



Ethnobotanical Studies of Some Weeds of Marathwada Region of Maharashtra

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ABSTRACT

During botanical excursions to different parts of Marathwada region every year, it is observed fact that weeds produce a huge biomass. The weed diversity in the crop fields would be rich source of medicines and drugs. Hence the present work was undertaken for the identification and documentation of ethnobotanical weeds growing in crop fields in the Marathwada region of Maharashtra. Our survey was also aimed at the possibility of discovering new ways by which such plants could be better utilized for the welfare of human health. A total of 13 species of weeds representing 12 Genera and 09 families were studied. In addition to the first hand collection of ethnobotanical information from the inhabitants of the area, additional traditional uses were obtained through a study of the pertinent literature. Our results suggest the weeds of these fields were mostly common, unwanted and easily grown in any place. However, our results also show that there are many ways of properly utilizing such weedy species in the promotion of human welfare. Moreover, the collection of these medicinal weeds provided farmers with a most welcomed additional income.

Keywords: Biomass, Wildfire, Farmers, Additional income.

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INTRODUCTION

In India many unwanted plants so called weeds are very common, dominant and wide spread in the crop fields. In India diversity of unwanted plant in crop fields is very common, dominant and easily available. Weeds also occupy almost all open spaces. They spread like wildfire and grow abundantly in the crop fields, forest and roadsides [1]. During botanical excursions to different parts of this phytogeographic region every year, it is observed fact that weeds produce a huge biomass. The weed diversity in the crop fields would be rich source of medicines and drugs. The local people will be able to make an extra profit by selling the medicinal weeds.

In ancient Indian literature it is observed that every plant on this planet is useful in industry, medicine and allelopathy. Indian economy depends greatly on the number of wild plant species including weeds. The weed diversity in the crop fields would be a great source of medicines. By identifying the potential, national and international markets of common medicinal weeds, farmers can earn additional income which can distract the farmers from suicide which due to low income in agriculture, especially in Maharashtra. This fact promoted to work on the present topic.

OBJECTIVES OF STUDY

1. Survey for the various weed species growing in crop fields in the region.
2. To identify various weed species of this region.
3. To study the use of the test plants in the traditional medicinal system.
4. To maintain the Herbarium of the weed plants.

MATERIAL AND METHODS

Study area

Marathwada region comprising of eight districts viz. Aurangabad, Beed, Osmanabad, Jalna, Latur, Nanded, Hingoli and Parbhani which forms the part of the vast Deccan plateau of India and its located at 70° 5'-78° 5' E longitude and 17° 5'-20° 5' N longitude.

Collection of weeds from different fields

Weeds were collected in different crop fields of Marathwada region. For this several excursions were arranged in different localities of the study area.

Identification of weeds

The collected flowering plant species were identified on the spot and in the laboratory on the basis of their natural characters with the help of identification keys and floras [5, 3].

Morphology of weeds:

The morphology of weeds was studied as per the method described by Dalvi [1] and Dhole *et al.*, [2]. The natural characters like habit, root, stem, leaves, inflorescence, flowers and fruits of the weeds were studied with the help of Floras. The flora of Marathwada (Naik, 1998) was extensively used.

Ethnobotanical Uses

The data of ethnobotanical uses of the test weed species was collected from various fields and the herbal vendors and local tribal medicinal practitioners residing in the region by the questionnaire survey method [4, 1]. For this a predefined questionnaire was used which included various questions about the ecological status and ethnobotanical uses of the test plant species.

Questionnaire of Ethnobotanical Data Collection [1]

I (name of informant), hereby give my full consent and conscious to participate in this study and declare that to the best of my knowledge the information that I have provided is true, accurate, and complete.

Date:

(Signature/Thumb impression of informant).

Informants' Details.

Name:

Gender:

Age:

Occupation:

Education:

Location/Residence:

Data about Medicinal Plant and Its Use

Names of plants (local names):

Plant part used:

Cultivated/wild:

Name of disease(s) treated:

Method of crude drug preparation:

Use of single or mixture of plants:

Mode of administration:

Dosage:

Remarks:

Plant identified as——(botanical name and family).

