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A Preliminary Survey of Phytodiversity of Weeds from Rourkela Steel City, Sundargarh, Odisha, India

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ABSTRACT: Weeds are the plants with generally undesirable properties. They spread rapidly and competitively. When it grows in garden it reduces air flow in garden, keeping plants wetter and more prone to pathogens. Rourkela, in the north-eastern part of Odisha state is one of the major steel industrial centres of India and regarded as the industrial capital of Odisha. The present study focuses on the weed diversity of non forest and crop fields of Rourkela and adjoining areas in the district of Sundargarh of Odisha state. A total of 180 weed species under 140 genera belonging to 11 monocot families, 42 dicot families and one pteridophytic family are reported in this investigation. Out of 54 families, the pre-dominance of weeds is shown by Poaceae with 22 species while Asteraceae showed second highest with 21 species, followed by Amaranthaceae, Fabaceae and Acanthaceae and Euphorbiaceae each having 8 and 9 species respectively. *Cynodon dactylon, Chromolaena odoratrum, Achyranthes aspera, Parthenium hysterophorus, Sida acuta, Sida cordifolia, Vernonia cinerea, Cyperus rotundus, Cyperus triceps, Croton bonplanadius* are the most frequently reported weed species found during the study. *Parthenium hysterophorus* is the most noxious weed found during study. Since the flora of Sundargarh districts has not been beneficially explored, this study will help in completion of flora of Sundargarh district and Rourkela in particular.

Keywords: Rourkela Steel City, Sundargarh, Weeds, Phytodiversity, Sundargarh

Running Title: Weed Flora of Rourkela.

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INTRODUCTION

Weeds are undesired plant which grown on cultivated field, open field and wastelands. They grow very fast, reproduce in more numbers and invade the new area in short life period (Dangwal *et al.*, 2012). The weeds are grown in wrong places which compete with crop plants for their nutrients, moisture, sunlight and area for growth and development (Rao, 1983). These plants have low life scan period with high potential of reproduction. They do not grow only in crop fields of rice, wheat, sugarcane but have more potential to grow and spread on open field areas, forest, tank bunds and roadsides. (Jethre, 1731) defined weed as undesired which grown unwanted while (Bell, 1905) defined weeds as plants grows at outside. Weeds grow as invasive species as aggressive in action, which creates troubles to other lives and undesirable to the biodiversity (Khanna, 2009). Weeds grow on crop lands unintentionally and widespread by spreading of seeds to reduce the crop production. Due to increase in number and rapid growth, they reduce the quantity as well as quality of the product which causes a greater loss to agricultural production. They reduce the production quantity and causes high economic loss to the producers. They show allelopathic effects on the crop plants through their root exudates (Prayaga & Venkaiah 2011). Weeds have more competitive ability than the crops which makes a critical condition in the weed crop competition. They provide habitat for harmful insects, rodents and host for pathogens which causes diseases in plant, animal and human beings. They act as host for variety of diseases like malaria, dengue and yellow fever (Petern, 1955). Diseases like black fever and allergic diseases mainly caused by the highly noxious weeds as *Parthenium hysterophorus* etc.

Besides these adverse not useful effects, they can be utilized for food fodder, medicine and fibre etc. purposes (Patil *et al*., 2010; Mujawar 2012 a and b; Aher 2015). Weeds having presence of glycosides and alkaloids, weeds can be used as medicine in controlling of cold, asthma, dermitites etc. For control and proper management of the weeds, it is required to know their flowering and fruiting periods, phenology, dispersal methods and time of dispersion of seeds. The germination and growth periods will also helpful for knowing about their invasion and change pattern of the crops.

Rourkela is known as the Steel City of Odisha is located at Sundargarh district about 245 km from the shore line of Bay of Bengal. It is located 20°12′N latitude and 84°53′E latitude, at the elevation about 219 meters above the mean sea level. Industrialization of this area has started since 1956 (Fig. 1)**.**

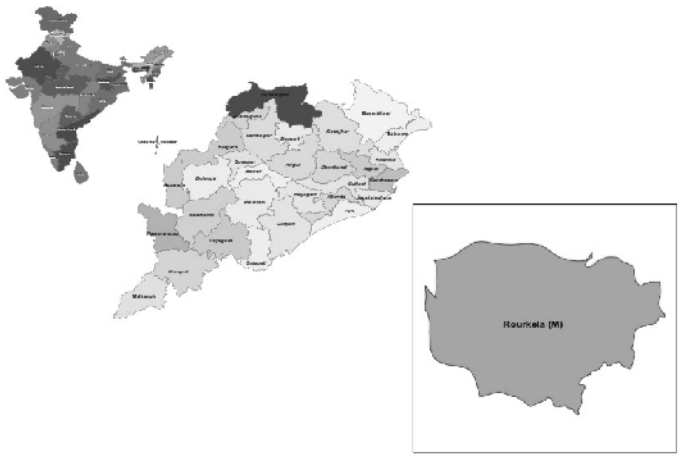

Fig. 1. Map of Rourkela steel City of Sundargarh district, Odisha, India.

