MEDICINAL WEEDS IN THE RICE FIELD OF KATHMANDU VALLEY, NEPAL

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ABSTRACT
Weed management in the crop field is one of the major challenges of agriculture. It has been reported that new weeds are encroaching crop fields due to anthropogenic activities such as the use of insecticides, pesticides and chemical fertilizer, and also due to climatic changes including warming temperatures, erratic and unseasonal precipitation, flood and landslides. The agricultural history of Kathmandu valley is quite old, which represents one of the highly productive valleys in of Nepal for agricultural crops including rice, indicating the long history of weeds in the region. There are quite a lot number of medicinally important plants found in rice field as weeds. Traditional practitioners are using these weeds in curing diseases as primary health care, and the utilization of weeds is the best method of weed management. The objective of this present study was to enumerate the weeds in and around paddy field and gather their medicinal properties of weeds among the local people of Kathmandu valley in order to assist with the weed management of paddy field. The periodic field survey was conducted in 9 selected sites, 3 from each district (Kathmandu, Lalitpur, and Bhaktapur) during summer 2012-2014 (two times: crop matured seasons and just after harvesting). We found 104 weed species belonging to 36 families in the rice field of Kathmandu valley that have medicine values.

Key words: Kathmandu valley, medicinal plants; rice; weeds

INTRODUCTION
After the domestication of plants, man has inherited rich traditional knowledge on the use of surrounding plants for different daily activities of life like food, medicine, tannin, dye, resin, fodder, fibres, woods, fuel, cosmetics, and crafts and for religious ceremonies. Cultivation of food plants like rice, wheat, maize is very important for the survival of people contributing as the major source of energy. Rice (Oryza sativa) is one of the predominant cereal crops of Nepal with rice-wheat cropping as a major farming practice. It is cultivated mainly during June-July. Paddy covers about 20 percent of the gross domestic agricultural production forming the supply of more than fifty percent calorie requires for Nepalese people (Basnet, 2004). Although the lowland of Nepal (Terai) alone contributes more than 80 percent rice production in Nepal, rice is cultivated in range of habitats up to the elevation of over 3000 m asl (NAARC, 2000). Due to the wide range of geographic location of rice, it also includes wide range of weeds that continuously interact with rice plantation challenging the production of the crop.

In agriculture ecosystem, weeds compete with crops for soil nutrients, moisture and light, etc. Weeds are any unwanted plant of the unwanted site and unwanted time, whether native or non-
native species (Aldrich, 1984). Weeds may become a source of disease and a host of insects or parasites. Literally, every weed is considered as unwanted plant of farmland at unwanted time. Those plants which usually grow where they are not wanted, and usually, interfere with the production of cultivated crops, are considered to be weeds (Ranjit and Bhattarai, 1988). Hence, the weeds are harmful to the crops as they decrease crop productivity by altering soil nutrients or by infecting crops directly. It was mentioned that about 12 percent of crop loss was attributed to weeds (Anaya, 1999). Weeds reduce the crop yield either by reducing the amount of harvestable product (grain, forage) or by reducing the amount of crop actually harvested (Aldrich, 1984). The energy expended for the weeding of man’s crops is sometimes more than for any other single human task (Holm, 1971). The weeds cannot harm the crop yield in their low density instead they could stimulate crop growth (Thijssen, 1999). Meanwhile, it is not always true that all weeds are unwanted and harmful plants. Some weeds possess economic values as medicinal, nutrition, industries and fodder forms. Usually, weeds are destroyed during crops seasons by mechanically or by using chemicals or weedicides. It is not always beneficial to remove weeds from crops fields because of their role in nutrient cycling. Several pieces of literature emphasize to establish nutritional relationship between crops and weeds. There are quite numbers of available literatures about medicinal application of weeds (Cunningham, 2001; Dhanam and Elayraj, 2014). Traditional knowledge, practices and identification of medicinally important weeds should be explored to provide medicinal knowledge of weeds, thereby making their maximum use which complements with weed management system in cropland. This work is designed with an objective of identifying the medicinal weeds and documentation of ethnomedicinal uses of weeds present in the paddy fields of Kathmandu valley.

