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Angiosperm weeds diversity of Kohima District, Nagaland, Northeast India

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ABSTRACT

The paper presents a comprehensive study of 118 common angiosperm weeds from Kohima District, Nagaland. These weeds represent 33 families and 92 genera. The botanical names, vernacular names, common names, family, habit, lifespan, voucher number and uses are enumerated systematically. The study reveals that certain plant families predominate in the study area, with Compositae (19.49%), Leguminosae (16.95%), and Poaceae (7.63%) being the most dominant. These families have a significant presence among the recorded weeds. Herbaceous plants were represented with the highest number of species (68%), followed by shrubs (16%), under shrubs (10%), climbers and vines (2%), creeping herb and lianas (1%). The paper also highlights the utilization of some weed species as medicines and vegetables for consumption by the local population as well as fodder for animals. The current study will provide an inventory of the common angiosperm weeds in Kohima District providing a valuable resource for local biodiversity preservation and also help researchers, scientists, farmers, and students who want to conduct further studies in this field.

Key words: Diversity, Angiosperm weeds, Ethnobotany, Kohima, Nagaland

Introduction

Weeds represent the most significant and pervasive biological obstacle to agricultural production systems, leading to harm in both cultivated and uncultivated areas. They diminish crop yields, compromise produce quality, and escalate production costs. In addition to causing yield and nutrient losses, weeds also act as shelters and alternate hosts for various insect pests and diseases, potentially decreasing land value. In non-cultivated areas, weeds also pose health risks and contribute to biodiversity loss (Rao *et al.*, 2018). These plants are often categorised into one of the three life cycle groups: annuals, biennials or perennials. Various definitions have been formulated for weeds, depending on the context in which they exist and the plants involved.

According to Thomas *et al.* (2002), a weed is a plant that grows where it is not wanted or a plant that is out of place. As per Barbara *et al.* (2003), a weed is a native or introduced (alien) species that has a perceived negative ecological or economic impact on agricultural or natural systems. Navas (1991) defined a weed as “a plant that forms populations that can invade cultivated habitats, which are severely disturbed or occupied by humans, and potentially depress or displace the native plant populations that are intentionally cultivated or are of ecological and/or aesthetic significance”. The concept of weeds as superfluous plants emerged as humans intentionally began cultivating plants for food (Martin, 2021). A plant is considered a weed not only based on its characteristics and habitat but also on its relative position among other plants and human activity

(Neogi and Rao, 1982). Interestingly, many plants commonly considered weeds have beneficial purposes and are intentionally cultivated in gardens and agricultural fields. These are often referred to as “beneficial weeds” for their ability to attract pollinators, enhance soil quality, provide food and medicine, create wildlife habitats and contribute to aesthetics and landscaping (Khatun *et al.*, 2018). In certain arid regions of India, the growth of millet *Cenchrus americanus* has been found to be promoted by the presence of three weeds, namely *Arnebia hispidissima*, *Spermacoce articularis* and *Celosia argentea* (Bhandari and Sen, 1979). While weed plants generally have a negative allusion in relation to both crops and non-crop plants, some also possess beneficial properties. Numerous studies have explored the medicinal importance and diversity of weeds in agricultural settings, undertaken by several researchers (Rahman, 2013; Neogi and Rao, 1982; Johnson, 1997; Tomita *et al.*, 2003; Antralina *et al.*, 2015; Mallick, *et al.*, 2015; Bhattacharjya and Sarma, 2016; Jana, 2016; Sen *et al.*, 2016; Sureshkumar *et al.*, 2016; Radha and Manokari, 2017; Khatun and Rahman, 2018; Lakshmanan *et al.*, 2022; Konyak *et al.*, 2022). However, so far no work on documenting the diversity of common angiosperm weed plants has been done from Kohima District. Therefore, the present attempt has been made to document the diversity and ethnobotanical use of some common angiosperm weeds in Kohima District, Nagaland.

Materials and Methods

Study area

Kohima located in the Southern part of Nagaland lies approximately between 25.40° N latitude and 94.08° E longitude situated at an elevation of 1444 m above sea level and covers an area of 4.041 sq. km of the total geographical area of the state (Deorani and Sharma, 2007) surrounded by Manipur to the South, Wokha to the North, Zunheboto to the East and Dimapur to the West. Kohima features a pleasant and moderate climate with rainy summers and very cold winters. December to February is considered the coldest months when frost occurs and occasional snowfall occurs at higher altitudes, June to August are the hottest months when the temperature rises to about 30 °C; however, the heat is suppressed due to heavy rainfall. Agriculture is the main occupation

and people practice terraced cultivation and double cropping on large scale. A significant portion of Nagaland’s population relies on farming as their primary occupation, leading it to be a crucial contributor to the state’s economy. This traditional practice is deeply ingrained in Naga culture and has been passed down through generations, providing both employment opportunities and a stable source of income for many (Solo and Kikhi, 2021).