It is one of the major steel industrial canters of India having first integrated steel plant known as Rourkela steel plant established in 1956 which gave name Rourkela to Known as Rourkela Steel City. Better communication, abundance of natural mineral resources like iron ore, limestone, dolomite etc. aviliability of water and other infrastructure in and around Rourkela are the main reasons for such rapid industrial development in the area. Due to development of industries in this area the city also called as Industrial Capital of Odisha. Recent up spurt in iron and steel pricing has seen a lot of industries of all sizes establishing in and Rourkela. Today the Rourkela City is not only known internationally for iron and steel trades or as steel City but also known as the Garden city of our country. Rourkela is surrounded by a Durgapur range of hills and encircled by rivers as Sankha and Koel those met at Vedvyas where the second longest river of Odisha originates named as Brahmani River. Phytodiversity study of Sundargarh district have not been fully explored. A few reports on flora of Sundargarh district (Acharya *et al.*, 2007, 2008; Mallick, 2010, Mallick and Acharya, 2013; Kumar *et al*., 2018) have been published. The present paper is an attempt to study the phytodiversity of weeds grown in and around Rourkela which will help in completion of floristic study of the Rourkela city.

MATERIALS AND METHODOLOGY

The study area was thoroughly surveyed throughout the year from time to time to study the botanical and ecological characteristics of weeds in Rourkela urban areas. Extensive filed tours planned to different areas of Rourkela city and informations was collected based on key informant surveys involving local people, farmers for knowing about common names and about the plants. Routine field notes of each weed plants were written on local common names, habit, habitat, flowering and fruiting period and general distribution about the weeds. Plant species belonging to various life forms and families were collected, identified taxonomically and proper classified with the help of flora books. (Haines, 1921-1925; Saxena and Brahamam, 1994-1996).

RESULTS AND DISCUSSION

The present survey investigated in Rourkela steel city of Odisha comprised of 180 species belonging to 54 families and 140 genera weed plants. The scientific name with family, common name, habit, flowering and fruiting period of total 180 weed species as collected information from local people during survey is presented in Table 1. The dicotyledonous group comprises of 137 species under 111 genera belonging to 42 dicot families while a total number of 42 species, 28 genera belong to 11 families as monocotyledonous families presented in Table 2. Dicot weed species were found to be dominant with 76% while monocots and pteridophytes showed 23% and 1% of the total weed flora respectively presented in Fig. 2.

The taxonomic classification of weeds species as habit wise shows 162 (90%) numbers of species are herbs which are dominating to other groups (Fig. 3). Shrubs showing 13 species (7%) while climbers with 5 species (3%). The top dominant families with highest number of species shown in Fig. 4.

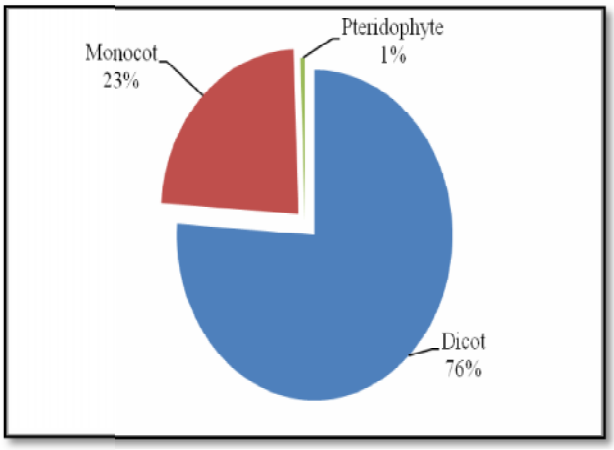

Fig. 2. Percentage of total plant groups of weed species in Rourkela city, Sundargarh, Odisha.

