

Diversity of weed flora of Bharsar, Pauri Garhwal (Uttarakhand), India

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Abstract: Uttarakhand is a hill state, situated in central Himalaya. It differs from the plains in topography, elevation, geographic features, ethnic diversity, land use system, socio-economic conditions and diversity of habitats for flora and fauna. Among the diversity of habitats for flora, weeds cause enormous reduction in crop yield, wastage of resources and human energy and are also a health hazard to human being. Therefore, adequate and timely suppression of weeds is essential. Detail information about the weeds of any region is essential for deciding a weed control method. To study the diversity of weed flora in Bharsar region for weed identification purpose a field survey was conducted from 2012 to 2015 in a different blocks namely Medicinal and Aromatic Plants; Floriculture and Land Architecture; Potato Farm, Apple Orchard, Tea, Organic, Vegetable, Kiwi, Farm of Krishi Vigyan Kendra and Fruit Nursery under College of Horticulture, VCSG Uttarakhand University of Horticulture, Bharsar, Uttarakhand. This extensive field survey revealed that the more than 100 weeds were present in this region. Among all, weeds from two family viz. Asteraceae and Poaceae were found dominant.

Keywords: Bharsar, weed, diversity, family, identification

I. Introduction

Jethro Tull [1] in his much revered book "Horse Hoeing Husbandry" first time defined 'a weed as a plant can grow where it is not desired'. Zimdahl [2] defines a weed as "a herbaceous plant not valued for use or beauty, growing wild and rank, and regarded as cumbering the ground or hindering the growth of superior vegetation". Macneish [3] believed weeds have been existing on the earth ever since the man started domesticating/ cultivating plants and animals around 10, 000 B.C. - the most significant single occurrence in human history. DeWet and Harlan [4] selected three classes of plants in nature: i) wild plants (which grow naturally outside the human disturbed habitat), ii) weeds (which thrive in habitats that are continuously disturbed by humans), and iii) domesticates/ crops (which are artificially propagated and often require cultivation and care by humans in order to grow and make use of environmental resources). Weeds have been recognized as a problem since the beginning of agriculture and the battle against weeds is a never ending one. Weed management often appear the costliest agronomic effort for the success in crop production. Das [5] thought between humans and continuing food supply, there stand four natural hazards, e.g. weather, weeds, insect pests and plant diseases. These hazards sometimes work independently and many times hand in hand. Dangwal et al. [6] reported weeds grow in association with agricultural crops and bring about significant decline in yield through their competition with crop plants for sunlight, space, nutrients etc. However, some weeds are also allelopathic in nature Oudhia and Tripathi [7], [8]. Holm et al., [9] estimated that out of about 8000 weed species growing in world, only 250 are of particular importance to agricultural crops.

In view of significant yield decline by weeds in different crops, numerous studies have been carried out on various aspects of weed biology and control in India. In general, seasonal long competition for major weeds culminates in yield reduction to an extent of 15-40 % in this context. Kaul [10] studied the weed flora in Kashmir valley and reported 401 weed species belonging to 251 genera and 56 angiosperm families. Shailey and Gaur [11] studied the phyto-sociological association of crops and weeds of Pauri Garhwal district of Uttarakhand, India and recorded 180 weed species belonging to 50 angiosperm families. The dominant dicot families were *Amaranthaceae*, *Apiaceae*, *Asteraceae*, *Brassicaceae* and *Commelinaceae*; and *Poaceae* from monocot families. Singh et al., [12] studied the phytosociological association of weeds in winter crops of Kashmir valley. Gupta et al., [13] studied the dynamics of cereal crop weeds of Doon valley, Uttarakhand with special reference to rice, maize and wheat fields. They reported about 151 weed species belonging to 118 genera, 31 families; 57 weeds were reported from rice, 77 from maize and 71 from wheat fields. With this background, the present investigation was undertaken to achieve the diversity of weed flora in different blocks of College of Horticulture, Bharsar.

II. Materials and methods

2.1 Location and Climate

The college of Horticulture, VCSG UHF, Bharsar is situated at 30.06° N Latitude, 78.99° E Longitude and at the altitude of 1900 meters above the mean sea level under temperate climate. Generally, days of Bharsar are fairly warm followed by cool nights in summers. The area receives adequate sunshine hours whereas the growing period is shorter due to long winter. The main features of the Bharsar climate are mild hot summers, higher precipitation during rainy season, prolonged cold winters and occasional snow fall during winter season. The climatic factors such as precipitation, temperature, relative humidity and wind, in association with elevation, slope aspects, drainage, vegetation, etc. are responsible for the niche micro-climate of this region.