Field survey, collection and identification

A field survey for the collection of specimens was carried out at different locations in Kohima District from April 2021 to September 2022. Random weed collection was done along with photographs; the morphology, habitat, habit, etc. of the collected plants was noted in the field. Plants or their twigs with flowers and or fruits were collected as vouchers; the specimens were then processed for herbarium following the standard procedure by Jain and Rao, 1977. Identification of weed plants was done with available regional floras (Hooker *et al.*, 1872-1897; Kanjilal *et al.*, 1943-1940; Singh *et al.*, 2002; Sapu and Gurung, 2017) and related literatures. Nomenclature of all the reported weeds was authenticated using online database (Plants of the World Online, <https://powo.science.kew.org/>, accessed on 08-07-2023). The collected plant specimens are deposited at the Herbarium Department of Botany, Nagaland University, Lumami.

Results and Discussion

In the present study, a total of 118 weeds were documented. Out of the total 21 species were monocots and 97 species were dicots belonging to 33 families and 92 genera. The family Compositae was recorded as the most dominant family among the dicots represented by (23 spp.), followed by Leguminosae (20 spp.), Malvaceae and Amaranthaceae (6 spp. each), Solanaceae and Polygonaceae (4 spp. each), Convolvulaceae and Plantaginaceae (3 spp. each), Verbenaceae, Melastomataceae, Onagraceae, Oxalidaceae, Urticaceae, Phyllanthaceae, Euphorbiaceae, Acanthaceae and Rosaceae (2 spp. each), Brassicaceae, Lamiaceae, Apiaceae, Srophulariaceae, Violaceae, Caryophyllaceae, Primulaceae, Papaveraceae, Lobeliaceae, Ranunculaceae and Lythraceae with one species each. Among the monocot family, Poaceae was recorded with the highest number of species (9 spp.),

followed by Cyperaceae (6 spp.), Commelinaceae (3 spp.), Juncaceae, and Eriocaulaceae with one species each. Among different growth forms (Herbs, shrubs, under-shrubs, creeping herbs, vines, lianas and climbers), herbaceous plants show the highest number of species (Figure 3). An enumeration of the collected plant species recorded was presented with the botanical name, vernacular name (wherever available), common name, family, habit, voucher number and uses (Table 1). Family-wise distribution of the documented plants has been presented in Figure 2. Photographs of some of the collected weed plants are also given in Figure 1.

Several plant species documented from the region play crucial roles for the local residents living in and around the study area, such as providing sustenance, medicinal benefits, fodder, ornamental value and serving other household needs. Plants such as *Buddleja asiatica*, *Carex baccans*, *Celosia argentea*, *Lantana camara*, *Thunbergia grandiflora* and

Tithonia diversifolia are typically cultivated for their visual beauty and ornamental value. Ethno-medicinal knowledge of some weed plants was also discussed and details on the plant parts used and mode of utilization were gathered through group discussion and interviews from the local people, village elders, local herbalists and traditional medicine practitioners. From the documented species, 82 species were found to have medicinal properties which were used by the local inhabitants for curing various common ailments like skin diseases, cuts and burns, gastrointestinal problems, diabetes, hypertension, indigestion, fever, toothache, headache, diarrhea, etc. Plants like *Ageratum conyzoides*, *Biden pilosa*, *Centella asiatica*, *Ageratina adenophora*, *Mikania micrantha*, *Ranunculus diffusus*, *Persicaria capitata* and *Urena lobata* are used for treating various skin-related diseases. *Plantago major*, *P. asiatica* subsp. *erosa*, *P. asiatica*, *C. asiatica*, *Osbeckia stellata* var. *crinita*, *Oxalis debilis*, *O. corniculata*, *Fagopyrum esculentum*,

