, seeds reddish- brown, trigonous. Flowering and fruiting Nov- April.

Phytochemicals: beta- sitosterol, choline, taraxerol, euphorbol, b-amyrin and quercetin.

Pharmacological uses: the whole plant is used in cure of diarrhea, amoebic dysentery, asthma and urinogenital disorders.

***Evolvulus nummularis* (L.), Convolvulaceae Juss., Safed sankhpushpi**

Taxonomical description: Slender, prostrate herbs, rooting at nodes, leaves glabrous, except the hairy nerves beneath. Pedicels erect first decurved after anthesis, calyx segments oblong- lanceolate, ciliate, corolla deeply lobed, capsule 1-4 seeded. **Flowering and fruiting** Aug- Sept.

Phytochemicals: beta- sitosterol, glucosides, d-mannitol, ursolic acid, oleanolic acid, 3 a- hydroxyl-12-en-29 b-oic acid.

Pharmacological uses: the plant is used in treatment of insanity, epilepsy, nervine complaints and bleeding. Roots are used in intermittent fever.

***Phyllanthus niruri* L. Euphorbiaceae Juss., Bhui-awla**

Taxonomical description: Erect, glabrous, branched herb, upto 45 cm high, branchlets compressed trigonous. Leaves distichous, upto 2cm long, ovate elliptic or acute, cuneate at base. Male flowers fascicled, short stalked; bracts lanceolate; perianth segments 5-6, subequal, 2-seriate; stamens 3; disc lobes 6, glandular yellowish. Female flowers solitary; styles free; capsule globose, glabrous; seeds trigonous, longitudinally ribbed, disc shallowly 5-lobed. **Flowering and fruiting** June-Dec.

Phytochemicals: phyllanthin, hypophyllanthin, niranthin, nirtetralin, phyltetralin, kaempferol, b-sitosterol, eriodictyol-rhasmnoopyranoside and saponins.

Pharmacological uses: whole plant is used in cure of gonorrhoea, dyspepsia, dysentery, dropsy, jaundice and fever.

***Rungia pectinata* (L.) Nees. Acanthaceae Juss., Kharmor**

Taxonomical description: A much branched, procumbent, annual; leaves elliptic or oblong lanceolate, tapering at ends; flowers very small, bright blue, in one sided, short spikes, bracts dimorphic, the barren once lanceolate, fertile ones orbicular, lower anther cells tailed, capsule 3x1mm, ovoid. **Flowering and fruiting** Oct- Feb.

Phytochemicals: luteolin-7-glycoside, luteolin, delphinidin, chrysoeriol and saponins.

Pharmacological uses: the whole plant is used to cure of snakebite, cough, fever and urinary disorders.

***Ruellia tuberosa* L., Acanthaceae Juss., Fever root.**

Taxonomical description: Erect, annual herb, 60-70 cm in height, leaves upto 12 cm long, shining, narrowed at the base, entire to sub undulate, flowers blue violet, paired in axils of leaves, ephemeral, corolla tube abruptly narrowed below, capsule oblong- mucronate,

flattened, black, seeds sub orbicular compressed black brown. **Flowering and fruiting** July- Oct.

Phytochemicals: ellagic acid, catechol, gallic acid, quercetin, resorcinol, tannic acid, vanillin, salicylic acid, acetyl salicylic acid, benzoic acid and phloroglucinol.

Pharmacological uses: the plant is traditionally used as diuretic, antipyretic, anthelmintic, emetic, kidney disorders and gonorrhoea.

***Sida acuta* L. Malvaceae Juss., Kharenta**

Taxonomical description: Branched erect undershrub, upto 60cm; all parts sparsely hairy to glabrous; leaves ovate oblong to lanceolate, rounded or occasionally subacute at base; apex acute; serrate each tooth ending in a simple hair; flowers in a cluster of 2-3. Pedicels variable in length, calyx as long as corolla, mericarps 2-awned. **Flowering and fruiting** July-oct.

Phytochemicals: quindolinone, cryptolepinone and 11-methoxy- quindoline, quinone cryptolepinone, N-transferuloyltyramine and 7, 12- dimethylbenz-a anthracene.

Pharmacological uses: the roots are aromatic, cooling, astringent, stomachic, bitter, tonic, demulcent and diuretic and used in gonorrhoea, cystitis, leucorrhoea, chronic dysentery and bleeding piles.

