Weed Species Distributed in Wheat Fields at Uremia (Northwest Of Iran)

Sirous Hassannejad*, Mohammad Saleh Pirouie, Elham Abbasvand

Department of Plant Eco-Physiology, University of Tabriz, Iran
*Corresponding Author, Email: sirous_hasannejad@yahoo.com

Abstract. Weeds are one of the major limiting factors in Iranian wheat fields. This study was done to determine weed composition, weed species and plant families ranking in the wheat fields of Uremia districts. Weed samplings were performed during 2013 from 100 wheat fields in 11 districts of Uremia. The data were recorded on relative weed density, coverage, uniformity, and frequency (%) to find problematic and main weeds. Also relative diversity, density, and coverage of each plant family were calculated to find important families dominated in wheat fields. A total, 190 weed species belonging to 34 plant families were recorded in Uremia wheat fields. Only 21 weed species were found in more than 30% of fields. The computation of relative dominance (RD) is a good judgment for deciding the status of a given weed in a community. The data showed that the highest RD (22.94 %) was calculated for *Gallium aparine* L. This wees is dominant, troublesome and hard controlling weed species observed in Uremia wheat fields. Highest uniformity and density of this weed, also showed that it had more competitive or reproductive ability than other weeds. Asteraceae, Poaceae and Brassicaceae with 62.56, 36.37 and 27.52 FDI (family dominance index), respectively, were dominant plant families in the wheat fields of Uremia county. This study provided a very helpful knowledge to farmers, agronomy specialists and scientific communities to design a solid integrated weed management plan in wheat in Uremia country in northwest of Iran.

Key words: Family dominance index, relative dominance, weed flora, wheat

1. INTRODUCTION

Weeds are generally undesirable plants on arable fields. Crop yield losses due to weed species by competing of them with crop for water and nutrients, harbouring various insect pests, acting as hosts for different micro-organismal diseases and by blocking irrigation-drainage systems. Despite the many methods of weed management that are now available worldwide, it is estimated that approximately 13% crop losses are still due to weeds alone (Cobb and Read, 2010).

Knowledge of weeds identification and their distribution is essential in setting priorities for weed management or research (Loux and Berry, 1991). Weed survey are crucial to determine the occurrence and relative importance of weed species in the crop production system (Korres et al., 2002), also are useful for determining the occurrence and relative importance of weed species in crop production systems (Thomas, 1985; Frick and Thomas, 1992; McCully et al., 1991). Weed flora composition in each region depends on the appearance of the new species, adaptation and the cultivating measures (Damghani and Kamkar, 2009). Weeds represent a highly specific and important biological component of their environments. Their persistence is remarkable in view of the efforts to eliminate them, and warrants greater attention (Radsevich and Holt, 1984).

Minbashi et al. (2008) recorded 87 weed species within irrigated wheat fields in Tehran province. Keshavarz et al. (2008) studied the dispersion and dominance of weeds in the wheat field of the Kohgiloyeh and Boier Ahmad province and showed that 27 species of 13 families were competing with the wheat from which *Gallium tricornutum* occurred most dominantly. In wheat and barley fields of Jamkhaneh-Sari, 22 weed species belonging to 9 families were identified (Yazdani et al, 2008).

Weeds are one of the major limiting factors in Iranian wheat fields (Minbashi et al. 2008). Some studies about weed flora in cereal and oil-seed crops have been done in some counties of Iran (Minbashi et al. 2008; Hassannejad and Porheidar-Ghafarbi 2013a; Hassannejad and Porheidar-Ghafarbi 2013b; Hassannejad and Ghisvandi 2013; Nazer Kakhaki, et al., 2013). But, we have a little information about distribution of dominant weeds in wheat fields in northwest of Iran. So, the objective of this study was to determine the dominant weed species and survey of their distribution in wheat fields at Uremia County.

Thus, the aims of this study were to determine weed composition, weed species and plant families ranking according to the relative dominance (RD) and family dominance index (FDI) indices, respectively in the wheat fields of Uremia districts.
2. MATERIALS AND METHODS

2.1. Study site

Uremia County of Iran situates is located between 37°55' latitude and 45°00' longitudes.

This county has cold semi-aries climates; average annual rainfall in uremia is equal 289 mm and mean temperature 12.5°.

![Fig. 1: Locality of site sampling, Uremia county (Northwest of Iran)](image)

2.2. Sampling procedure

Weed samplings were performed during 2013 from 100 wheat fields in 11 districts of Uremia County (Northwest of Iran). Time of sampling was started by beginning of stem elongation until the end of heading stages of wheat (Minbashi et al., 2008). Geographical information of each field like longitude, latitude and elevation were recorded using Global Positioning System (GPS). Fields were surveyed following the methodology of Thomas (1985) in which 20 quadrates of 0.25 m² were randomly placed along a "W" pattern consisting of 5 quadrates in each one of 4 arms of the pattern, in each field.