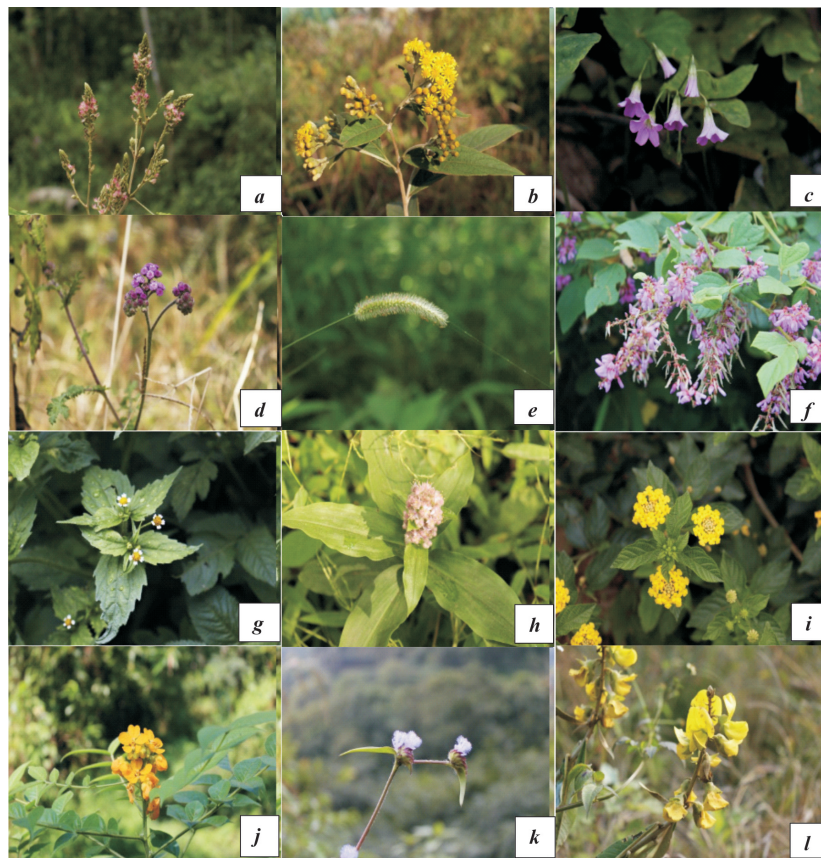


Fig. 1a. *Flemingia macrophylla* (Willd.) Kuntze ex Merr., *b. Duhaldea cappa* (Buch.-Ham. Ex D.Don) Pruski & Anderb., *c. Oxalis debilis* Kunth, *d. Cyathocline purpurea* (Buch.-Ham. ex D.Don) Kuntze, *e. Imperata cylindrica* (L.) Raeusch., *f. Puhuaea sequax* (Wall.) H. Ohashi & K. Ohashi, *g. Galinsoga parviflora* Cav., *h. Floscopa scandens* Lour., *i. Lantana camara* L., *j. Senna hirsuta* (L.) H.S. Irwin & Barneb., *k. Cyanotis vaga* (Lour.) Schult. & Schult.f., *l. Crotalaria juncea* L.