***Solanum nigrum* L. Solanaceae Juss., Makoy**

Taxonomical description: Diffused much branched herbs upto 1m height; leaves ovate to ovate- lanceolate, sinuate or lobed; flower in umbeliform, extra- axillary cyme; peduncle 1-5cm long, appressed hairy, calyx lobes ovate rounded, corolla pubescent; berries round, smooth up to 7mm across, seeds minutely pitted, yellow. **Flowering** Oct- June

Phytochemicals: solasomine, solamargine, soladulcidine, tomatidine, 5a-solasodanol and demissidine

Pharmacological uses: berries are bitter, pungent, laxative, tonic, diuretic and used in cure of piles, vomiting, asthma, bronchitis, fever and urinary discharges.

***Spilanthus radicans* Jacq., Asteraceae Dum., Acmella**

Taxonomical description: Prostrate or decumbent-ascending, aromatic, viscid, annual herbs. Stem branched, with coarsely dentate winged or decurrent leaf bases, glandular pubescent. Leaves obovate-spatulate, with narrowed base, obtuse, mucronate, coarsely double dentate, glandular - villous. Inflorescence globose-ellipsoid, 1cm long, winged, glandular pubescent peduncles. Involucral bracts lanceolate, acute, hairy in the upper half. Corolla pale. Achenes glandular, hairy.

Flowering Feb- Oct.

Phytochemicals: b-sitosterol, N- isobutylamide, N-isobutylamide-2,6,8-decatrienamide and spilanthol

Pharmacological uses: plant is used as anticonvulsant, analgesic, anti-inflammatory, vasodilation, diuretic, and antimalarial activities.

***Sonchus arvensis* L. Asteraceae Dumort., Dodak**

Taxonomical description: A perennial, erect herb, 60-100 cm tall. Stems hollow, umbellately branched, glandular hairy above. Heads pale yellow to yellowish-white, umbellately corymbose. Peduncles and bracts glandular hairy. Achenes ribbed, transversely rugose, brown. **Flowering** March- Nov.

Phytochemicals: palmitic acid, b-sitosterol, daucosterol, quercetin, apigenin -7-o-b-gluco-pyranoside, luteolin-7-o-b-d-gluco-pyranoside, quercetin-3-o-b-D-gluco-pyranoside and rutin.

Pharmacological uses: plant is sedative, anti oxidant, anti-inflammatory, inhibitory, gastro intestinal activities and used in cure of kidney stone.

Discussion

A weed is a non-crop plant that can become a pest if not managed adequately. However its presence may not always be harmful and does not need its immediate eradication. Pioneer weeds can perform vital ecological functions. They act as natural covering of soil that has become exposed by fire, flood, landslide, clear-cutting,

clean tillage, or other disturbance. They protect the soil from erosion, replenish organic matter, and feed and restore soil life. They absorb, conserve, and recycle soluble nutrients that would otherwise leach away, absorb carbon dioxide from the atmosphere, restore biodiversity. Some weeds provide habitat for beneficial organisms like insects and animals, and thereby contribute significantly to natural and biological control of some insect pests. Certain weeds also make nutritious food or fodder. Some of the weeds are, however, useful also, as they are of great medicinal and economic uses. The weeds have certain biological phytochemicals viz. alkaloids, flavonoids, phenols, terpenes, and saponins etc. which are used to treat health disorders. Understanding the mechanisms behind weed proliferation in cropping systems will require detailed knowledge of the processes and causes of weed adaptation, such as the evolution of herbicide resistance, gene flow between transgenic crops and weeds. Ultimately, a better understanding of weed evolution in the context of human-caused selection could be the key to significant future advances in weed management in agroecosystems. The integration of the practical side of weed science with hypothesis-driven evolutionary ecology, along with the tools of genetics and genomics, will provide answers to the questions of not only the types of mutations that arise to promote weed growth but also helps in understanding an evolution of weeds. Thus, managing weedy species can consist of letting them grow and utilizing them when and where their presence is mainly beneficial; removing them promptly when they threaten to interfere with the crop; and or pulling before they can cast seed onto crop fields. The goal of sustainable weed management is to minimize the adverse impacts of weeds on crops, and sometimes to reap the benefits of pioneer vegetation when the benefits outweigh the costs of allowing it to remain. It is important to understand that weed growth is, in effect, a healing response to land disturbance after either natural disaster or human activity leaves the soil vulnerable to erosion or degradation. Such a successful establishment of weeds in the study area could be due to adoption of poor cultural practices in crop fields and different interference mechanisms of weeds including allelopathy which can result in heavy crop losses.

Acknowledgements

The authors are grateful to Prof D.R. Misra, ex HoD Department of Botany, University of Allahabad, Prayagraj for their meticulous guidance and support. Dr Lalji Singh, Joint Director & Regional Head, BSI, Andaman and Nicobar Regional Centre, Andaman and Nicobar, Islands, Principal, KN.Govt. PG College, Gyanpur for providing help and support.

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Received : 1st February, 2024

Accepted : 31st March, 2024