2.3. Data analysis

All weeds in each quadrate were identified, counted (density and cover percent), and recorded for subsequent data entry and analysis. All weed species observed in the field condition were classified in three groups, including surpassing weeds (SW), underneath weeds (UW), and climbing weeds (CW) which includes climbing, twining, trailing and stoloniferous species (Memon, 2004). In order to distribution patterns, all weeds in wheat fields at Uremia county were classified into four categories; Assertive weeds (frequency over than 60%), ascendant weeds (frequency between 50% to 60%), average weeds (frequency between 30% to 49%), and below average weeds (frequency less than 30%) (Mori et al., 1983).

The data recorded in each quadrate (density and cover percentage), all quadrates of each fields (uniformity), and all fields of this county (frequency) were summarized using some quantitative measures (frequency, uniformity, density as outlined by Thomas (1985) and cover percentage as outlined by Hassannejad and Porheidar-Ghafarbi (2012). The finale quantitative measure calculated was relative dominance (RD) (Hassannejad and Porheidar-Ghafarbi, 2012).

\[
(RF) = \frac{\text{Frequency value of species } K}{\text{Sum of frequency values for all species}} \times 100
\]

The frequency value indicates the percentage of fields infested by a species k. This measure is an estimate of the geographical extent of infestation by specific weed species.
The field uniformity value as the percentage of quadrates infested by a species k is an estimate of the area infestation by specific weed species.

\[
(RU) = \frac{Field \ uniformity \ value \ of \ species \ K}{Sum \ of \ field \ uniformity \ values \ for \ all \ species} \times 100
\]

The mean field density value indicates the number of plants per m\(^2\) for each species averaged over all fields sampled.

\[
(RMD) = \frac{Mean \ field \ density \ value \ of \ species \ K}{Sum \ of \ mean \ density \ value \ for \ all \ species} \times 100
\]

The mean coverage value indicates the coverage of plants per m\(^2\) for each species averaged over fields sampled.

\[
(RMC) = \frac{Mean \ field \ coverage \ value \ of \ species \ K}{Sum \ of \ mean \ field \ coverage \ values \ for \ all \ species} \times 100
\]

2.4. Estimation of Family Dominance Index (FDI)

Family dominance index (FDI) was counted following the methodology of Hassannejad and Porheidar-Ghafarbi (2012) in order to contrast the relative portion of each plant family to weed species combination. It was calculated as the sum of the relative diversity, relative density, and relative coverage, as follow:

Relative Diversity = \(\frac{Number \ of \ species \ in \ family}{Total \ number \ of \ species}\) \times 100

Relative Density = \(\frac{Number \ of \ individuals \ in \ family}{Total \ number \ of \ individuals}\) \times 100

Relative Coverage = \(\frac{Coverage \ of \ individuals \ in \ family}{Total \ coverage \ of \ individuals}\) \times 100

FDI = Relative Diversity + Relative Density + Relative Coverage

3. RESULTS AND DISCUSSIONS

A total, 190 weed species belonging to 34 plant families were recorded in wheat fields at Uremia County in 2013 (Table 1). Regarding their plant form, 87.90% of weed species were dicotyledonous, and 12.10% of them were monocotyledonous. Hyvonen et al. (2003) mentioned that low-input cultivations were expected to favor the species numbers and abundance of dicotyledonous. The underneath weeds (UW), surpassing weeds (SW), and climbing weeds (CW) have constituted 46.84, 40, and 13.15% of weeds in 2013, respectively.

Only 21 weed species were found in more than 30% of fields. Between all recorded weeds, 88.94% of weeds were below average weeds (founded in less than 30% of fields), and 7.36% of weeds were average weeds (founded in 30-49% of fields). But only 2.10% of weeds (4 species) as assertive weeds were observed in more than 60% of fields. Higher values for the frequency of these weeds indicate a higher proportion of their climatic and soil conditions; like that Minbashi et al. (2008) mentioned it in their researches. Eight species of 21 dominant weed species (frequency more than 30%) belong to surpassing weeds.

Ranking all weeds showed that Gallium aparine L., Turgenia Latifolia (L.) Hoff, Acropytalon repense (L.) D.C., Polygonum aviculare L., Convolvulus arvensis L. and Secale cereale L. with RD equal 22.94, 20.80, 14.66, 13.79, 13.53 and 11.11 respectively, were dominant weed species in wheat fields according to RD score (Table 2). High share of these six weed species from RD total (96.83:400) indicated that they are troublesome and hard controlling weeds in Uremia wheat fields. Gallium aparine with mean uniformity 6.68 and mean density 2.38 plants m\(^2\) had highest uniformity and density in this county (Table 2). Higher values for the mean field uniformity and density for this weed species respectively shows it’s tolerant to managements methods used in the occurrence fields and it’s compatibility or propagation ability compare other weeds. Investigations show that Gallium aparine is considered by many to be the most aggressive weed of winter cereals. It is of ubiquitous occurrence in...
hedgerows, and has become more invasive in cereals and oilseed rape. Its climbing and scrambling habit allows it to rapidly outgrow the crop to form a dense weed canopy, eventually causing severe lodging, interference with harvesting procedures, large yield losses and severe crop contamination (Cobb and Read, 2010).