**MATERIALS AND METHODS**

**Study Area**

Kathmandu Valley lies at 1,300 masl and is located between latitudes 27°32’13” and 27°49’10” north and longitudes 85°11’31” and 85°31’38” east. Its three districts, Kathmandu, Lalitpur, and Bhaktapur, cover an area of 899 square kilometres, whereas the area of the valley as a whole is 665 square kilometres. The valley is bowl shaped and surrounded by the Mahabharat mountain range on all sides. There are four hills acting as forts of the valley, Phulchowki in the South East, Chandragiri in the South West, Shivapuri in the North West, and Nagarkot in the North East. The highest altitudes are 2,166m (in Bhaktapur), 2,732m (in Kathmandu), and 2,831m (in Lalitpur).

The climate is good, the soil is fertile, and is endowed with rich forests and scenic beauty. The climate is subtropical, temperate, and cool-temperate, with four distinct seasons: spring from March to May; summer from June to September; autumn from October to November; and winter from December to February. In general, the annual maximum and minimum temperatures are between 29°C in June and 1°C in January. The annual rainfall records for Kathmandu from 1995 to 2003 show fluctuations between 1,171 to 1,868 mm.

The valley is surrounded by four major hills viz. Shivpuri, Phulchoki, Naagarjun and Chandragiri. This survey was conducted in the village area of three districts namely Kathmandu (Dahchok, K1; Matathirth, K2 and Sankhu, K3), Lalitpur (Khokana, L2; Badikhel, L3 and Jharuwarashi, L1), and Bhkatapur (Nagdesh-Madhypur, B1;
Fig. 1: Map showing Kathmandu valley with selected study area

**Methodology**

The study was conducted periodically. Field studies were conducted in summer season in September - October to collect all the weed plants in the flowering stage, due to similar phonological changes in rice. While working on a taxonomic and ethnomedicinal survey of Kathmandu valley, we collected weed plants in rice field and collected medicinal values of collected weeds from local people as well as from existing literature. Observation on habit, habitat, local name and uses were recorded in the field notebooks with the help of local people. Random quadrat method was adopted for studying Phyto socioecological attributes of weeds. We laid down 90 quadrats of 1 x 1 sqm in the studied locations. Plant species were identified in the field with available literature. Specimens that were not identified in the field were collected, pressed and dried in order to prepare herbarium specimens (Siwakoti and Rajbhandari, 2015). All the collected specimens were reconfirmed with the help of standard literature (Hara et al., 1978, Hara and Williams, 1979; Hara et al., 1982; Stainton, 1972; Polunin and Stainton, 1984; Stainton, 1988, Press et al., 2000) and herbarium study. Nomenclature of the species was followed [www.tropicos.org](http://www.tropicos.org).

Ethnomedicinal information of weeds were compiled from local farmers during field visit and additional information with the help of published literatures like Chopra et al. (1956), Kirtikar (1980a), Kirtikar (1980b), Kirtikar (1981a), Kirtikar (1981b), Malla and Shakya (1984), Anonymous (1989), Tiwari and Joshi (1998), AVS (1994), DPR (1997), Rajbhandari and Joshi (1998), Chauhan (1999), Tiwari and Shrestha (2000), Bhattcharjee (2001), DPR (2001), Rajbhandari (2001), Manandhar (2002), Anonymous (2004), Watanabe et al. (2005), Baral and Kurmi (2006).