Development of Herbarium

The ethnobotanical weed species of the region were preserved in the form of herbarium. For herbarium, the dried, well-pressed and poisoned weed specimens of test plant species were mounted on thick, white paper sheets of good quality and standard size of 11 ½ x 16 ½ inch herbarium sheets, well-labeled and arranged in species covers, genus covers and were placed in the herbarium cupboards in order to develop a departmental herbarium.

RESULT

Morphology of weed plants in Marathwada region:

Out of 36 problematic weeds studied, 13 weeds are found medicinally important and are used to cure many different diseases. They are as follows-

1. *Commelinabengalensis* L.

(Family: Commelinaceae)

Distribution- It is found in the field of maize, rice, greengram, blackgram, soyabean, groundnut. Habit- erect, perennial soft herb. Root- adventitious root. Stem- branches rooting at the nodes. Underground

shoots developed Cleistogamous white flower. Leaf- ovate, acute-obtuse, entire hairy. Flower- dimorphic upper flower blue, basal one white in axillary cyme, funnel shaped spathe. Calyx-sepals-3-outer one linear, inner on orbicular. Corolla- petal-3, larger one broadly ovate. Androecium - stamens-6 fertile stamens 3, staminodes 3. Gynoecium- ovary trilocular, trilobular, 1 locule of 1 ovulate appendages, axile placentation. Fruit- capsule ellipsoid. Seed- smooth brown. Flowering time - September to December. Propagation - by seeds.

Cynodon dactylon Pers.

(Family: Poaceae)

Distribution- It is found in the field of almost all test crops. Habit- prostrate herb. Root- adventitious root, rooting at the nodes, nodes glabrous. Stem- prostrate and creeping, branching with short wiry flattened culms, hairy. Leaf- linear-lanceolate, apex acute, erect or spreading leaf blades linear, flate. Spikelets greenish, spikelets sessile, oblong laterally, compressed, 1-flowered, green or purple, lower glumes thinly membranous, narrowly oblong, keeled, acute, upper glumes similar, lemma membranous, boat-shaped, 3-nerved, keels and margins hispid with white hairs apex acute, lodicules 2, small, stamens-3-small, caryopsis, oblong. Flowering time - August to December. Propagation: - by vegetatively.

Tridax procumbens L.

(Family - Asteraceae)

Distribution- It is found in the field of maize and blackgram. Habit- small erect herb. Root- tap root. Stem- weak, hairy, branches spreading. Leaf- simple, opposite, succulent, hairy, ovate to lanceolate, margin dentate, acute, hairs present in both the sides. Inflorescence- solitary. Flower- small, pedicel long, hairy, solitary, two types of florets outer ray floret- creamish yellow to white colour-1 seriate and inner disc florets yellow. Ray floret- corolla tube narrowly cylindrical, 3-lobes. Ovary oblong, unilocular, basal placentation. Disc florets- corolla tubular, 5-lobes stamens- 5, ovary unilocular, unilocular, 1 ovule, basal placentation, style 2 fid, fruit achenes with feathery silky pappus, black coloured. Flowering time- almost throughout year. Propagation - by seeds.

Phyllanthus amarus Schumacher and Thonn.

(Family - Euphorbiaceae)

Distribution- It is found in the field of all test crops. Habit- erect herb. Root- tap root. Stem- erect branched, glabrous. Leaf- simple, alternate, short, leaf rounded at both the ends, apiculate, stipules (minute) lanceolate, petiolate, green. Perianth 4-lobed, unequal. Androecium- stamens 2-4 filaments entirely connate, style bifid at upper side. Gynoecium- ovary-3-locular, axile placentation. Fruit- globose, trigonous. Seed- pale brown. Flowering time - July to November. Propagation - by seeds.

Euphorbia hirta L.