2.2 Soil

Soil texture, colour and nature represent wide range of variations, depending upon geology, altitude, slope aspects, climate, vegetation and biological and chemical interactions of particular site. Soils are medium texture clay-loam and deep profile depth 1 to 2 meter. Bharsar region soils are slightly acidic (pH 5.5-6.0) in nature with high organic carbon (0.9-1.2%) content. Mineralization rate is slow although, these soils are medium in available nitrogen (290-300 kg/ha) and phosphorous (P₂O₅ 23-42 kg/ha); rich in potassium (K₂O 380-440 kg/ha), with the exception of some cultivated fields.

2.3 Weeds

Weeds, like many plants are known by three names viz, common name, scientific name/ botanical name and regional/ local name "Table 2". The present study was undertaken to find out common weeds of Bharsar under cultivation in different blocks viz, Medicinal and Aromatic Plants; Floriculture and Land Architecture; Potato Farm; Apple Orchard; Tea; Organic; Vegetable; Kiwi; Farm of Krishi Vigyan Kendra and Fruit Nursery of College of Horticulture, VCSG Uttarakhand University of Horticulture and Forestry, Bharsar, Pauri Garhwal, Uttarakhand, India. Extensive field surveys were conducted during different months of *Rabi* and *Kharif* crop season of 2012-15. Randomly three sites were selected in each block of the College of Horticulture. Weeds were collected from all the sites of the study area at seedling, premature & maturity/ harvesting stages of Medicinal and Aromatic, ornamentals, vegetables and fruit trees. During this period survey of weeds in different block, interviews with block supervisor, workers/ farmers, agriculturists and horticulturists' alongwith botanists were conducted to collect information about the seasonal weed plants and their vernacular names, if known. The collected weed plants were photographed and systematically identified with the help of available literature viz, monographs, magazines, journals, textbooks etc.

III. Results and Discussion

During *Rabi* and *Kharif* season, total 107 weed species belonging to two monocot and thirty seven dicot families were found in the said survey of the college campus. The predominance was shown by *Asteraceae* with 18 weed species and *Poaceae* with 16 weed species, which included some major weed species; while *Fabaceae* have 6 weed species; *Polygonaceae*, *Rosaceae* have 5 weed species. Each rest of the families has less than 5 number of weed species, were represented as minor weeds "Table 1".

Table 1: Name of weed's family, No. of weeds and their proportion/ share under specific family

S. No.	Family	No. of weeds	Proportion (%)	Remarks	
1	<i>Asteraceae</i>	18	16.82	Dicotyledonous	-
2	<i>Poaceae</i>	16	14.95	-	Monocotyledonous
3	<i>Fabaceae</i>	6	5.61	Dicotyledonous	-
4	<i>Polygonaceae</i>	5	4.67	Dicotyledonous	-
5	<i>Rosaceae</i>	5	4.67	Dicotyledonous	-
6	<i>Lamiaceae</i>	4	3.74	Dicotyledonous	-
7	<i>Solanaceae</i>	4	3.74	Dicotyledonous	-
8	<i>Convolvulaceae</i>	4	3.74	Dicotyledonous	-
9	<i>Cyperaceae</i>	4	3.74	-	Monocotyledonous
10	<i>Ranunculaceae</i>	3	2.80	Dicotyledonous	-
11	<i>Apiaceae</i>	2	1.87	Dicotyledonous	-
12	<i>Amaranthaceae</i>	2	1.87	Dicotyledonous	-
13	<i>Araliaceae</i>	2	1.87	Dicotyledonous	-
14	<i>Brassicaceae/ Cruciferae</i>	2	1.87	Dicotyledonous	-
15	<i>Commelinaceae</i>	2	1.87	Dicotyledonous	-
16	<i>Oxalidaceae</i>	2	1.87	Dicotyledonous	-
17	<i>Plantaginaceae</i>	2	1.87	Dicotyledonous	-
18	<i>Rubiaceae</i>	2	1.87	Dicotyledonous	-
19	<i>Smilacaceae</i>	2	1.87	Dicotyledonous	-
20	<i>Berberidaceae</i>	1	0.93	Dicotyledonous	-