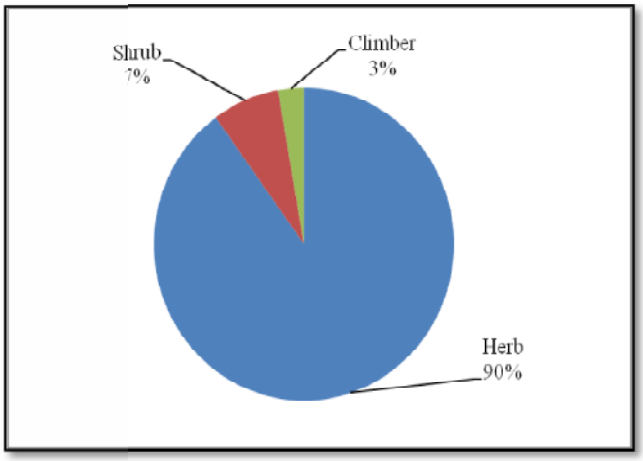

Fig. 3. Habit wise distribution of weed species in Rourkela City, Sundargarh, Odisha.

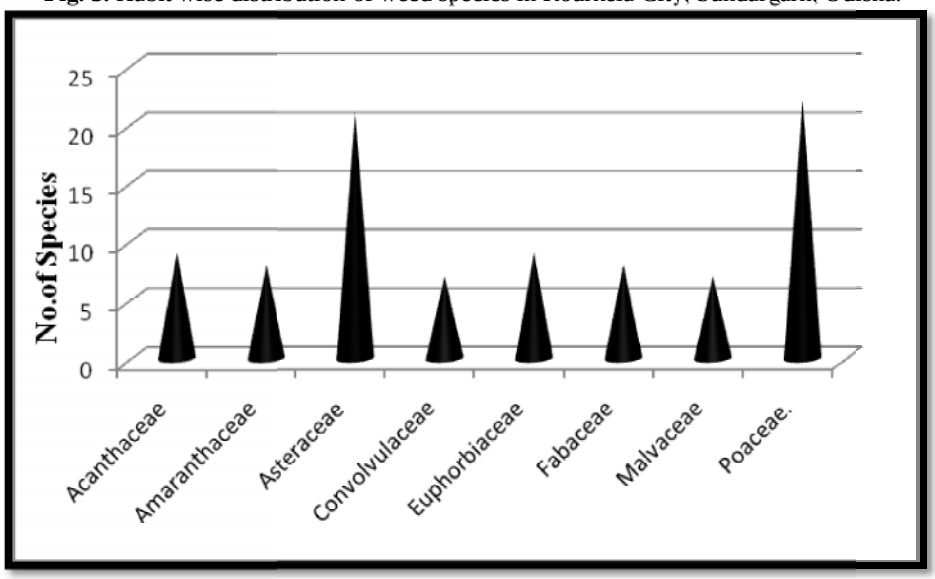

Fig. 4. Familywise distribution of 5top dominated families of weed species of Rourkela City of Sundargarh , Odisha.

Fig. 5. Different weed species studied in Rourkela city, Sundargarh, Odisha. A-*Ageratum conyzoides* L, B-*Eclipta prostata* (L.) L., C-*Cleome viscosa* L, .D-*Mikania micrantha* L., E-*Martynia annua* L., F-*Oxalis corniculata* L., G-*Richardia scabra* L., H-*Barleria prionitis* L., I-*Abutilon indicum* (L.) Sweet.

Poaceae is the most dominated family with 22 species while Asteraceae is the second highest with 21 species in number each. Following Asteraceae and Poaceae, Euphorbiaceae and Acanthaceae with 9 species, Amaranthaceae, and Fabaceae with 8 species while Malvaceae and Convolvulaceae with 7 species are the dominating families. *Chromolaena odorata, Blumea lacera, Ageratum conyzoides, Argemone mexicana and Grangea maderaspatana* are the noxious weeds found everywhere in croplands as well as open fields while *Parthenium hysterophorus* found more noxious weeds which causes black fever diseases grown everywhere in the city due high potential of reproduction ability by dispersion seeds in more numbers. *Mikania micrantha* another noxious weed which is climber in nature grows over wall and plants very rapidly by inhibiting the growth of the trees.

CONCLUSION

This study is based on the open fields, wastelands, croplands as well as in the non forest lands where diversity of seasonal weeds are grown. Due to better development of the area, increase in population and rapid industrization, many useful species may become endangered in future. So they should be recorded and identified along with their usefulness, ethnobotanical uses before their extinction. As the total flora of the Rourkela city as well as Sundargarh district have not been fully explored about the flora the present study will provide the baseline information on the total flora of Rourkela of Sundargarh district. It will be helpful in preparation of district flora of Sundargarh as well as weed management of the area.