**RESULT AND DISCUSSION**

We found 104 species of weeds in the rice field of Kathmandu valley belonging to 36 families as medicinal plants. Among them, one is a non-flowering plant and 104 are flowering plants. The dominant plant family is Asteraceae (24 species), followed by Poaceae (8 species), Polygonaceae (6 species), Fabaceae (6 species), Euphorbiaceae (5 species), Cyperaceae (5 species), Amaranthaceae, Caryophyllaceae, Scrophulariaceae (4 species each), Malvaceae, Lamiaceae (3 species each), Verbenaceae, Umbeliferae, Solanaceae, Rosaceae, Plantaginaceae, Lathyraceae, Commelinaceae and Capparidaceae each having 2 species and Acanthaceae, Boraginaceae, Companulaceae, Cannabaceae, Chenopodiaceae, Convolvulaceae, Cruciferae, Geraniaceae,
Nyctaginaceae, Ophioglossaceae, Oxalidaceae, Pedaliaceae, Ranunculaceae, Rubiaceae and Urticaceae with single species each.

Despite being the major crop throughout Nepal and Kathmandu valley, the diversity of weeds in paddy fields are less explored in Nepal with a preoccupied thought that weeds are useless plants. However, there has been significant progress in study of weeds in Nepal in recent years. The study from Paddy field of Kirtipur region (Kathmandu district) enumerated 52 weed species with the maximum weed density in the month of September (Manandhar et al. 2007). The diversity of medicinal weeds, we have reported from Kathmandu valley is very high in comparison to the paddy field of Tamil Nadu India, from where out of reported 145 species, only 39 of them were medicinally used. The greater number of weeds in the paddy fields of Kathmandu valley was also due to the practice of paddy plantation in drier terraces with the rain fed during summer monsoon, and these terraces after paddy harvest remain barren with full of weeds due to the lack of irrigation. And the higher use value of weeds from Kathmandu could be due to the rich cultural diversity and rich traditional knowledge of use of plants from historical time till today.