21	<i>Cannabaceae/ Cannabaceae</i>	1	0.93	Dicotyledonous	-
22	<i>Caryophyllaceae</i>	1	0.93	Dicotyledonous	-
23	<i>Chenopodiaceae</i>	1	0.93	Dicotyledonous	-
24	<i>Cucurbitaceae</i>	1	0.93	Dicotyledonous	-
25	<i>Demnstaediaceae</i>	1	0.93	Dicotyledonous	-
26	<i>Dicksoniaceae</i>	1	0.93	Dicotyledonous	-
27	<i>Fumariaceae</i>	1	0.93	Dicotyledonous	-
28	<i>Hypericaceae</i>	1	0.93	Dicotyledonous	-
29	<i>Loranthaceae</i>	1	0.93	Dicotyledonous	-
30	<i>Papaveraceae</i>	1	0.93	Dicotyledonous	-
31	<i>Plumbaginaceae</i>	1	0.93	Dicotyledonous	-
32	<i>Portulacaceae</i>	1	0.93	Dicotyledonous	-
33	<i>Primulaceae</i>	1	0.93	Dicotyledonous	-
34	<i>Saxifragaceae</i>	1	0.93	Dicotyledonous	-
35	<i>Scrophulariaceae</i>	1	0.93	Dicotyledonous	-
36	<i>Urticaceae</i>	1	0.93	Dicotyledonous	-
37	<i>Valerianaceae</i>	1	0.93	Dicotyledonous	-
38	<i>Vitaceae</i>	1	0.93	Dicotyledonous	-
39	<i>Zingiberaceae</i>	1	0.93	Dicotyledonous	-

The yield losses due to weeds are generally more than the combined losses caused by insects and pathogens together. The impact of weeds is always obscure and it becomes visible when the critical time has gone; whereas that of insects and pathogens is visible at all times. This is the reason the why the weeds are mostly ignored and on contrary the insects and pathogens attacks are given proper heed.

It is astonishing to note that *Asteraceae* and *Poaceae* existed only to the extent of 16.82 % and 14.95 % respectively, among the weed flora of the target site “Table 1”. Out of total weed species reported from the study area, weeds like *Heracleum candicans*, *Bidens bipinnata*, *Cirsium arvense*, *Conyza canadensis*, *Eupatorium adenophorum*, *Gnaphalium affine*, *Taraxacum officinale*, *Anaphalis triplinervis*, *Stellaria media*, *Cuscuta reflexa*, *Trifolium repens*, *Fumaria parviflora*, *Hypericum perforatum*, *Loranthus longiflorus*, *Oxalis corniculata*, *Oxalis latifolia*, *Plantago lanceolata*, *Plantago major*, *Digitaria sanguinalis*, *Setaria glauca*, *Rumex nepalensis*, *Rumex hastatus*, *Rosa multiflora*, *Rubus ellipticus*, *Rubus occidentalis*, *Galium aparine*, *Rubia manjith*, *Nicandra physalodes*, *Urtica dioica* and *Valeriana jatamansi* are common weeds of horticultural crops. Remaining weeds are less common but present amongst the cultivated fields of the College.

Here, two monocot and thirty seven dicot families are arranged alphabetically with their botanical names, common name and available vernacular names, habits and characteristics are mentioned (Table 2). These findings are in a greater analogy with the previous work of Kaul [10] and Singh et al. [12].

Table 2: List of weed flora in Bharsar, Pauri Garhwal (Uttarakhand), India

Sl. No.	Botanical Name	Common Name	Vernacular Name	Family	Habit and Characteristics
1	<i>Achyranthes aspera</i> L.	Snakestail/ Prickly chaff flower/ Devil's horsewhip	Latjeera/ Chirchita/ Chirchra	<i>Amaranthaceae</i>	Erect, sparingly branched annual or biennial herb
2	<i>Amaranthus viridis</i> L.	Slender pigweed	Chaulai	<i>Amaranthaceae</i>	Erect glabrous much branched annual broad-leaved herb
3	<i>Ammi visnaga</i> (L.) Lam.	Honey plant/ Visnaga/ Tooth pick weed/ Khella	Honey plant	<i>Apiaceae</i>	Annual or biennial herb growing from a taproot erect to a maximum height near 80 cm.
4	<i>Heracleum candicans</i> Wall. Ex D.C.	White Leaf Hogweed/ Hogweed, Cow parsnip	Heracleum	<i>Apiaceae</i>	Upto 1.7 m in height perennial herb.
5	<i>Hedera helix</i> L.	Common ivy/ English ivy/ European ivy/ Just ivy	Hedera	<i>Araliaceae</i>	Clinging evergreen vine, Familiar sight in gardens, waste spaces, on house walls, tree trunks, growing to 20 – 30 m high.
6	<i>Hedera nepalensis</i> K. Koch	Himalayan Ivy/ Himalya-Efeu, Chang Chun teng	Hedera	<i>Araliaceae</i>	Perennial Ivy plant found at altitudes of about 1000-3000 m. Plants grows up to 30 m in height.
7	<i>Ageratum conyzoides</i> L.	Bill goat weed/ Chickweed/ Goat weed/ White weed	Gamlwa/ Jungli Pudina/ Visadodi/ Semandula/ Gha-	<i>Asteraceae</i>	Erect branched annual broad leaved herb