Table 1. List of common angiosperm weeds of Kohima District, Nagaland

Sl. No.	Family	Scientific name	Vernacular name	Common name	Habit	Life span	Voucher number	Use
1.	Malvaceae	<i>Abelmoschus moschatus</i> Medik.	-	Musk mallow	S	Perennial	NU-BOT-RK-324	M
2.	Amaranthaceae	<i>Achyranthes aspera</i> L.	Rhamie	Prickly chaff flower	H	Perennial	NU-BOT-RK-285	M
3.	Compositae	<i>Acmella oleraceae</i> (L.) R.K.Jansen	Kevenha	Toothache plant	H	Annual and Perennial	NU-BOT-RK-221	M
4.	Leguminosae	<i>Aeschynomene americana</i> L.	-	Shyleaf	H/US	Annual or Perennial	NU-BOT-RK-225	M
5.	Leguminosae	<i>Aeschynomene indica</i> L.	-	Indian joint vetch	H/US	Annual and Perennial	NU-BOT-RK-229	M
6.	Compositae	<i>Ageratina adenophora</i> (Spreng.) R.M. King & H.Rob	Japan nha	Crofton weed	H	Perennial	NU-BOT-RK-192	M
7.	Compositae	<i>Ageratina riparia</i> (Regel) R.M.King&H.Rob.	-	Mistflower	S/US	Perennial	NU-BOT-RK-291	M
8.	Compositae	<i>Ageratum conyzoides</i> (L.) L.	Nhasa	Chick weed	H	Annual	NU-BOT-RK-214	M
9.	Amaranthaceae	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	Dziibou	Alligator weed	H	Perennial	NU-BOT-RK-304	F, M
10.	Amaranthaceae	<i>Amaranthus spinosus</i> L.	Nyiedza	Spiny pig weed	H	Annual	NU-BOT-RK-321	E, M
11.	Amaranthaceae	<i>Amaranthus viridis</i> L.	Teirhiitiepfi	Pig weed	H	Annual	NU-BOT-RK-329	E, M
12.	Papaveraceae	<i>Argemone mexicana</i> L.	Kikhahu	Mexican prickly poppy	H	Annual	NU-BOT-RK-286	M
13.	Compositae	<i>Artemisia indica</i> Willd.	Ciena	Indian wormwood	H/US	Perennial	NU-BOT-RK-315	M
14.	Compositae	<i>Artemisia nilagirica</i> (C.B.Clarke) Pamp.	Ciena	Nilgiri wormwood	S	Perennial	NU-BOT-RK-297	M
15.	Compositae	<i>Bidens pilosa</i> L.	Zorha	Beggar's tick	H	Annual and Perennial	NU-BOT-RK-206	E, F, M
16.	Phyllanthaceae	<i>Breynia retusa</i> (Dennst.) Alston	-	Cup saucer plant	S/T	Perennial	NU-BOT-RK-301	M
17.	Scrophulariaceae	<i>Buddleia asiatica</i> Lour.	Chirid	Asian butterfly bush	S	Perennial	NU-BOT-RK-158	M, O
18.	Brassicaceae	<i>Cardamine hirsuta</i> L.	Seguoga	Bittercress	H	Annual or Biennial	NU-BOT-RK-296	E, M
19.	Cyperaceae	<i>Carex baccans</i> Nees	-	Crimson seeded sedge	H	Perennial	NU-BOT-RK-330	O
20.	Amaranthaceae	<i>Celosia argentea</i> L.	-	Plumed cockscomb	H	Annual	NU-BOT-RK-232	E, O
21.	Apiaceae	<i>Centella asiatica</i> (L.) Urb.	Gara	Indian pennywort	H	Perennial	NU-BOT-RK-199	E, M
22.	Leguminosae	<i>Chamaecrista mimosoides</i> (L.) Greene	-	Feather-leaved Cassia	H	Annual	NU-BOT-RK-140	NK
23.	Compositae	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	-	Devil weed	S	Perennial	NU-BOT-RK-314	M
24.	Commelinaceae	<i>Commelina benghalensis</i> L.	Akhovepii	Tropical spiderwort	H	Annual and Perennial	NU-BOT-RK-305	M
25.	Compositae	<i>Conyza canadensis</i> (L.) Cronquist	-	Horse weed	H	Annual and Biennial	NU-BOT-RK-356	M
26.	Compositae	<i>Crassocephalum crepidioides</i> (Benth.) S.Moore	-	Fire weed	H	Annual	NU-BOT-RK-342	M, F

Table 1. Continued ...