**Table 1- Enumeration of weeds in the rice fields of Kathmandu valley**

| SN | Weed species                  | Family          | Local name       | Therapeutics applications                                                                 |
|----|-------------------------------|-----------------|------------------|------------------------------------------------------------------------------------------|
| 1  | *Abutilon indicum* (L.) Sweet.| Malvaceae       |                  | Used in dyspepsia, cough, leucorrhoea, piles, toothache, stomach-ache, tuberculosis.       |
|    |                               |                 |                  | Used in Asthma, bronchitis, bed sores, earache, tape worm, ringworm, pneumonia, rheumatism, scabies, ulcers, headache. |
|    |                               |                 |                  | Used in bleeding piles, bronchitis, cough, dropsy, diuretic, dysentery, dyspepsia, skin diseases, toothache, urinary, concretions, vomiting. |
|    |                               |                 |                  | Infusion of the herb is extensively used for curing flatulence, dysentery, colic and other gastrointestinal ailments. |
| 2  | *Acalypha indica* L.          | Euphorbiaceae   |                  | Used to stop bleeding on cut and wounds                                                   |
| 3  | *Achyranthes aspera* L.       | Amaranthaceae Apamarga |            | Useful in body pain, eye disorders, nutritional disorders, piles, stomach-ache.         |
|    |                               |                 |                  | Used in colic, eczema, gonorrhoea, menorrhagia.                                           |
|    |                               |                 |                  | Used as a blood purifier, digesting agent, piles.                                         |
|    |                               |                 |                  | Used as anti-typhoid, anti-tubercular properties, toxic prevention, ringworm, sore, Stomachic, purgative, deobstruent, anthelmintic, Insecticidal, skin diseases, rheumatism, bronchitis, fever, headache |
|    |                               |                 |                  | Used in Anthelmintic, emmengagoue, leucoderma, appetizer, disease of itching, sweating, amenorrhoa, dysmenorrhoa, cures tumours, antiseptic |
|    |                               |                 |                  | An antidote to food poison, contagious fever, headache, cures wounds                     |
| No. | Species                              | Family     | Uses                                                                                      |
|-----|--------------------------------------|------------|-------------------------------------------------------------------------------------------|
| 13  | Berleria cristata L.                 | Acanthaceae| Bhedekuro                                                                                  |
| 14  | Bidens pilosa L.                     | Asteraceae | Kuro                                                                                      |
| 15  | Blumea lacera (Blume f.) DC.          | Asteraceae | Kukur ghans                                                                                |
| 16  | Blumeopsis flava (DC Gagnep.         | Asteraceae |                                                                                           |
| 17  | Boehmeria eldemioides Miq. [= Boehmeria diffusa L. Nytaginaceae | Asteraceae |                                                                                           |
| 18  | Breea arvensis (L.) Less.             | Asteraceae | Thaakal                                                                                    |
| 19  | Cannabis sativa var. indica L.        | Cannabaceae| Gaanja                                                                                     |
| 20  | Capsella bursa-pastoris (L.) Medik.   | Cruciferae | Chasure jhaar                                                                              |
| 21  | Cassia mimosoides L.                 | Fabaceae   | Tapre                                                                                      |
| 22  | Cassia tora L.                       | Fabaceae   | Tapre                                                                                      |
| 23  | Centella asiatica (L.) Urb. Umbelhifera | Umbelifera| Godtapre                                                                                   |
| 24  | Euphorbia hirta L.                   | Euphorbiaceae| Dudhe jhaar                                                                               |
| 25  | Chenopodium album L.                 | Chenopodiaceae| Bethe Saag                                                                                 |
| 26  | Cirsium verutum (D. Don) Spreng.      | Asteraceae | Sungure kanda                                                                              |
| 27  | Cleome gynandra L.                   | Capparidaceae| Junge phul                                                                                 |
| 28  | Cleome viscosa L.                    | Capparidaceae| Ban tori                                                                                   |
| 29  | Clerodendrum serratum (L.) Moon      | Verbenaceae| Chuva, Andekhi                                                                             |
| 30  | Clitoria ternatea L.                 | Fabaceae   | Aparajeeta                                                                                 |
| 31  | Coix lachryma-jobi L.                | Poaceae    | Bhirkaulo                                                                                  |
| 32  | Commelina benghalensis Blume          | Commelinaceae| Kaane jhar                                                                                 |
| 33  | Commelina paludosa Bl                 | Commelinaceae| Kane saag                                                                                  |
| 34  | Convolvulus arvensis L.               | Convolvulaceae|                                                                                           |
| 35  | Conyza stricta Wild.                 | Asteraceae |                                                                                           |