Table 1: Total weed species studied in Rourkela Steel City, Sundargarh, Odisha, India.

S.No.	Family	Scientific Name(S) of species	Local name	Plant Groups	Habit
1.	*Acanthaceae*	*Andrographis paniculata* (Burm.f) Wall.ex Nees	Chireita	Dicot	Herb
2.		*Barleria cristata* L.	Daskerenta	Dicot	Shrub
3.		*Barleria prionitis L.*	Daskerenta	Dicot	Shrub
4.		*Blepharis repens* (Vahl) Roth	Rasnajadi	Dicot	Herb
5.		*Crossandra infundibuliformis* (L.) Nees	Itimala	Dicot	Herb
6.		*Hygrophila auriculata* (Schum.) Heine	Koilekha	Dicot	Herb
7.		*Peristrophe bicalyculata* (Retz). Nees	NK	Dicot	Herb
8.		*Ruellia prostata* Poir.	NK	Dicot	Herb
9.		*Rungia pectinata* (L.)Nees	Sankhasaga	Dicot	Herb
10.	*Aizoaceae.*	*Glinus oppositifolius* (L.) DC	Pitasaga	Dicot	Herb
11.	*Alismataceae*	Sagittaria sagitifolia auct.non.L.	NK	Monocot	Herb
12.	*Amaranthaceae*	*Achyranthes aspera* L.	Apamaranga	Dicot	Herb
13.		*Aerva lanata* (L.) Corr.	Paunsia	Dicot	Herb
14.		*Alternanthera sessilis* (L.) R.Br.ex DC	Madaranga	Dicot	Herb
15.		*Amaranthaus spinosus* L.	Kantaleutia	Dicot	Herb
16.		*Amaranthus tricolour* L.	Bhajisaga	Dicot	Herb
17.		*Amaranthus virdis* L.	Bhajisaga	Dicot	Herb
18.		*Celosia argentea* L.	Nahanga	Dicot	Herb
19.		*Gomphrena celosoides* Mart.	Godibana	Dicot	Herb
20.	*Amaryllidaceae*	*Crinum asiaticum* L.	Hatikanda	Monocot	Herb
21.	*Apiaceae*	*Centella asiatica* (L.) Urb	Thalkudi	Dicot	Herb
22.		*Hydrocotyle sibthorpioides* Lam.	Mandukaparni	Dicot	Herb
23.	*Asteraceae*	*Acanthospermum hispidum* DC	Gokhara	Dicot	Herb
24.		*Ageratum conyzoides* L.	Pokasungha	Dicot	Herb
25.		*Bidens biternata* (Lour.) Merr & Sher.	Banasebati	Dicot	Herb
26.		*Blumea lacera* (Burm.f.) DC	Pokasungha	Dicot	Herb
27.		*Chromolaena odorata* (L.) King & Robins	Badipokasungha	Dicot	Herb
28.		*Eclipta prostata* (L.) L.	Keshadura	Dicot	Herb
29.		*Emilia sonchifolia* (L.)DC	Sarakara	Dicot	Herb
30.		*Enydra fluctuans* Lour.	Hidimicha	Dicot	Herb
31.		*Gnaphalium polycaulon* Pers.	NK	Dicot	Herb
32.		*Grangea maderaspatana* (L.) Poir.in Lam	Agnikumari	Dicot	Herb
33.		*Mikania micrantha* L.	Salamari	Dicot	Climber
34.		*Parthenium hysterophorus* L.	Gajarghasa	Dicot	Herb
35.		*Sonchus wightianus* DC	Anasorisha	Dicot	Herb
36.		*Sphaeranthus indicus* L.	Bhuinkadamba	Dicot	Herb
37.		*Spilanthes acmella* auct.non (L.) Murray	Badaakarakara	Dicot	Herb
38.		*Spilanthes paniculata* Wall.ex DC.	Chotaakarakara	Dicot	Herb
39.		*Synedrella nodiflora* (L.) Gaertn.	NK	Dicot	Herb
40.		*Tridax procumbens* L.	Bisalyakarani	Dicot	Herb
41.		*Vernonia cinerea* (L.) Less	Badipokasungha	Dicot	Herb
42.		*Wedelia chinensis* (Osbeck) Merr.	Bhrungaraja	Dicot	Herb
43.		*Xanthium strumarium* Koening	Jhagada	Dicot	Herb
44.	*Balsaminaceae.*	*Impatiens balsamina* L.	Haragoura	Dicot	Herb
45.	*Boraginaceae*	*Heliotropium indicum* L.	Hatisundha	Dicot	Herb
46.	*Brassicaceae.*	*Cardamine scutata* L.	NK	Dicot	Herb
47.	*Caesalpiniaceae*	*Cassia alata* L.	NK	Dicot	Shrub
48.		*Cassia occidentalis* L.	Kalachakunda	Dicot	Shrub
49.		*Cassia tora* L.	Chakunda	Dicot	Herb
50.	*Capparaceae*	*Cleome gyandra* L.	Anasorisha	Dicot	Herb
51.		*Cleome rutidosperma* DC.	NK	Dicot	Herb
52.		*Cleome viscosa* L.	Anasorisha	Dicot	Herb
53.	*Chenopodiaceae*	*Chenopodium* album L.	Bathuasaga	Dicot	Herb
54.	*Commelinaceae*	*Anelima vaginatum* (L.)R.Br.	NK	Monocot	Herb
55.		*Commelina benghalensis* L.	Kansiri	Monocot	Herb
56.		*Commelina diffusa* Burm. f.	Kansiri	Monocot	Herb
57.		*Cyanotis axillaris* (L.) Schult. & Schult.f.	NK	Monocot	Herb
58.	*Convolvulaceae*	*Convolvulus pluricaulis* L.	Sankhapuspi	Dicot	Herb
59.		*Cuscuta reflexa* Roxb.	Nirmuli	Dicot	Herb
60.		*Evolvulus alsinoides* (L.)L.	Bichhamalia	Dicot	Herb