Sl. No.	Family	Scientific name	Vernacular name	Common name	Habit	Life span	Voucher number	Use
27.	Leguminosae	<i>Crotalaria juncea</i> L.	-	Indian hemp	H/US	Annual	NU-BOT-RK-138	M
28.	Leguminosae	<i>Crotalaria pallida</i> Aiton	Nangliba	Smooth Rattle box	H	Annual	NU-BOT-RK-290	M
29.	Commelinaceae	<i>Cyanotis vaga</i> (Lour.)	-	Wandering Dew-	H	Perennial	NU-BOT-RK-151	NK
30.	Compositae	Schult.&Schult.f. <i>Cyathocline purpurea</i> (Buch.-Ham. ex D.Don) Kuntze	-	Grass Gangotra	H	Annual	NU-BOT-RK-322	M
31.	Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Phiechu	Bermuda grass	CH	Perennial	NU-BOT-RK-355	M
32.	Cyperaceae	<i>Cyperus brevifolius</i> (Rottb.) Hassk.	-	Greenhead sedge	H	Perennial	NU-BOT-RK-351	M
33.	Cyperaceae	<i>Cyperus difformis</i> L.	-	Small-flower umbrella sedge	H	Annual	NU-BOT-RK-287	F
34.	Cyperaceae	<i>Cyperus rotundus</i> L.	Kiutsu	Nut grass	H	Perennial	NU-BOT-RK-343	M
35.	Compositae	<i>Dichrocephala integrifolia</i> (L.f.) Kuntze	-	Button weed	H	Annual	NU-BOT-RK-288	M
36.	Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler	-	Southern crab grass	H	Annual	NU-BOT-RK-353	M
37.	Convolvulaceae	<i>Dinetus racemosus</i> (Roxb.) Buch.-Ham. ex Sweet	-	Snow creeper	C	Annual and Perennial	NU-BOT-RK-323	NK
38.	Caryophyllaceae	<i>Drymaria cordata</i> (L.) Willd. exSchult.	Pfiipfinuo	Chickweed	H	Annual	NU-BOT-RK-220	M
39.	Compositae	<i>Duhaldia cappa</i> (Buch.-Ham. Ex D.Don) Pruski&Anderb.	-	Sheep's ear	S	Perennial	NU-BOT-RK-289	M
40.	Poaceae	<i>Eleusine indica</i> (L.) Gaertn.	-	Indian goosegrass	H	Annual	NU-BOT-RK-344	M
41.	Compositae	<i>Emilia sonchifolia</i> (L.) DC.	-	Cupid's shaving brush	H	Annual	NU-BOT-RK-331	E, M
42.	Poaceae	<i>Eragrostis unioides</i> (Retz.) Nees ex Steud.	-	Canegrass	H	Annual	NU-BOT-RK-316	F
43.	Eriocaulaceae	<i>Eriocaulon cinereum</i> R.Br.	-	Pipeworts	H	Annual and Perennial	NU-BOT-RK-328	M
44.	Euphorbiaceae	<i>Euphorbia heterophylla</i> L.	-	Japanese poinsettia	H	Annual	NU-BOT-RK-368	M
45.	Euphorbiaceae	<i>Euphorbia hirta</i> L.	Dudiya	Snake weed	H	Annual	NU-BOT-RK-345	E, F, M
46.	Polygonaceae	<i>Egopyrum esculentum</i> Moench	Garei	Buckwheat	H	Annual	NU-BOT-RK-197	E, F, M
47.	Cyperaceae	<i>Fimbristylis dichotoma</i> (L.) Vahl	-	Common fringe sedge	H	Annual	NU-BOT-RK-363	NK
48.	Cyperaceae	<i>Fimbristylis quinqueangularis</i> (Vahl) Kunth	-	-	H	Annual and Perennial	NU-BOT-RK-358	NK
49.	Leguminosae	<i>Flemingia macrophylla</i> (Willd.) Kuntze ex Merr.	-	-	S	Perennial	NU-BOT-RK-144	M
50.	Commelinaceae	<i>Floscopa scandens</i> Lour.	-	Climbing flower cup	H	Perennial	NU-BOT-RK-302	M
51.	Rosaceae	<i>Fragaria nilgerrensis</i> Schltdl. ex J.Gay	Jalinkhumthera	Nilgiri Strawberry	H	Perennial	NU-BOT-RK-337	M
52.	Compositae	<i>Galinsoga parviflora</i> Cav.	Rothan	Gallant soldier	H	Annual	NU-BOT-RK-362	E, M
53.	Amaranthaceae	<i>Gomphrena serrata</i> L.	-	-	H	Perennial	NU-BOT-RK-346	M

Table 1. Continued ...