Useful in inflammations, fevers, bronchitis, blood diseases, biliousness, pains and asthma. The extract of the plant is applied in Leprosy, tumour, fistulae diarrhea, and other skin disorder by rural peoples. Astringent, anthelmintic, deobstruant, abdominal disorders, liver disorders, hematemesis, cough, bronchitis, cholera, hypertension, tranquiliser. Used in cuts and wounds. Used as Anaemia, asthma, blood purifier, fever, hastens delivery, inflammation of urinary tract, jaundice, muscular pains, ophthalmic, swelling. Used in indigestion. Astringent, bleeding, most reliable medicine for staying fluxes of blood. Used in Jaundice, scabies, worm control. The leaf juice is specifically used for ringworm and also useful in curing other skin trouble in the rural area. Used in brain tonic, elephantiasis, leprosy, weakness. Used in Asthma, boils, bronchitis, cough, colic troubles, enriches the blood, laxative, piles, swellings, vomiting. Used as digestive, aphrodisiac, dyspepsia, decoction, bronchitis, stomach-ache, spleen enlargement. Root paste is given to fever. Used in earache, inflammation, rheumatic, stomach-ache. Used in cough, dyspepsia, fever. Used as expectorant, antispasmodic, epilepsy, cough, increase appetite, stimulant, antileech, febrifuge, dyspnoea, cough, catarrhal affections, cephalgia, ophthalmia, dropsy. Used for Eye diseases, headache, indigestion, itching, ox, snake bite, warts, worm control. Used in menstrual, disorder, intestinal worms, Diuretics, Pneumonia, Pectoral disease. Used in burns, boils, laxative, leprosy, nervous disorders, swellings. Used in vertigo, Fever, Bilious. Cathartic properties. Cures dysentery and diarrhoea.
| No. | Scientific Name                                      | Family       | Traditional Uses                                                                 |
|-----|-----------------------------------------------------|--------------|----------------------------------------------------------------------------------|
| 36  | *Crotalaria accicularis*                          | Fabaceae     | Used in cure scabies, detoxicant.                                                 |
|     | Buch.-Ham ex Benth.                                 |              |                                                                                 |
| 37  | *Croton bonplandianus*                              | Euphorbiaceae| Used in Arthritis, polio.                                                         |
|     | Baill.                                              |              |                                                                                 |
| 38  | *Cuphea procumbens* L.                             | Lathyraceae  | Used as anti-typhoid, anti-tubercular properties, toxic prevention, ringworm, sore, |
|     |                                                     |              | Used in dysentery, insanity, leucorrhoea, piles, urinary troubles.                 |
| 39  | *Cynodon dactylon* (L.) Pers.                      | Poaceae      | Healing agent for cuts, and wounds, treat ringworm, conjunctivitis, fractures bones, |
|     | *Cynoglossum zeylanicum* (Vahl ex Hornem.) Thunb.  |              | uterine tumours, boils,                                                          |
|     | ex Lehman.                                          |              |                                                                                 |
| 40  |                                                     |              | Used as diuretic, Astringent, Diarrhoea, Gonorrhoea, Syphilis                     |
| 41  | *Cyperus difformis* L.                             | Cyperaceae   | Tumour is used in Abscesses, cholera, cough, diarrhoea, epilepsy, fever, wounds,     |
|     |                                                     |              | erysipelas,                                                                      |
| 42  | *Cyperus iria* L.                                  | Cyperaceae   | Used in Asthma, diuretic, eczema, itching,                                        |
|     |                                                     |              |                                                                                 |
| 43  | *Cyperus rotundus* L.                              | Cyperaceae   | For nasal infection                                                               |
|     |                                                     |              |                                                                                 |
| 44  | *Desmodium gangeticum* (L.) DC                    | Fabaceae     | Used in headache, antipyretic, cold, throat problem, diarrhoea, dysentery         |
|     | *Dichrocephala benthamii* CB Clarke                 | Asteraceae   | Used as a laxative, peptic ulcer, cough and cold                                  |
|     |                                                     |              | Useful in biliousness and constipation and flatulence                              |
| 46  | *Drymaria cordata* L.                              | Caryophyllaceae| Check haemorrhage, disease of the spleen                                          |
|     |                                                     |              |                                                                                 |
| 47  | *Drymaria diandra* Blume                           | Caryophyllaceae| Antisepic for ulcers, emetic, jaundice, nerves problems, purgative, tonic, snakebite. |
|     |                                                     |              | Used as cardiac tonic, diuretics, febrifuge, dysuria, diarrhoea, toothache, rheumatism |
|     |                                                     |              | Astringent, opthalmia, gastropathy, diarrhoea, intermittent fever, asthma, antiasthmatic, cuts and wounds |
|     |                                                     |              |                                                                                 |
| 48  | *Echinochloa colona* (L.) Link                      | Poaceae      | Used in headache                                                                   |
|     | *Echinochloa crus-galli* (L.) P. Beauv.             |              |                                                                                 |
|     |                                                     |              |                                                                                 |
| 50  | *Eclipta prostrata* (L.) L.                         | Asteraceae   | Used in a wound to check bleeding                                                 |
|     |                                                     |              |                                                                                 |
| 51  | *Elephantopus scaber* L.                            | Asteraceae   |                                                                                 |
|     |                                                     |              |                                                                                 |
| 52  | *Emilia sonchifolia* (L.f.) DC                     | Asteraceae   |                                                                                 |
|     |                                                     |              |                                                                                 |
| 53  | *Fimbristylis dichotoma* (L.) Vahl                  | Cyperaceae   |                                                                                 |
|     |                                                     |              |                                                                                 |
| 54  | *Galinsoga parviflora* Cav.                        | Asteraceae   |                                                                                 |
| 55  | *Geranium pratense* L.                              | Geraniaceae  |                                                                                 |
|     |                                                     |              |                                                                                 |
| 56  | *Gnaphalium affine* D.Don Lam.                     | Asteraceae   |                                                                                 |
|     |                                                     |              |                                                                                 |
| 57  | *Hydrocotyle sibthorpioides* Lam.                   | Umbelliferae |                                                                                 |
|     |                                                     |              |                                                                                 |
| 58  | *Imperata cylindrica* (L.) Beauv.                   | Poaceae      |                                                                                 |
|     |                                                     |              |                                                                                 |
| 59  | *Indigofera linifolia* (L.f.) Retz.                 | Fabaceae     |                                                                                 |