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8	<i>Artemisia annua</i> L.	Sweet wormwood/ Annual wormwood	buti/ Bhakumbar Artemisia/ Pati	<i>Asteraceae</i>	Annual broad-leaved herb. Naturally grows from 30 to 100 cm tall
9	<i>Artemisia nilagirica</i> (Clarke) Pamp	Indian wormwood/ Fleabane/ Mugwort	Nagdonga/ Davana	<i>Asteraceae</i>	Aromatic shrub, 1-2 m high, yellow or dark red small flowers, grows throughout India in hills up to 2400 m elevation.
10	<i>Bellis perennis</i> L.	Common daisy/ English daisy/ Lawn daisy	English daisy	<i>Asteraceae</i>	English daisy is a low-growing perennial
11	<i>Bidens bipinnata</i> L.	Spanishneedles	Spanishneedles	<i>Asteraceae</i>	Annual broad-leaved herb
12	<i>Cirsium arvense</i> (L.) Scop.	Canada theistle	Canada theistle	<i>Asteraceae</i>	Erect perennial leafy spiny broad leaved herb with pink or white flower
13	<i>Cirsium vulgare</i> (Savi.) Tenore	Bull thistle	Bull thistle	<i>Asteraceae</i>	Biennial broad- leaved herb
14	<i>Conyza canadensis</i> (L.) Cronquist	Horse weed/ Canadian horse weed/ Butter weed	Horse weed	<i>Asteraceae</i>	<i>Conyza Canadensis</i> (formerly <i>Erigeron Canadensis</i> L.) is an annual plant
15	<i>Eupatorium adenophorum</i> Spreng.	Kalabansa/ Croftonweed	Kalabansa	<i>Asteraceae</i>	Annual broad-leaved herb
16	<i>Gnaphalium affine</i> D. Don	Gnaphalium	Gnaphalium	<i>Asteraceae</i>	Annual or biennial herb up to 40 cm high, often branched from the base, densely white-woolly.
17	<i>Hypochaeris radicata</i> L.	Common catsear	Common catsear	<i>Asteraceae</i>	Perennial broadleaf plant
18	<i>Parthenium hysterophorus</i> L.	Gajarghas/ Chatakchandani/ Congress grass/ Carrot weed	Congress grass/ Chatak chandni	<i>Asteraceae</i>	Annual much branched broad leaved herb
19	<i>Sonchus asper</i> (L.) Hill	Prickly sow-thistle/ Rough milk thistle/ Spiny sowthistle/ Spiny-leaved sow thistle	Prickly sow-thistle	<i>Asteraceae</i>	Annual or biennial herb sometimes reaching a height of 200 cm with spiny leaves and yellow flowers resembling those of the dandelion.
20	<i>Tagetes minuta</i> L.	Wild Marigold	Jungali Genda/ Genda	<i>Asteraceae</i>	Annual broad-leaved herb
21	<i>Taraxacum officinale</i> Wiggers.	Dandelion, Common tansy	Dandelion	<i>Asteraceae</i>	Annual broad-leaved herb
22	<i>Tridax procumbens</i> L.	Tridax daisy/ Coat buttons	Ghamra	<i>Asteraceae</i>	Perennial procumbent hispid herb
23	<i>Anaphalis triplinervis</i> (Sims) C.B. Clarke	Triple-veined pearly everlasting	Anaphalis	<i>Asteraceae</i>	Herbaceous perennial plant. Native to the Himalayas (Tibet, Afghanistan, North India, Nepal, Bhutan). Grey-green felted leaves produce sprays of small white flower heads. Height 45-60 cm.
24	<i>Xanthium pennsylvanicum</i> (Syn. <i>Xanthium strumarium</i> L.)	Common Cocklebur, Burweed	Cocklebur	<i>Asteraceae</i>	Coarse annual broad-leaved herb with spines and thorny fruits
25	<i>Berberis aristata</i> Roxb.	Kilmoda/ Indian Barberry/ Tree Turmeric	Kilmori/ Kilmoda/ Kilmora	<i>Berberidaceae</i>	Native to <u>temperate</u> regions, Perennial
26	<i>Arabis amplexicaulis</i> Edgew.	Stem-Clasping Rock-Cress	Jungali sarso	<i>Brassicaceae/ Cruciferae</i>	Perennial, 20-70 cm tall, erect, usually with a single flowering stem
27	<i>Lepidium ruderae</i> L.	Narrow-leaf pepper wort/ roadside pepper weed/ peppergrass	Narrow leaf pepper wort	<i>Brassicaceae/ Cruciferae</i>	Annual herb
28	<i>Cannabis sativa</i> L.	Hemp/ Marijuana	Bhang	<i>Cannabinaceae / Cannabaceae</i>	Erect annual or perennial broad-leaved undershrub
29	<i>Stellaria media</i> (L.) Vill.	Common chickweed/ Chickenwort/ Craches/ Maruns/ Winter weed	Chickweed	<i>Caryophyllacea e</i>	Cool season annual plant. Flowers are small and white
30	<i>Chenopodium</i>	Common	Bathua	<i>Chenopodiacea</i>	Erect annual broad leaved herb