(Family - Euphorbiaceae)

Distribution- It is found in the field of all test crops. Habit- erect, annual herb. Root- tap root. Stem- erect, reddish-green color, hairy, yellowish, hairy, milky latex are secret in plant. Leaf- simple opposite, ovate-oblong, serrate, acute, serrulate, dentate, dark green or radish-brown on upper surface pale beneath, petiole long. Inflorescence- corymbose cymes. Flower- minute pale green unisexual. 3-6 male flowers and one female flower in each cyathium. Cyathia in corymbose, axillary, subsessile cymes, glands minute, peduncle long. Fruit- globose, Seed- trigonous. Flowering time: - almost throughout the year. Propagation - by seeds.

Euphorbia heterophylla L.

(Family - Euphorbiaceae)

Distribution- It is found in the field of all test crops. Habit- bushy, erect herb. Root- tap root. Stem- dichotomously branched, smooth, green. Leaf- green, alternate, opposite below, entire, lobed, acute, serrate, floral leaves similar or entire and lanceolate. Inflorescence- corymbose cymes. Cyathia numerous 6-10, in terminal cluster, shortly pedicelled. Male florets 12-15, bracteolate, female florets laterally pendulous. Fruit- globose, glabrous.

Flowering time - July to December. Propagation - by seeds.

Portulaca oleracea L.

(Family - Portulacaceae)

Distribution- It is commonly found in cultivated field such as Jawar, Maize, Wheat and almost all the test crop fields. Habit- prostrate annual succulent herbs. Root- Tap root. Stem- reddish green, smooth. Leaf- simple, alternate, fleshy succulent, spatulate. Flowers- bright yellow in terminal clusters. Calyx- sepals-2, free, large. Corolla- petal-5, yellow, free-polypetalous. Androecium- stamens-10, ovary obovoid, unilocular, ovules numerous, free, central. Fruit- capsule. Seed- numerous, black. Flowering time - throughout the year. Propagation - by seeds.

Argemone mexicana L.

(Family – Papaveraceae)

Distribution- It is found in the different test crop fields. Habit- spiny erect herb. Root- Tap root. Stem- erect branched, cylindrical, spiny and green, secrete yellow latex. Leaf- simple, exstipulate, alternate, semi-amplexicaul, margin much dissected and spinous, acute, total leaf surface spiny. Inflorescence - solitary axillary. Flower- complete, actinomorphic, ebracteate, pedicelate, trimerous, hypogynous. Calyx- sepals-3, polysepalous, twisted, spiny, slightly boat- shaped. Corolla- Petals-6, in two whorls of 3 each, polypetalous, imbricate, yellow. Androecium- Stamens indefinite, polyandrous filaments long and yellow, ditheous, basifixed. Gynoecium- pentacarpellary, ovary superior, covered with spines, unilocular, ovules many, parietal placentation, reduced style, stigma hood like. Fruit- capsule, spinous. Seed- black. Flowers & fruit - January to June. Propagation - by seeds.

Solanum nigrum auct.

(Family - Solanaceae)

Distribution- It is found in the field of maize, blackgram, wheat and groundnut. Habit- erect herb. Root- taproot. Stem, erect, branched, herbaceous, smooth green. Leaf- simple, opposite exstipulate, petiolate, ovate, acute, unicostate reticulate venation. Inflorescence- axillary. Flower- white, complete, pentamerous, bisexual. Actinomorphic. Calyx- sepals -5, fused, gamosepalous, volvate. Corolla- petal-5, fused gamopetalous. Androecium- stamen 5, basifixed. Gynoecium- bicarpellary, syncarpous, Ovary superior, bilocular with many ovules in each locule, axile placentation, style long and hairy, stigma bilobed. Fruit- berry. Flowering time - August to January. Propagation - by seeds.

10. *Oxalis corniculata* L.