Medicinal weeds in the rice field of ...
60 **Jatropha gossypifolia** L. Euphorbiaceae Sajiwan
   Useful in convulsion, syphilis, neuralgia, dropsy, pleurisy, pneumonia

61 **Lantana camara** L. Pedaliaceae Banmara
   Used in cuts, wounds

62 **Leucas aspera** L. [=**Leucas plukenetii** (Roth) Spreng]
   Lamiaceae Ban tulasi
   Used in digestion, fever, head ache, jaundice, stomach disease, snakebite

63 **Lindernia oppositifolia** (L.) Mukerje
   Scrophulariaceae Kankare jhaar
   Chronic bronchitis, mixed with coriander and applied to skin disease, cut and wounds

64 **Lippia nodiflora** L. Verbenaceae
   Used in Asthma, anthelmintic, bronchitis, blood and eye disorders, bowels, burning sensation, fevers, colds, diseases of the heart, stomachic, thirst and loss of consciousness, ulcers, urinary concretions, wounds, vulnerary.

65 **Lobelia chinensis** Lour. Campanulaceae Eklebir
   Snake bites, boils, ascites from cirrhosis, schistosomiasis, nephritis, oedema, enteritis, diarrhoea

66 **Mazus pumilus** (Burm. f.) Steen
   Scrophulariaceae Baghmukhe jhar
   Used cure typhoid

67 **Mazus surculosus** D.Don Scrophulariaceae
   Used in hyperacidity, cut and wounds

68 **Mentha arvensis** L. Lamiaceae Pudina, baabari
   Antiseptic, anthelmintic, cardiotonic, febrifuge, Sudorific, Contraceptive, asthma, splenopathy, cough, jaundice, general weakness, rheumatism, fever, bronchitis, skin diseases, wounds and cuts

69 **Ophioglossum petiolatum** Hook.
   Ophioglossaceae Jibre sag
   Used to treat wounds, cuts, nasal bleeding and check vomiting

70 **Oxalis corniculata** L. Oxalidaceae Chari amili
   Astringent, stimulating wash for ulcers, swollen parts of body, scabies, also used as a fish poison

71 **Persicaria barbatum** L. [=**Persicaria chinensis** (L.) H. Gross]
   Polygonaceae Pire, bikha
   Used as a fish poison, applied in skin disease, stomach-ache

72 **Persicaria hydropiper** (L.) Spach [=**Polygonum hydropiper** L.]
   Polygonaceae Pire
   Juice is used in backache

73 **Persicaria perfoliata** (L.) H. Gross
   Polygonaceae Amilo pire
   Used as cooling, diuretic and diaphoretic

74 **Phragmites karka** (Retz.) Trin ex Steud.
   Cyperaceae Narkat
   Used in Jaundice, diabetes, urinary infections, intermittent fever.