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	<i>album</i> L.	lambsquarter/ Dogstoothgrass/ Fathen		<i>e</i>	
31	<i>Commelina benghalensis</i> L.	Tropical spiderwort/ Wandering Jaw	Kena/ Kankau/ Kanchara	<i>Commelinaceae</i>	Fleshy branched annual broad leaved grass herb
32	<i>Commelina diffusa</i> Burm.	Climbing dayflower, spreading dayflower	Kena	<i>Commelinaceae</i>	Annual broad-leaved grass herb
33	<i>Cuscuta reflexa</i> Roxb.	Giant Dodder	Amarbel	<i>Convolvulaceae</i>	Parasitic weed with yellow wiry twining stem
34	<i>Ipomoea cairica</i> (L.) Sweet	Mile-a-minute vine/ Cairo morning glory/ Railroad creeper	Railroad creeper	<i>Convolvulaceae</i>	Vining perennial has palmate leaves and large, showy white to lavender flowers.
35	<i>Ipomoea pestigris</i> Linn.	Tiger Foot/ Morning Glory	Panchpatia	<i>Convolvulaceae</i>	It is a twinning, herbaceous, hairy, annual vine.
36	<i>Ipomoea purpurea</i> (L.) Roth.	Tall Morning-glory	Tall Morning glory	<i>Convolvulaceae</i>	Tall morningglory is a summer annual broadleaf vine.
37	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey	Native Bryony/ Striped cucumber	Shivlingi/ Native Bryony/ Striped cucumber	<i>Cucurbitaceae</i>	Vine in the Cucurbitaceae family
38	<i>Cyperus difformis</i> L.	Variable flatsedge/ Smallflower umbrella-sedge	Motha or mutha	<i>Cyperaceae</i>	It is a plant of aquatic and moist habitats. This is an annual herb with one to many thin, soft erect stems reaching over 30 cm in maximum height. The inflorescence is a rounded bundle. Flowers are light brown.
39	<i>Cyperus esculentus</i> L.	Yellow nutsedge	Motha or mutha	<i>Cyperaceae</i>	Top growth 8-30 inches tall. The inflorescence is yellow-brown, golden, or straw colored, and consists of an umbel of spikes borne on stalks of unequal length (1-3 inches). Contains tubers
40	<i>Cyperus iria</i> L.	Rice flatsedge/ Umbrella sedge	Motha or mutha	<i>Cyperaceae</i>	It is a tufted annual herb, or occasionally perennial, with fibrous roots, 15-75 cm tall.
41	<i>Cyperus rotundus</i> L.	Purple nutsedge/ nutgrass/ cocoglass	Motha or mutha	<i>Cyperaceae</i>	Perennial erect, glabrous herb with purple inflorescence. Contains rhizomes
42	<i>Pteridium aquilinum</i> (L.) Kuhn	Bracken/ Brake/ Common Bracken	Fern	<i>Dennstaedtiaceae</i>	Herbaceous perennial plant, deciduous in winter. Arising upwards from an underground rhizome grow to 1-3 m
43	<i>Dicksonia antarctica</i> Labill.	Soft tree fern/ Man fern	Fern	<i>Dicksoniaceae</i>	Evergreen tree fern
44	<i>Lathyrus aphaca</i> L.	Snakestail/ Prickly chaff flower/ Devil's horsewhip	Latjeera/ Chirchita/ Chirchra	<i>Fabaceae</i>	Annual broad- leaved herb
45	<i>Melilotus indica</i> All.	Yellow sweetclover	Pili senji	<i>Fabaceae</i>	Annual broad leaved herb
46	<i>Trifolium pratense</i> L.	Red clover	Red clover	<i>Fabaceae</i>	Herbaceous, short lived perennial plant, grows to 20-80 cm, flowers dark pink
47	<i>Trifolium repens</i> L.	White clover, Dutch clover	Tinpatia	<i>Fabaceae</i>	Annual broad leaved herb
48	<i>Vicia hirsuta</i> (L.) Gray	Gray vetch/ Hairy vetch/ Tiny vetch	Akri	<i>Fabaceae</i>	Annual broad leaved herb
49	<i>Vicia sativa</i> L.	Common vetch	Akra	<i>Fabaceae</i>	Annual broad leaved herb
50	<i>Fumaria indica</i> Pugsley [Syn. <i>Fumaria parviflora</i> (L.) Wt. & Arn.]	Fumitory/ Bansoya	Bansoya	<i>Fumariaceae</i>	Annual broad-leaved prostrate herb
51	<i>Hypericum perforatum</i> L.	St. John's Wort/ Klamath weed/ Hypericum/ Goat weed	Balsana/ Bassant/ Dendhi	<i>Hypericaceae</i>	Herbaceous perennial plant widely distributed in temperate regions
52	<i>Ajuga bracteosa</i> Wall ex. Benth	Neel Khanti/ Kauri Booti	Bugleweed/ ground pine/ carpet bugle	<i>Lamiaceae</i>	<i>Ajuga bracteosa</i> is an evergreen perennial growing
53	<i>Caryopteris foetida</i> (D. Don) Thell.	Stinking bluebeard	Stinking bluebeard	<i>Lamiaceae</i>	<i>Caryopteris</i> species are erect or rambling shrubs. Shrub is