(Family - Oxalidaceae)

Distribution- It is found in the field of green gram, pigeon pea, soyabean and groundnut. Habit- small hairy erect perennial herb. Root- tap root. Stem- creeping and rooting at the nodes, branched, erect. Leaf- trifoliolate, leaflets entire, heart shaped. Inflorescence- axillary, umbellate. Flower- yellow, small, pentamerous, bisexual. Calyx- sepals -5, free-polysepalous. Corolla- petals 5, yellow color, free-polypetalous. Androecium- stamens-10. Gynoecium- ovary-5 locular, numerous ovule, axile placentation, style separate, hairy. Fruit- capsule. Flowering time - Almost throughout the year. Propagation- By seeds.

Solanum xanthocarpum Schrad & Wendl.

(Family - Solanaceae)

Distribution- It is found in the field of blackgram and wheat. Habit- erect herb. Root- tap root. Stem- erect, woody at the base, branched, spiny. Leaf- sub-pinnatifid, ovate, rounded and unequal at margin, hairy, spines present both side, petiolate. Inflorescence- axillary. Flower- violet-purple, pentamerous, bisexual, complete. Calyx- sepals 5, hairy and prickly outside. Corolla- petals 5, united, gamopetalous, violet-purple. Anthers yellow, oblong. Ovary ovoid. Fruit- berry yellow or white with green veins. Seeds- glabrous. Flowering time - June to January. Propagation - by seeds.

Cassia tora L.

(Family - Caesalpiniaee)

Distribution- It is found in the field of maize, greengram, soyabean, wheat and groundnut. Habit- erect annual herb. Root- tap root. Stem- erect, woody, herbaceous. Leaf- pinnately compound, glabrous, stipulate. Inflorescence – racemes. Flower- golden yellow, bisexual, pentamerous. Corolla- sepals-5, free, polysepalous. Corolla- petals 5, free, polypetalous. Androecium- stamens 10. Gynoecium- monocarpellary, ovary superior, unilocular, marginal placentation, style long, stigma simple. Fruit- pod. Seed- many initially green at maturity it becomes brown. Flowering time - August to December. Propagation - by seeds.

Baccopamoni (L.)

(Family - Scrophulariaceae)

Distribution- It is found in the field of rice. Habit- succulent prostrate herb. Root- tap root, rooted at nodes. Stem- fleshy, glabrous. Leaf- flashy, opposite, the upper alternate or some time decussate, sessile, spatulate entire. Inflorescence- axillary, solitary. Flower- bluish white, long pedicels, pentamerous, bisexual, complete. Calyx- sepals-5, unequal, acute, lanceolate. Corolla- petals 5, bluish white. Androecium- stamens-4, didynamous, bluish. Gynoecium- ovary globose. Fruit- capsule. Seed- many. Flowering time - almost throughout the year. Propagation- by seeds.

All the weeds and their medicinal uses are summarized in Table No. 1

Table No. 1: List of Weeds & their medicinal importance.

Sr.No.	Botanical name	Local name	Family	Uses
1.	<i>Commelina bengalensis</i> L.	Kena	Commelinaceae	Plant juice is given in dysentery and paste applied to treatment of pimples and blisters on breast.
2.	<i>Cynodondactylon</i> Pers.	Durva/ Harali	Poaceae	Used as first aid for minor injuries. A traditional use of <i>Cynodon</i> is for eye disorders and weak vision; the afflicted are advised to walk bare foot on dew drops spread over <i>Cynodon</i> plant each morning. Useful in leucoderma, bronchitis, piles, asthma, tumors, and enlargement of the spleen. Virus-affected discolored leaves of <i>Cynodon</i> are used for the treatment of liver complaints.
3.	<i>Tridax procumbens</i> L.	Jakhamjud i	Asteraceae	Leaf juices are applied over the cuts and wounds as antiseptic. The leaf paste are mixed with equal amount of turmeric paste is used to treatment of all skin infections. Whole plant used to treatment of piles. 3cm length cut root are used for inducing abortion up to 3 months of pregnancy.
4.	<i>Phyllanthus amarus</i> Schumach and Thonn.	Bhue awla	Euphorbiaceae	The whole plant juice is mixed with goat milk and taken internally for 3 to 4 days to cure jaundice. The plant is used as antiseptic, astringent, diuretic, febrifuge. Whole plant used to treatment of liver infection, diaerhoea, dropsy. Whole plant paste and given along with buttermilk on empty stomach in the morning to treatment of diabetes.
5.	<i>Euphorbia hirta</i> L.	Dudhi	Euphorbiaceae	Leaf paste is given to expel intestinal worms and to treat- ment of intestinal wounds and it is also used as vermifuge. Decoction obtained from plant powder given to cure kidney disorders, dysentery, asthma, colic, urenogenital tract. Regenerates skin, emollient antiparasite, anti-inflammatory, antimitotic, antiviral, antibiotic,