Sl. No.	Family	Scientific name	Vernacular name	Common name	Habit	Life span	Voucher number	Use
54.	Leguminosae	<i>Grona heterocarpus</i> (L.) H.Ohashi & K. Ohashi	-	Asian ticktrefoil	H	Perennial	NU-BOT-RK-306	NK
55.	Leguminosae	<i>Hylodesmum repandum</i> (Vahl) H.Ohashi & R.R.Mill	-	Tick-Trefoils	H	Perennial	NU-BOT-RK-369	M
56.	Acanthaceae	<i>Hypoestes phyllostachya</i> Baker	-	Polka dot plant	H/US	Perennial	NU-BOT-RK-307	M
57.	Poaceae	<i>Imperata cylindrica</i> (L.) Raeusch.	-	Cogongrass	H	Perennial	NU-BOT-RK-352	M
58.	Leguminosae	<i>Indigofera nigrescens</i> King & Prain	-	-	S		NU-BOT-RK-332	NK
59.	Convolvulaceae	<i>Ipomoea hederifolia</i> L.	-	Red morning glory	V	Annual	NU-BOT-RK-317	F
60.	Convolvulaceae	<i>Ipomoea quamoclit</i> L.	Tamlata	Cypress vine	V	Annual	NU-BOT-RK-359	M
61.	Poaceae	<i>Ischaemum sayajiraol</i> Raole & R.J.Desai	-	Jungle rice	H	Annual	NU-BOT-RK-357	E, M, F
62.	Juncaceae	<i>Juncus effusus</i> L.	-	Common rush	H	Perennial	NU-BOT-RK-347	M, C
63.	Leguminosae	<i>Kummerowia striata</i> (Thunb.) Schindl.	-	Japanese clover	H	Annual	NU-BOT-RK-327	NK
64.	Leguminosae	<i>Lablab purpureus</i> (L.) Sweet	Teisritsiii	Hyacinth bean	C	Annual and Perennial	NU-BOT-RK-223	M
65.	Verbenaceae	<i>Lantana camara</i> L.	Anitong	Lantana	S	Perennial	NU-BOT-RK-218	M, O
66.	Leguminosae	<i>Leptodesmia microphylla</i> (Thunb.) H.Ohashi & K.Ohashi	-	-	S	Perennial	NU-BOT-RK-354	NK
67.	Lamiaceae	<i>Leucas aspera</i> (Willd.) Link	Sinus moziitong	Thumbai	H	Annual	NU-BOT-RK-361	E, M
68.	Lobeliaceae	<i>Lobelia nummularia</i> Lam.	Murusako	-	H	Perennial	NU-BOT-RK-360	M
69.	Onagraceae	<i>Ludwigia adscendens</i> (L.) H.Hara	-	Water primrose	H(Aquatic)	Perennial	NU-BOT-RK-299	E, M
70.	Melastomataceae	<i>Melastoma malabathricum</i> L.	Akhamu	Indian Rhododendron	S	Perennial	NU-BOT-RK-348	E, M
71.	Compositae	<i>Mikania micrantha</i> Kunth	Japanza	Climbing hemp vine	C	Perennial	NU-BOT-RK-338	M
72.	Leguminosae	<i>Mimosa pudica</i> L.	Keriinganha	Touch-me-not	H/US	Perennial	NU-BOT-RK-350	M
73.	Solanaceae	<i>Nicotiana tabacum</i> L.	Tekhu-Khuprii	Tobacco	H	Perennial	NU-BOT-RK-163	M
74.	Onagraceae	<i>Oenothera rosea</i> L'Hér.ex.Aiton	-	Rosy evening primrose	H	Perennial	NU-BOT-RK-336	NK
75.	Melastomataceae	<i>Osbeckia stellata</i> var. <i>crinita</i> (Benth. ex Naudin) C.Hansen	Koukhe	-	S	Perennial	NU-BOT-RK-308	E, F
76.	Oxalidaceae	<i>Oxalis corniculata</i> L.	Thezutsiituo	Creeping wood sorrel	H	Annual and Perennial	NU-BOT-RK-211	E, M
77.	Oxalidaceae	<i>Oxalis debilis</i> Kunth	Keve	Pink-sorrel	H	Perennial	NU-BOT-RK-339	M
78.	Compositae	<i>Parthenium hysterophorus</i> L.	-	Congress grass	H	Annual	NU-BOT-RK-367	M
79.	Poaceae	<i>Paspalum repens</i> P.J.Bergius	-	Swamp bead grass	H	Annual	NU-BOT-RK-318	NK
80.	Poaceae	<i>Paspalum scrobiculatum</i> L.	-	Kodo millet	H	Annual	NU-BOT-RK-309	E
81.	Polygonaceae	<i>Persicaria capitata</i> (Buch.-Ham. ex D Don) H.Gross	Uciipumithishe	Knotweed	H	Perennial	NU-BOT-RK-340	M
82.	Polygonaceae	<i>Persicaria hydropiper</i> (L.) Delarbre	Priizhie	Pepper-wort	H	Annual	NU-BOT-RK-219	E

Table 1. Continued ...