61.		*Evolvulus nummularis* (L.)L.	Sankhapuspi	Dicot	Herb
62.		*Ipomoea aquatica* Forssk.	Kalamasaga	Dicot	Herb
63.		*Ipomoea carnea* Jacq.	Amari	Dicot	Shrub
64.		*Ipomea cairica* (L.)Lam.	Banakamala	Dicot	Climber
65.	*Crassulaceae*	*Kalanchoe pinnata* (Lam.)Pers.	Amarapoi	Dicot	Herb
66.	*Cucurbitaceae*	*Coccinia grandis* (L.)Voigt.	Kunduri	Dicot	Climber
67.		*Trichosanthes cucumerina* L.	Pitapotala	Dicot	Climber
68.	*Cyperaceae.*	*Cyperus compressus* L.	Muthaghasa	Monocot	Herb
69.		*Cyperus difformis* L.	Muthaghasa	Monocot	Herb
70.		*Cyperus globosus* All.	Muthaghasa	Monocot	Herb
71.		*Cyperus iria* L.	Muthaghasa	Monocot	Herb
72.		*Cyperus rotundus* (L.)Pers.	Muthaghasa	Monocot	Herb
73.		*Cyperus triceps* Endl.	Muthaghasa	Monocot	Herb
74.	*Eriocaulaceae*	*Eriocaulon quinquangulare* L.	Nakadimba	Monocot	Herb
75.	*Euphorbiaceae*	*Acalypha indica* L.	Indramarisha	Dicot	Herb
76.		*Chrozophora rottleri* (Geisel) Juss	NK	Dicot	Herb
77.		*Croton bonplandianus* Boill.	Banamaricha	Dicot	Herb
78.		*Euphorbia hirta* L.	Chittakutei	Dicot	Herb
79.		*Euphorbia heterophylla* L.	NK	Dicot	Herb
80.		*Euphorbia indica* Lam.	NK	Dicot	Herb
81.		*Euphorbia prostrata* Ait.	NK	Dicot	Herb
82.		*Jatropha gossypifolia* L.	Baigaba	Dicot	Shrub
83.		*Phyllanthus fraternus* Webster	Badiaonla	Dicot	Herb
84.	*Fabaceae*	*Crotolaria juncea* L.	Chanapata	Dicot	Herb
85.		*Crotolaria pallida* Ait.	Banajhumuka	Dicot	Herb
86.		*Desmodium triflorum* (L.) De	Kuradiaghasa	Dicot	Herb
87.		*Indigofera tinctoria* L.	Nilapahara	Dicot	Herb
88.		*Melilotus alba* Desv.	Banamethi	Dicot	Herb
89.		*Mucuna pruriens* (L.)DC.	Baidanka	Dicot	Herb
90.		*Tephrosia purpurea* (L.)Pers.	Banakolathia	Dicot	Herb
91.		*Trigonella foenum-graecum* L.	NK	Dicot	Herb
92.	*Ficoideae.*	*Trianthema portulacastrum* L.	Dhalapurunisaga	Dicot	Herb