75 **Phyllanthus amarus** Schumach. & Thonn Euphorbiaceae Amala jhar
   In the case of indigestion and boils

76 **Plantago erosa** Wall. Plantaginaceae Isabgol
   Used as diuretics, antidiysentric, expectorant, aphrodisiac, habitual constipation, chronic dysentery, colonalgia, gonorrhoea, nephropathy, duodenal ulcers, general debility, gout, diarrhoea,
| No. | Scientific Name                  | Family          | Common Name         | Uses                                                                 |
|-----|---------------------------------|-----------------|---------------------|----------------------------------------------------------------------|
| 79  | Polygonum plebeium R. Br.       | Polygonaceae    | Bethe, balune saag  | Used in pneumonia, sore throat, blood dysentery                      |
|     |                                 |                 |                     | Used in burns, cardio vascular diseases,                            |
|     |                                 |                 |                     | cholesterol reducer, fever, diarrhoea, diabetes,                    |
|     |                                 |                 |                     | headache, ulcers, urinary disorders, wounds.                        |
| 80  | Portulaca oleracea L.           | Portulacaceae   |                      |                                                                      |
|     |                                 |                 |                     |                                                                      |
| 81  | Duchesnea indica (Andrews)      | Rosaceae        | Bhui kaphal         | Relief in profuse menstruation, fever, blemishes on the tongue      |
|     | Focke. [=Fragaria indica Rosaceae Andrew.] |             |                     |                                                                      |
| 82  | Ranunculus laetus Wall. ex D. Don. | Ranunculaceae | Naak kore           | Used in Jaundice, used to wash the eye, ant treat ophthalmia,       |
|     |                                 |                 |                     | control menstruation, headache, applied joint pain                 |
|     |                                 |                 |                     | Used as antidyssenteric, astringent, anthelmintic,                   |
|     |                                 |                 |                     | rejuvenating, leprosy, skin diseases, jaundice,                     |
|     |                                 |                 |                     | diarrhoea, Wounds, and cuts, urinary diseases, leucorrhoea,         |
|     |                                 |                 |                     | otopathy, febrifuge, efficient blood purifier, ear and eye         |
|     |                                 |                 |                     | diseases, snake bite, leucooderma, rheumatic arthritis              |
| 83  | Rosa sericea Lindl             | Rosaceae        | Jungali Gulaph      | Used in Jaundice, used to wash the eye, ant treat ophthalmia,       |
|     |                                 |                 |                     | control menstruation, headache, applied joint pain                 |
| 84  | Rubia manjith Roxb. ex Fleming  | Rubiaceae       | Majitho             | Used in Jaundice, used to wash the eye, ant treat ophthalmia,       |
|     |                                 |                 |                     | control menstruation, headache, applied joint pain                 |
| 85  | Rumex nepalensis Spreng.        | Polygonaceae    | Hal-Hale            | Used in Jaundice, used to wash the eye, ant treat ophthalmia,       |
|     |                                 |                 |                     | control menstruation, headache, applied joint pain                 |
| 86  | Saccharum officinarum Lindl.    | Poaceae         | Ukhu                | Used as laxative, expectorant, cardiotonic, aphrodisiac,           |
|     |                                 |                 |                     | bronchitis, anaemia, seminal weakness                               |
| 87  | Saccharum spontaneum L.         | Poaceae         | Kans                | Used as laxative, emollient, diuretics, lithotrophic, haemostatics,|
|     |                                 |                 |                     | aphrodisiac                                                         |
| 88  | Salvia plebeia R. Br.            | Lamiaceae       |                      | Used as antiemetics, cardiotonic, dentrifuge, contraceptive,       |
|     |                                 |                 |                     | wounds, cuts, cough, peptic ulcers, splenopathy, dental caries,    |
|     |                                 |                 |                     | jaundice, fever and general weakness                                |
| 89  | Setaria viridis (L.) P.         | Poaceae         | Kukur ghans         | Widely used in Bruises                                              |
|     | Beauv.                          |                 |                     | Astringent, anti-rheumatic, gonorrhoea, leucorrhoea,                |
|     |                                 |                 |                     | heal cuts, nervous disorders, snake bite, scorpion sting, and       |
|     |                                 |                 |                     | wounds.                                                            |
| 90  | Sida cordifolia L.(Burn. f)     | Malvaceae       | Balu                | Demulcent, diuretic, haemorrhoids, stomach-ache                     |
|     | Borss                          |                 |                     | Used in Jaundice, cough, piles, skin diseases, ulcer                |
| 91  | Sida rhombifolia L.             | Malvaceae       | Balu                | Used as an anti-inflammatory and in asthma, constipation,          |
|     |                                 |                 |                     | diuretic, fever, laxative, sore throat, stimulant, cough,           |
| 92  | Solanum nigrum L.              | Solanaceae      | Kali gedi           | Used as an anti-inflammatory and in asthma, constipation,          |
|     |                                 |                 |                     | diuretic, fever, laxative, sore throat, stimulant, cough,           |
|     |                                 |                 |                     | stomach-ache, Used in Jaundice, cough, piles, skin diseases, ulcer |
| 93  | [= Solanum xanthocarpum Schard & Wendl.] | Solanaceae | Bhaise kanda        | Used as an anti-inflammatory and in asthma, constipation,          |
|     |                                 |                 |                     | diuretic, fever, laxative, sore throat, stimulant, cough,           |
|     |                                 |                 |                     | stomach-ache, Used in Jaundice, cough, piles, skin diseases, ulcer |
|     |                                 |                 |                     | As plaster for broken bones and swelling                            |
| 94  | Sonchus oleraceus L.            | Asteraceae      | Dudhe jhaar         | Used as an antibiotic, chronic hepatitis, intermittent fever,      |
|     |                                 |                 |                     | insomnia, jaundice, biliary calculi and other hepatitis, heart     |
| 95  | Spergula arvensis L.            | Caryophyllaceae | Jhyaau jaar         | Used as a fermenting agent                                          |
| 96  | Spilanthes paniculata Wall. ex. DC. | Asteraceae | Bhuin timur         | Used in snake bite, toothache, stomach-ache,                       |
| 97  | Stellaria media (L.) Vill.      | Caryophyllaceae | Armale jaar         | As plaster for broken bones and swelling                            |
| 98  | Taraxacum officinale Wigg.      | Asteraceae      |                      | Used as antibacterial, chronic hepatitis, intermittent fever,      |
|     |                                 |                 |                     | insomnia, jaundice, biliary calculi and other hepatitis, heart     |
CONCLUSIONS