Sl. No.	Family	Scientific name	Vernacular name	Common name	Habit	Life span	Voucher number	Use
83.	Phyllanthaceae	<i>Phyllanthus urinaria</i> L.	Bhu-amla	Gripweed	H	Annual and Perennial	NU-BOT-RK-333	E, M
84.	Plantaginaceae	<i>Plantago asiatica</i> subsp <i>erosa</i> (Wall.) Z. Yu Li	Gapa	Foothill plaintain	H	Perennial	NU-BOT-RK-194	E, M
85.	Plantaginaceae	<i>Plantago asiatica</i> L.	Gapa	Asiatic plantain	H	Perennial	NU-BOT-RK-326	E, M
86.	Plantaginaceae	<i>Plantago major</i> L.	Gapa	Common plantain	H	Perennial	NU-BOT-RK-364	E, M
87.	Rosaceae	<i>Potentilla fulgens</i> Wall.ex Sims	Bajradanti	Himalayan Cinquefoil	H	Perennial	NU-BOT-RK-313	M
88.	Primulaceae	<i>Primula vulgaris</i> Huds.	-	Primrose	H	Perennial	NU-BOT-RK-349	NK
89.	Compositae	<i>Pseudognaphalium affine</i> (D.Don) Anderb.	Chienega	Cotton weed	H	Annual	NU-BOT-RK-217	E, M
90.	Leguminosae	<i>Pueraria montana</i> (Lour.) Merr.	-	Kudzu vine	V	Perennial	NU-BOT-RK-293	E, M
91.	Leguminosae	<i>Puhuaea sequax</i> (Wall.) H. Ohashi & K.Ohashi	-	-	S	Perennial	NU-BOT-RK-136	NK
92.	Ranunculaceae	<i>Ranunculus diffusus</i> DC.	-	Yellow spur	H	Perennial	NU-BOT-RK 370	M
93.	Lythraceae	<i>Rotala rotundifolia</i> (Buch.-Ham. ex Roxb.) Koehne	Labukleiri	Roundleaf tooth cup	H(Semi-aquatic)	Perennial	NU-BOT-RK-189	E, M
94.	Polygonaceae	<i>Rumex nepalensis</i> Spreng.	-	Nepal Dock	H	Perennial	NU-BOT-RK-303	E
95.	Leguminosae	<i>Senna corymbosa</i> (Lam.) H.S. Irwin & Barneby	-	-	S	Perennial	NU-BOT-RK-239	NK
96.	Leguminosae	<i>Senna hirsuta</i> (L.)H.S. Irwin & Barneby	-	Woolly Cassia	H/US	Perennial	NU-BOT-RK-365	M
97.	Leguminosae	<i>Senna tora</i> (L.) Roxb.	-	Sicklepod	H	Annual	NU-BOT-RK-310	M
98.	Malvaceae	<i>Sida acuta</i> Burm.f.	-	Common wireweed	S	Perennial	NU-BOT-RK-150	M
99.	Malvaceae	<i>Sida cordifolia</i> L.	-	Country mallow	US	Annual and Perennial	NU-BOT-RK-298	M
100.	Leguminosae	<i>Solmaea laxiflora</i> (DC.) H. Ohashi & K. Ohashi	-	-	H	Annual and Perennial	NU-BOT-RK-131	M
101.	Solanaceae	<i>Solanum nigrum</i> L.	Gatsi	Black nightshade	H/US	Perennial	NU-BOT-RK-319	E, M
102.	Solanaceae	<i>Solanum torum</i> Sw.	-	Devil's fig	S/T	Annual	NU-BOT-RK-237	E, M
103.	Solanaceae	<i>Solanum viarum</i> Dunal	Chiikrii	Tropical soda apple	S	Perennial	NU-BOT-RK-334	M
104.	Compositae	<i>Sonchus wightianus</i> DC.	Nhana	Wight's sow-thistle	H	Perennial	NU-BOT-RK-366	M
105.	Compositae	<i>Sphagnetocola trilobata</i> (L.) Pruski	-	Yellow creeping daisy	H	Perennial	NU-BOT-RK-341	NK
106.	Verbenaceae	<i>Stachytarpheta jamaicensis</i> (L.)Vahl	-	Blue porter weed	H	Perennial	NU-BOT-RK-300	M
107.	Compositae	<i>Synedrella nodiflora</i> (L.) Gaertn.	-	Cinderella weed	H	Annual	NU-BOT-RK-312	E, M
108.	Leguminosae	<i>Tadelagus triquetrum</i> (L.) H. Ohashi	-	Winged-stalk desmodium	US	Perennial	NU-BOT-RK-295	M
109.	Acanthaceae	<i>Thunbergia grandiflora</i> Roxb. Koktruli-tong	-	Sky vine	L	Perennial	NU-BOT-RK-371	M, O
110.	Compositae	<i>Tithonia diversifolia</i> (Hemsl.) A. Gray	-	Mexican sunflower	H/S	Annual and Perennial	NU-BOT-RK-111	M, F, O

Table 1. Continued ...

Sl. No.	Family	Scientific name	Vernacular name	Common name	Habit	Life span	Voucher number	Use
111.	Compositae	<i>Tridax procumbens</i> (L.) L.	Zorha	Tridax daisy	H	Annual	NU-BOT-RK-320	M
112.	Malvaceae	<i>Triumfetta obliqua</i> Roth	-	Hairy Burr-bush	US	Perennial	NU-BOT-RK-292	M
113.	Malvaceae	<i>Triumfetta rhomboides</i> Jacq.	-	Burr-bush	US	Annual and Perennial	NU-BOT-RK-311	M
114.	Malvaceae	<i>Urena lobata</i> L.	Kouchii	Caesarweed	S	Perennial	NU-BOT-RK-135	M
115.	Poaceae	<i>Urochloa ramosa</i> (L.) T.Q. Nguyen	-	Browntop millet	H	Perennial	NU-BOT-RK-335	NK
116.	Urticaceae	<i>Urtica ardens</i> Link	Zozie	Himalayan nettle	H	Annual and Perennial	NU-BOT-RK-215	E, F, M
117.	Urticaceae	<i>Urtica fissa</i> E. Pritz.	Zozie	Stinging nettle	H	Perennial	NU-BOT-RK-325	NK
118.	Violaceae	<i>Viola pilosa</i> Blume	-	Banafshah	H	Perennial	NU-BOT-RK-294	NK