				diuretic. The plant latex is used to apply in the treatment of warts.
6.	<i>Euphorbia heterophylla</i> L.	Dudhani	Euphorbiaceae	The leaves are used in traditional practices as anticonvulsant, laxative, migraine and wart cures.
7.	<i>Portulaca oleracea</i> L.	Ghol	Portulacaceae	It contains many active biological compounds. It is edible because good source of food nutrients. It is used as bactericide and anti-inflammatory.
8.	<i>Argemone maxicana</i> L.	Vilayati	Papaveraceae	Plant latex used to treatment of eczema, skin diseases, psoriasis, eyes to control white patches in the eye. Very small doses of plant latex are used to treatment of jaundice. <i>Argemone</i> seed oil mixed with mustard oil, these are used to treatment of ulcers, skin eruptions, scabies and headache. Seed is used to antidote to snake venom. Smoke of seed treat to relieve toothache.
9.	<i>Solanum nigrum</i> L.	Kakamachi	Solanaceae	Leaf paste and fruit decoction is given to treat rabies. Leaf preparation in the form of a soup is taken for treatment of diabetes, scabies, itching, ulcer, and constipation and heart problems. Root and leaves decoction are given to treatment of fever and urinary disorder, whole plant paste is used as emollient, diuretic and laxative. The root powder is mixed with honey and given to treatment of hiccups.
10.	<i>Oxalis corniculata</i> L.	Changeri	Oxalidaceae	If it is taken with one teaspoonful juice of <i>Oxalis corniculata</i> quick results are seen and with in 2 to 3 days, improved appetite. Whole plant used to treatment of fever, indigestion, chronic dysentery and also useful to patients who are suffering from insomnia.
11.	<i>Solanum xanthocarpum</i> L.	Kantakari	Solanaceae	Root is used to treatment of cough, asthma, chest pain. leaves is good treatment for piles. Fumigation with vapour of burning seeds is treatment of relieve toothache.

12.	<i>Cassia tora</i> L.	Tarota	Caesalpiniaceae	Root and leaf paste are applied all skin diseases, eczema, acne, psoriasis, boiled and cuts. leaf paste applied as prepare a good plaster to treatment of bone fracture. Seed paste is mixed with lime juice to treatment of ring worms.
13.	<i>Baccopa monnieri</i> (L.) Wettst	Nir Brahmi	Scrophulariaceae	Nir brahmi is a important tonic for mental diseases and nervous disorders also used to treatment of urinary tract infections, high blood pressure, blood diseases, rheumatism, hepatitis. Antibiotic, antifungal properties are present which make it useful in healing of wounds. Leaf juice is helpful to promote the urination. In leaf juice mixed with honey once day on empty stomach to cure epilepsy. A poultice of the boiled plant is placed on the chest in acute bronchitis and children cough. .

CONCLUSION

The diversity of weeds in crop fields may prove a huge resource for the coming new biotechnologies. The weed diversity may prove a boon to farmers. It may be a frontier. Therefore the detail study of weed diversity of crop fields and its utilization is an urgent need of human beings.

Thus weeds are the key resources for new genes and biotechnologically valuable compounds.

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