93.	*Gentianaceae*	*Canscora decussata* (Roxb.) Sch. & Sch f.	Dandipohala	Dicot	Herb
94.		*Canscora diffusa* (Vahl.)R.Br.	Bururia	Dicot	Herb
95.	*Hydrochariaceae*	*Hydrilla verticillata* (L.F)Royle	Hydrilla	Monocot	Herb
96.		*Ottelia alismoides* (L.)Pers	Panikenduli	Monocot	Herb
97.	*Hypoxidaceae*	*Curculigo orchioides* Gaertn	Talamuli	Monocot	Herb
98.	*Lamiaceae*	*Anisomeles indica* (L.)Kuntz	Bhutamari	Dicot	Herb
99.		*Leucas aspera* Spreng.	Gayasa	Dicot	Herb
100.		*Leucas cephalotus* Spreng.	Gayasa	Dicot	Herb
101.		*Leucas lanata* Benth	Gayasa	Dicot	Herb
102.		*Hyptis suaveolens* (L.)Poit.	Gangatulasi	Dicot	Herb
103.	*Malvaceae*	*Abutilon indicum* (L.) Sweet	Pedipedica	Dicot	Shrub
104.		*Malvastrum coromandelianum* (L.) Garcke	NK	Dicot	Herb
105.		*Sida acuta* Burm.f.	Bajramuli	Dicot	Herb
106.		*Sida cordata* (Burm.) Borss.	Bajramuli	Dicot	Herb
107.		*Sida cordifolia* L.	Bisiripi	Dicot	Herb
108.		*Sida rhombifolia* L.	Sahadeba	Dicot	Herb
109.		*Urena lobata* L.	Banakapasia	Dicot	Herb
110.	*Marsileaceae*	*Marsilea minuta* L.	Sunsuniasaga	Pteridophyte	Herb
111.	*Martyniaceae*	*Martynia annua* L.	Baghanakhi	Dicot	Herb
112.	*Menispermaceae*	*Cocculus hirsutus* (L.) Diels	Dahidahiya	Dicot	Climber
113.	*Mimosaceae*	*Mimosa pudica* L.	Lajakuli	Dicot	Herb
114.	*Molluginaceae*	*Mollugo pentaphylla* L.	NK	Dicot	Herb
115.	*Nyctaginaceae*	*Boerhavia diffusa* L.	Puruni	Dicot	Herb
116.		*Mirabilis jalapa* L.	Rangani	Dicot	Herb
117.	*Nymphaeaceae*	*Nelumbo nucifera* Gaertn.	Padmaphula	Monocot	Herb
118.		*Nymphaea pubescens* Willd.	Kainphula	Monocot	Herb
119.	*Onagraceae*	*Ludwigia octavalvis* (N.Jacq) Raven	Bilalabanga	Dicot	Herb
120.		*Ludwigia perennis* L.	Bilalabanga	Dicot	Herb
121.	*Oxalidaceae*	*Oxalis corniculata* L.	Ambiliti	Dicot	Herb
122.	*Papaveraceae*	*Argemone mexicana* L.	Agara	Dicot	Herb
123.	*Pedaliaceae.*	*Sesamum indicum* L.	Rasi	Dicot	Herb