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					growing about 4-6 feet tall.
54	<i>Prunella vulgaris</i> L.	Common self-heal/ heal-all	Common self-heal/ heal-all	<i>Lamiaceae</i>	Herbaceous plant and grows 5-30 cm high with creeping.
55	<i>Scutellaria pekinensis</i> L.	Skullcaps	Scutellaria	<i>Lamiaceae</i>	Annual or perennial herbaceous plants grow upto 100 cm tall, four-angled stems and opposite's leaves.
56	<i>Loranthus longiflorus</i> Desr.	Loranthus/ Bandagul	Loranthus/ Dendrophthoe	<i>Loranthaceae</i>	Parasitic plant that grow on the branches of woody trees. It derived the whole of its nutrients from juice of host plants. Loranthus seeds are spread by birds to fresh tree branches.
57	<i>Oxalis corniculata</i> L.	Creeping woodsorrel/ Indian sorrel/ sleeping beauty/ yellow oxalis/ yellow wood sorrel	Khatimithi/ Tin patia	<i>Oxalidaceae</i>	Perennial prostrate herb
58	<i>Oxalis latifolia</i> H.B.K.	Simple perennial woodsorrel	Khati-Mithi/ Broadleaf Woodsorrel/ Tinpatia	<i>Oxalidaceae</i>	Simple perennial broad- leaved herb
59	<i>Argemone mexicana</i> L.	Mexican pricklepoppy/ Mexican Poppy	Satyanashi	<i>Papaveraceae</i>	Erect branched prickly broad leaved annual herb (Yellow flower)
60	<i>Plantago lanceolata</i> L.	English plantain/ Narrow leaf plantain/ Rib leaf/ Lamb's tongue/ Ribwort plantain	Plantain	<i>Plantaginaceae</i>	Annual broad-leaved grass herb
61	<i>Plantago major</i> L.	Broadleaf plantain/ greater plantain	Broadleaf plantain/ greater plantain	<i>Plantaginaceae</i>	Annual broad leaved herb with a rosette of leaves
62	<i>Plumbago zeylanica</i> L.	Chitrakmool/ Ceylon Leadwort/ Doctorbush/ Wild leadwort	Chitrakmool/ Chitrak	<i>Plumbaginaceae</i>	Evergreen shrub that reaches about 6' in nature. Flowers are white
63	<i>Avena sativa</i> L.	Wild oat/ spring wild oat	Jungli Jai	<i>Poaceae</i>	Erect annual grass herb
64	<i>Bromus catharticus</i> Vahl.	Prairie grass/ Annual prairie grass/ Brome grass/ Rescue grass	Prairie grass	<i>Poaceae</i>	Annual or perennial grass growing up to a meter in height. The inflorescence is made up of spreading spikelets, the upper ones erect and the lower ones nodding or drooping. Each spikelet is very flat and pointed, the fruits tipped with short awns.
65	<i>Cynodon dactylon</i> (L.) Pers.	Bermudagrass/ Devilsgrass/ Stargrass	Doob	<i>Poaceae</i>	Perennial hardy branched usually prostrate herb
66	<i>Dactyloctenium aegypticum</i> (L.) P. Beauv. Willd.	Crowfoot grass	Makra	<i>Poaceae</i>	Short annual herb with creeping or erect branches
67	<i>Digitaria abyssinica</i> (A. Rich) Stapf	African couch grass/ Couch finger grass/ Dunn's finger/ Thangari	African couch grass/ Couch finger grass/ Dunn's finger/ Thangari	<i>Poaceae</i>	Perennial with slender long rhizomes and erect culm up to 30 cm high. Panicle of two to nine. Found sea level to 3000 m.
68	<i>Digitaria sanguinalis</i> (L.) Scop.	Hairy crabgrass/ Large crabgrass/ Crab finger grass/ Purple crabgrass	Crabgrass	<i>Poaceae</i>	Summer annual grass. Plants grow in clumps to about 80 cm tall, mostly upright, but sometimes prostrate.
69	<i>Drepanostachyum falcatum</i> Nees	Dwarf Bamboo	Ringal [Golu Ringal/ Garh/ Garila]	<i>Poaceae</i>	Ringal is a widely distributed shrub found in the temperate regions of Garhwal Himalaya.
70	<i>Eleusine indica</i> (L.) Gaertn.	Goosegrass/ Wiregrass	Goosegrass/ Wiregrass	<i>Poaceae</i>	Erect tufted annual grass
71	<i>Imperata</i>	Cogongrass/ Wiregrass	Imperata	<i>Poaceae</i>	Perennial grass