The rich diversity of weeds in paddy fields of Kathmandu valley indicated that the region is one of the potential areas for paddy plantation in Nepal. The higher weed diversity could also be attributed to rich variation in microtopography as well as the farming system of paddy including weeding technique, irrigation system, use of insecticides and pesticides in soil. The entire plant diversity including medicinal plant is threatened due to overexploitation, deforestation and land use changes, more particularly in big cities like Kathmandu. Despite heavy shrinkage in paddy field area in Kathmandu, the weeds are still highly diverse, but their survival could be critically challenged due to rapidly changing climate, emergence of invasive plant species and mainly due to the abandonment of paddy fields from Kathmandu valley.

Since many plants species and their products are used in pharmaceuticals, traditional, indigenous and ethnobotanical knowledge is very important to enhance our capacity to promote the use of weeds plant in primary health care as well as for drug formulation. Widely applied and easy allopathic practices in urban areas are sharply declining, which is highly critical in forming a huge gap in knowledge transfer regarding uses and potentiality of medicinally important plants.

The maximum use of locally available weeds from paddy fields is not only environmentally sustained but also highly cheaper against ever-increasing costly antibiotic and other synthetic medicine. Our findings could serve as baseline information for long term study of weed dynamics and be useful for farmers both in terms of weed management in paddy field and use of available weeds for primary health care, and also for people who are working on phytochemistry of medicinal weeds and drug formulation. Further exploration of ecological attributes, traditional knowledge documentation and phytochemical properties of medicinally important weeds are very important to scale up our understanding of weeds and their use as a part of their management technique.

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