124.	*Piperaceae*	*Peperomia pellucida* (L.) Kunth	Ghusuripana	Dicot	Herb
125.	*Plumbaginaceae*	*Plumbago zeylanica* L.	Dhala chitaparu	Dicot	Shrub
126.	*Poaceae.*	*Aristida setacea* Retz.	Khadikaghasa	Monocot	Herb
127.		*Chrysopogon aciculatus* (Retz) Trin.	Guguchia	Monocot	Herb
128.		*Cynodon dactylon* (L.)Pers.	Dubaghasa	Monocot	Herb
129.		*Dactyloctenium aegyptium* (L.) Pal.	Kakuriaghasa	Monocot	Herb
130.		*Desmostachya bipinnata* (L.)Stapf.	NK	Monocot	Herb
131.		*Digitaria abludens* (Roem.& Schult) Veldk	Chhirchira	Monocot	Herb
132.		*Digitaria ciliaris* (Retz) Koeler	NK	Monocot	Herb
133.		*Digitaria sanguinalis* Scop	NK	Monocot	Herb
134.		*Echinochloa colona* (L.) Link	Suanghasa	Monocot	Herb
135.		*Echinochloa crusgalli* (L.) P. Beauv.	NK	Monocot	Herb
136.		*Echinochloa glabrescens* Munro	NK	Monocot	Herb
137.		*Eleusine indica* (L.) Gaertn	Anamandia	Monocot	Herb
138.		*Fimbristylis complanata* (Retz.) Link	NK	Monocot	Herb
139.		*Fimbristylis falcata* (Vahl) Kunth	NK	Monocot	Herb
140.		*Fimbristylis ferruginea* (L.) Vahl	NK	Monocot	Herb
141.		*Fimbristylis miliacea* (L.) Vahl	Beruan	Monocot	Herb
142.		*Oryza rufipogon* Griff.	Balungadhana	Monocot	Herb
143.		*Panicum ramosum* L.	NK	Monocot	Herb
144.		*Paspalum distichum* Hook.f.	Kodua	Monocot	Herb
145.		*Paspalum scrobiculatum* L.	Kodua	Monocot	Herb
146.		*Pennisetum pedicellatum* Trin.	Biradilanjaghasa	Monocot	Herb
147.		*Saccharum spontaneum* L.	Kasatandi	Monocot	Herb
148.	*Polygonaceae*	*Polygonum barbatum* L.	Muthisaga	Dicot	Herb
149.		*Polygonum plebium* R.Br.	Muthisaga	Dicot	Herb
150.		*Rumex vesicarius* L.	Khatapalanga	Dicot	Herb
151.	*Pontederiaceae*	*Eichhornia crassipes* (Mart.) Solm.	Bilatidala	Monocot	Herb
152.	*Portulacaceae*	*Portulaca oleracea* L.	Badabalbaluasaga	Dicot	Herb
153.		*Portulaca quardifida* L.	Balbalua saga	Dicot	Herb
154.	*Rubiaceae.*	*Hedyotis corymbosa* (L.)Lam.	Gharapodia	Dicot	Herb
155.		*Mitracarpus villosus* (Sw)Dc.	NK	Dicot	Herb
156.		*Richardia scabra* Linn.	NK	Dicot	Herb
157.		*Spermococe articularis* Linn.f.	Sanagharapodia	Dicot	Herb
158.		*Spermococe mauritiana* Oesa Gideon.	NK	Dicot	Herb
159.	*Scorphulariaceae*	*Bacopa monnieri* (L.)Penn.	Brahmi	Dicot	Herb
160.		*Limnophilia heterophylla* (L.) Penn.	Hidimichi	Dicot	Herb
161.		*Lindernia ciliata* (Colsm.) Pennell.	NK	Dicot	Herb
162.		*Mazus japonicus* (Thunb.) Kuntz	NK	Dicot	Herb
163.		*Scoparia dulcis* L.	Banaganjei	Dicot	Herb
164.	*Solanaceae*	*Datura stramonium* L.	Dhaladudura	Dicot	Shrub
165.		*Datura metel* L.	Kaladudura	Dicot	Shrub
166.		*Physalis minima* L.	Phutphutika	Dicot	Herb
167.		*Solanum nigrum* L.	Nunnunia	Dicot	Herb
168.		*Solanum virginianum* L.	Akaranti	Dicot	Herb
169.	*Sterculiaceae*	*Melochia corchorifolia* L.	Telpuri	Dicot	Herb
170.		*Waltheria indica* L.	Bilanalita	Dicot	Herb
171.	*Tiliaceae.*	*Corchorus aestuans* L.	Bananalita	Dicot	Herb
172.		*Triumfetta neglecta* Wight & Arn.	Jatajatia	Dicot	Herb
173.	*Typhaceae*	*Typha angustata* Bory.& Chaub.	Santara	Monocot	Herb
174.	*Urticaceae*	*Laportea interrupta* (L.) Chew.	Bichuati	Dicot	Herb
175.	*Verbenaceae*	*Clerodendrum inerme* (L.)Gaertn.	Kharkhari	Dicot	Shrub
176.		*Lantana camara* L.	Putus	Dicot	Shrub
177.		*Lippia javanica* (Burm.f) Spreng	Bhutuni	Dicot	Shrub
178.		*Phyla nodiflora* (L.) Greene	Gosingi	Dicot	Herb
179.	*Violaceae*	*Hybanthus enneaspermus* (L.) F.V.Muell.	Madanamastak	Dicot	Herb
180.	*Zygophyllaceae*	*Tribulus terrstris* L.	Gokhura	Dicot	Herb