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	<i>cylindrica</i> (L.) P. Beauv.	Alangalang/ Thatchgrass			
72	<i>Leptochloa chinensis</i> (L.) Nees.	Red Sprangletop	Red Sprangletop	<i>Poaceae</i>	Annual erect robust grass herb
73	<i>Paspalum dilatatum</i> Poir.	Pigeongrass	Dallisgrass	<i>Poaceae</i>	Annual grass herb
74	<i>Phalaris minor</i> Retz.	Littleseed canary grass	Gulli-Danda/ Mandusi/ Gehunsa	<i>Poaceae</i>	Decumbent annual grass herb
75	<i>Polypogon monspeliensis</i> (L.) Desf.	Rabbit foot grass/ Foxtail grass	Foxtail grass	<i>Poaceae</i>	Annual grass herb
76	<i>Saccharum spontaneum</i> L.	Wild sugarcane/ Kansgrass	Kans	<i>Poaceae</i>	Perennial grass herb or under shrub
77	<i>Setaria glauca</i> (L.) Beauv.	Yellow foxtail	Yellow foxtail	<i>Poaceae</i>	Yellow foxtail is a summer annual grass. It is found to an elevation of 1200 m.
78	<i>Zoysia japonica</i> Steud	Japanese lawn grass/ Korean lawn grass	Zoysia grass	<i>Poaceae</i>	Creeping grass, Evergreen perennial grass growing to 20 cm.
79	<i>Polygonum persicaria</i> L.	Ladysthumb	Ladysthumb	<i>Polygonaceae</i>	Annual broad-leaved herb
80	<i>Polygonum plebejum</i> R. Br.	Indian knotweed	Indian knotweed	<i>Polygonaceae</i>	Prostrate annual/ biennial herb
81	<i>Rumex nepalensis</i> Spreng.	Nepal Dock	Amlya/ Amlora/ Bhilmora/ Malori/ Jungli Palak	<i>Polygonaceae</i>	Perennial, grows to 1-2 m. It is in flower from May to June; Altitude-80 m to 4200 m.
82	<i>Rumex dentatus</i> L.	Sour dock/ toothed dock	Jungli Palak	<i>Polygonaceae</i>	Annual broad-leaved herb
83	<i>Rumex hastatus</i> D. Don.	Arrowleaf Dock/ Yellow Sock/ Curled sock	Chilmora	<i>Polygonaceae</i>	Perennial broad- leaved herb
84	<i>Portulaca oleracea</i> L.	Garden Purslane/ Common Purslane	Pigweed/ Pursley	<i>Portulacaceae</i>	Annual succulent may reach 40 cm in height, taproot with fibrous secondary roots.
85	<i>Anagallis arvensis</i> ssp foemina (Syn. <i>Anagallis coerulea</i> L.)	Scorlet pimpernel/ Red pimpernel	Krishna neel	<i>Primulaceae</i>	Annual prostrate broad leaved herb
86	<i>Anemone obtusiloba</i> D. Don	Himalayan anemone	Himalayan anemone	<i>Ranunculaceae</i>	Tufted habit perennial with a short rhizomatous rootstock and stems up to 15 cm tall with yellow flowers.
87	<i>Ranunculus arvensis</i> L.	Creeping buttercup/ Bird foot buttercup	Ranunculus	<i>Ranunculaceae</i>	Annual broad-leaved herb
88	<i>Thalictrum foliolosum</i> D.C.	Meadow-rue	Meadow-rue	<i>Ranunculaceae</i>	Tall perennial rigid herb indigenous to the temperate Himalayas (5000-8000 ft).
89	<i>Duchesnea indica</i> (Andr.) Focke Synonyms <i>D. fragarioides</i> , <i>Fragaria indica</i>	Mock Strawberry/ Indian strawberry	Bankasa	<i>Rosaceae</i>	<i>Duchesnea indica</i> is an evergreen perennial
90	<i>Prinsepia utilis</i> Royle	Himalayan Cherry Prinsepia/ Prinsep/ Scholar	Bhikal/ Bekkra/ Bhekar/ Cherara	<i>Rosaceae</i>	Deciduous shrub growing up to 3.5 m.
91	<i>Rosa multiflora</i> Thunb.	Wild Rose	Jungli Gulab	<i>Rosaceae</i>	Temperate region and perennial shrub
92	<i>Rubus ellipticus</i> Smith.	Yellow Himalayan raspberry	Hishalu	<i>Rosaceae</i>	Thorny fruiting shrub that originates from South Asia, Shrub growing to 4.5 m
93	<i>Rubus occidentalis</i> L.	Black raspberry	Hishalu	<i>Rosaceae</i>	Deciduous shrub growing to 2-3 m (7-10 feet) tall, with prickly shoots.