[Abbreviations: H= Herb, S= Shrub, CH= Creeping herb, US= Under shrub, V= Vine, C- Climber, L= Liana, E= Edible, F= Fodder, O= Ornamental, M= Medicine, NK= Not known]

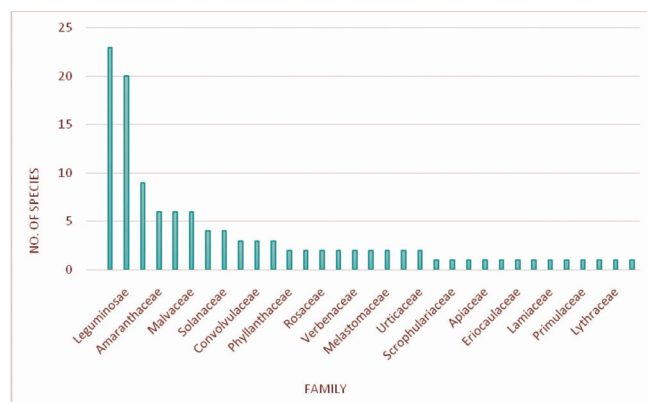


Fig. 2. Family-wise representation of angiosperm weeds

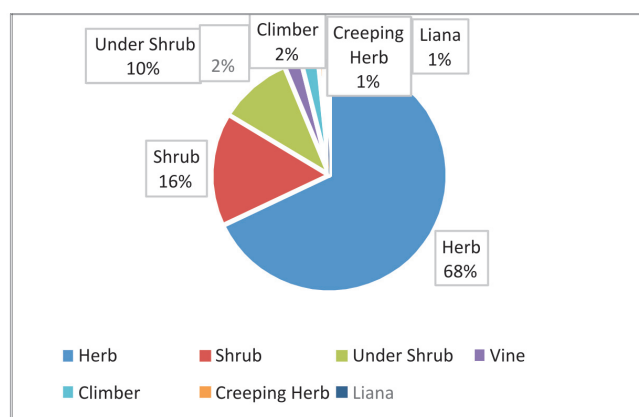


Fig. 3. Percentage composition based on the life-form

Lablab purpureus, *Potentilla fulgens* and *Phyllanthus urinaria* are used against gastrointestinal problems, diarrhea and dysentery. *Drymaria cordata*, *Leucas aspera*, *Mikania micrantha* and *P. capitata* are used as an antidote against insect and snake bites. The species like *Alternanthera philoxeroides*, *Galinsoga parviflora*, *Urtica ardens* and *U. fissa* are used for feeding livestock. Leaves of *Artemisia indica* and *A. nilagirica* are burnt and used as mosquito repellent.

Weed consumption is a global phenomenon and despite recommendations from agricultural scientists to eradicate them, it's worth noting that 89% of the most widespread and aggressive weeds around the world are actually edible. In addition, many of these weed species are highly nutritious and have medicinal properties (Panda, et al., 2020). Plants like *Cardamine hirsuta*, *C. asiatica*, *F. esculentum*, *L. purpureus*, *P. asiatica*, *P. capitatum*, *Acmella oleracea*, *O. corniculata*, *Persicaria hydropiper*, *Pseudognaphalium affine*, *Solanum torvum* and *U. ardens* are usually cultivated in kitchen gardens and taken as a vegetable.

Conclusion

This study extensively analyses the diverse weed population found in Kohima District of Nagaland. Within the dicots, the Compositae family is the most prominent with 23 distinct species, while among the monocots; the Poaceae family was reported with 9 species. The research also shows that several weed species in the area possess ethnobotanical properties, with some offering multiple medicinal uses. Thus, creating awareness programs to educate farmers and common people about the benefits of these weed plants is crucial. The study also identifies rapidly proliferating weed species like *M. micrantha*, *A. conyzoides*, *A. adenophora*, *L. camara*, *Paspalum repens*, *Urochloa ramosa*, *Cynodon dactylon* etc. in the area highlighting the urgency of developing effective weed management strategies considering both current and future perspectives.

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Declarations

Conflicts of interest/Competing interests: The authors declare that they have no conflict of interest.

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