NK: Not known

Table 2: Total weed species studied under different groups.

S.No	Plant Groups	Family	Genera	Species
1.	Pteridophyte	1	1	1
2.	Monocotyledons	11	28	42
3.	Dicotyledons	42	111	137

FUTURE SCOPE

1. The present study will be helpful for completion of district flora of Sundargarh district as the district flora is not explored.
2. Some of weed plants are used as wild food plants. The future study on nutritional properties of these plants can be helpful for food security by domestication in agriculture as well as help in fulfillment of food demand in future.
3. The economic importance of these plants will be studied in further exploration work.
4. Ethnobotany as well as Ethnomedicine values of these plants study will be helpful for biodiversity of this area as well as conserve the traditional knowledge related to these weeds plants.
5. The present flora study will be helpful for conservation of RET species of the area and of the district.
6. The threats due to some weeds like *Parthenium hysterophorus, Mikania micrantha, and Chromolaena odorata* can be studied more for mitigation of their invasiveness on other useful plants.
7. Weeds cause the highest crop losses with insect pests and pathogens which should be studied in future.
8. The weeds study of this area will be helpful for climate change and global warming adaptation and mitigation process of the area.

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REFERENCES

Acharya, B.C., Mallick, S.N., Dehury, S.S. and Khandagiri, S.N. (2008). Survey of Herbs in and around Rourkela. In *Proc. of Env. Seminar, Govt.(Autonomous) College, Rourkela* (pp. 35-54).

Acharya, B. C., Khandagiri, S., Mallick, S., & Maharana, M. (2007). A Survey of Plant Diversities in and around Rourkela. In *Proc. of Env. Seminar* (pp. 08-24).

Aher, S.K. (2015) Biodiversity of weed species in crop fields of Parner tahsil from Ahmednagar district (ms), India, *Indian Journal Plant Sciences*, **4**(4): 112-120.

Bell, J.W., (1905). The vitality of seeds. *Botanical Gazette*, **40**: 140-143.

Dangwal, L.R., Amandeep, S., Tajinder, S., & Anima, S. (2012). Major weeds of paddy fields in district Rajouri (J&K) India. *Journal of Agricultural and Biological Science*, **7**(7): 527-532.

Haines, H.H. (1921-1925). Botany of Bihar and Orissa. Arnold and sons and West Nirman Ltd. London 3.Vols.

Jethre, T. (1731). Horse Hoeing Husbandry. Berkshire. MDCC; **33**.

Karthiyayini, R. (2012). A survey of crop weeds and its medicinal value of Coimbatore district, Tamilnadu, India. *Life Sciences Leaflets* **6**: 58- 62.

Khanna, K.K. (2009). Invasive alien angiosperms of Uttar Pradesh, *Biological Forum*, **1**(2): 34-39

Kumar, S., Das, G., Shin, H.S., Kumar, P. and Patra, J.K. (2018). Diversity of plant species in the steel city of Odisha, India: ethnobotany and implications for conservation of Urban Bio-resources, *Brazilian. Archieves of Biology and Technology*, **61**: 1-9

Mallick, S.N. (2010). Survey of herbs in and around Rourkela and their ethnomedicinal values. M.Phil Dissertation submitted to G.M. College (Autonomous), Sambalpur.

Mallick, S.N. and Acharya, B.C. (2013). Phytodiversity survey of roadside herbs and their ethnomedicinal values in and around Rourkela Steel Township, Sundargarh, Odisha. *Life Sciences. Leaflets (l):* 46-55.

Mujawar, H. (2012 b). Weed analysis of Mallikarjun hills of Walwa from Sangli District of Maharashtra, India. *Journal of Research. in Plant. Sciences*, **1**(2): 138-145.

Mujawar, H. (2012a). Ethnobotany of Mallikarjun hills of Walwa from Sangli District (Maharashtra). *Life Sciences Leaflets*, **10**: 73-83.

Patil, P.S., Ahirrao,Y.A., Dusing, Y.A., Aher, U.P. and Patil, D.A. (2010). Role of crop weeds in traditional medicines in Buldhana district (Maharashtra). *Life Sciences Leaflets*, **10**: 261-272.

Petern, B.G. (1955). Soil-inhabiting nematodes. In: Soil Zoology (Butterworths Scientific Publication, London): 44-54.

Prayaga, M.P. and Venkaiah, M. (2011). Biodiversity of weed species in crop fields of North Coastal Andhra Pradesh, India. *International Journal of Fundamental Applied Life* Sciences, **1**(2): 59-67.

Rao, V.S. (1983). Principles of weed science. Oxford and Publishing. Co., India.

Saxena, H.O. and Brahmam M. (1994-1996). The Flora of Orissa. (**4**). Orissa Forest Development Corporation Ltd., Bhubaneswar, Odisha.