94	<i>Galium aparine</i> L.	Catch weed/ Bedstraw	Catch weed/ Bedstraw	<i>Rubiaceae</i>	Annual broad-leaved herb
95	<i>Rubia manjith</i> Roxb.	Manjith	Manjith	<i>Rubiaceae</i>	Manjith is a perennial climber, with 4-angled stems and branches.
96	<i>Berginia ciliata</i> (Haw.) Sternb. Revis. Saxifrage. Suppl. <i>Berginia ligulata</i> (Wall.) Engl.	Pashanbheda	Pashanbheda	<i>Saxifragaceae</i>	Mostly found in temperate Himalayas at 1500 m altitude
97	<i>Verbascum thapsus</i> L.	Woolly Mullein seed head	Great mullein or common mullein	<i>Scrophulariaceae</i>	Hairy biennial plant grow to 2 meters tall or more. Small yellow flowers are densely grouped on tall stem, which grows from a large rosette of leaves.
98	<i>Datura metel</i> L.	Thorn apple	Datura	<i>Solanaceae</i>	An erect, soft-stemmed shrub usually less than 1 m tall.
99	<i>Nicandra physalodes</i> (L.) Gaerth.	Shoofly Plant/ Apple of Peru	Shoofly Plant/ Apple of Peru	<i>Solanaceae</i>	It is a summer annual plant.
100	<i>Solanum nigrum</i> L.	Black nightshade	Makoya	<i>Solanaceae</i>	Erect branched annual or biennial broad-leaved herb
101	<i>Solanum surattense</i> Burn.f. (<i>S. xanthocarpum</i> Schrad & Wendl.)	Yellow-berried Nightshade/ Choti Katheri/ Kantkari/ Kateli	Thai eggplant/ Kantakari/ Kateli/ Katai/ Ringani	<i>Solanaceae</i>	Perennial broad-leaved herb
102	<i>Smilax aspera</i> L.	Rough Bindweed/ Sarsaparille	Rough Bindweed/ Sarsaparille	<i>Smilacaceae</i>	Creeping or climbing evergreen having spiny zigzag stems with shiny leaves, Perennial
103	<i>Smilax glaucophylla</i> Klotzsch	Elegant Smilax	Smilax	<i>Smilacaceae</i>	It is a perennial climber with branches round, sometimes ribbed, not spiny. It is found at altitudes of 1800-3100 m.
104	<i>Urtica dioica</i> Roxb.	Stinging nettle/ common nettle	Bichhu-Booti/ Sisnu/ Kandeli/ Bichhughas	<i>Urticaceae</i>	Herbaceous, perennial, 1 to 2 m tall in the summer and dying down to the ground in winter.
105	<i>Valeriana jatamansi</i> Jones (Syn. <i>V. wallichii</i> DC)	Indian Valerian/ Muskbala/ Sugandhbala/ Tagar	Sumaya/ Tagara/ Jatamansi	<i>Valerianaceae</i>	Perennial herb, 0.5-2 ft tall. Jatamansi is found throughout the Himalayas at altitude of 1500-3600 m.
106	<i>Vitis lanata</i> Roxb.	Wild grape	Asajiya/ asoja/ paharphuta/ purain	<i>Vitaceae</i>	A large woody deciduous climber; vines climbing on trees in forests going up to the height of 25 meters and covering the entire canopy of the tree
107	<i>Hedychium spicatum</i> Sm. In A. Rees	Vanhaldi/ Kapur kachri/ Ginger Lily/ Sandharlika	Vanhaldi/ Kapur kachri	<i>Zingiberaceae</i>	Hardy perennial, grows up to 1 metre.

IV. Conclusion

As we know weeds play a key role in the ecosystem which the gardener seeks to manage. This study may be useful for agriculturists as well as taxonomists and other scientists involved in the management of weeds. Thus overall study indicates identification and reporting about weeds will be helpful for studying biological and ecological adaptations of weeds, their magnitude of harmful effects on field and Horticultural crops.

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