<table>
<thead>
<tr>
<th>Order</th>
<th>Family Name</th>
<th>Richness</th>
<th>Relative Density</th>
<th>Relative Diversity</th>
<th>Relative Coverage</th>
<th>FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asteraceae</td>
<td>37</td>
<td>19.47</td>
<td>16.55</td>
<td>26.54</td>
<td>62.56</td>
</tr>
<tr>
<td>2</td>
<td>Poaceae</td>
<td>19</td>
<td>10</td>
<td>18.82</td>
<td>7.55</td>
<td>36.37</td>
</tr>
<tr>
<td>3</td>
<td>Brassicaceae</td>
<td>19</td>
<td>10</td>
<td>7.99</td>
<td>9.53</td>
<td>27.52</td>
</tr>
<tr>
<td>4</td>
<td>Fabaceae</td>
<td>19</td>
<td>10</td>
<td>5.84</td>
<td>8.67</td>
<td>24.52</td>
</tr>
<tr>
<td>5</td>
<td>Apiaceae</td>
<td>9</td>
<td>4.74</td>
<td>9.61</td>
<td>9.99</td>
<td>24.33</td>
</tr>
<tr>
<td>6</td>
<td>Caryophyllaceae</td>
<td>6</td>
<td>3.16</td>
<td>5.39</td>
<td>8.84</td>
<td>17.39</td>
</tr>
<tr>
<td>7</td>
<td>Rubiaceae</td>
<td>2</td>
<td>1.05</td>
<td>9.63</td>
<td>4.38</td>
<td>15.06</td>
</tr>
<tr>
<td>8</td>
<td>Ranunculaceae</td>
<td>7</td>
<td>3.68</td>
<td>5.02</td>
<td>2.00</td>
<td>10.70</td>
</tr>
<tr>
<td>9</td>
<td>Chenopodiaceae</td>
<td>6</td>
<td>3.16</td>
<td>3.35</td>
<td>3.47</td>
<td>9.98</td>
</tr>
<tr>
<td>10</td>
<td>Polygonaceae</td>
<td>4</td>
<td>2.11</td>
<td>1.42</td>
<td>1.44</td>
<td>6.54</td>
</tr>
<tr>
<td>11</td>
<td>Convolvulaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.86</td>
<td>1.70</td>
<td>6.62</td>
</tr>
<tr>
<td>12</td>
<td>Boraginaceae</td>
<td>7</td>
<td>3.68</td>
<td>1.24</td>
<td>1.99</td>
<td>6.56</td>
</tr>
<tr>
<td>13</td>
<td>Papaveraceae</td>
<td>5</td>
<td>2.63</td>
<td>1.94</td>
<td>1.99</td>
<td>6.56</td>
</tr>
<tr>
<td>14</td>
<td>Lamiaceae</td>
<td>7</td>
<td>3.68</td>
<td>1.42</td>
<td>1.44</td>
<td>6.54</td>
</tr>
<tr>
<td>15</td>
<td>Euphorbiaceae</td>
<td>6</td>
<td>3.16</td>
<td>1.37</td>
<td>1.90</td>
<td>6.43</td>
</tr>
<tr>
<td>16</td>
<td>Resedaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.86</td>
<td>2.20</td>
<td>3.58</td>
</tr>
<tr>
<td>17</td>
<td>Malvaceae</td>
<td>4</td>
<td>2.11</td>
<td>0.23</td>
<td>0.48</td>
<td>2.82</td>
</tr>
<tr>
<td>18</td>
<td>Solanaceae</td>
<td>4</td>
<td>2.11</td>
<td>0.21</td>
<td>0.49</td>
<td>2.80</td>
</tr>
<tr>
<td>19</td>
<td>Scrophulariaceae</td>
<td>3</td>
<td>1.58</td>
<td>0.63</td>
<td>0.49</td>
<td>2.70</td>
</tr>
<tr>
<td>20</td>
<td>Liliaceae</td>
<td>3</td>
<td>1.58</td>
<td>0.46</td>
<td>0.43</td>
<td>2.47</td>
</tr>
<tr>
<td>21</td>
<td>Amaranthaceae</td>
<td>3</td>
<td>1.58</td>
<td>0.12</td>
<td>0.23</td>
<td>1.93</td>
</tr>
<tr>
<td>22</td>
<td>Primulaceae</td>
<td>3</td>
<td>1.58</td>
<td>0.17</td>
<td>0.07</td>
<td>1.82</td>
</tr>
<tr>
<td>23</td>
<td>Dipsaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.39</td>
<td>0.70</td>
<td>1.61</td>
</tr>
<tr>
<td>24</td>
<td>Geraniaceae</td>
<td>2</td>
<td>1.05</td>
<td>0.18</td>
<td>0.12</td>
<td>1.36</td>
</tr>
<tr>
<td>25</td>
<td>Zygophyllaceae</td>
<td>2</td>
<td>1.026</td>
<td>0.04</td>
<td>0.19</td>
<td>1.28</td>
</tr>
<tr>
<td>26</td>
<td>Rosaceae</td>
<td>2</td>
<td>1.05</td>
<td>0.03</td>
<td>0.07</td>
<td>1.16</td>
</tr>
<tr>
<td>27</td>
<td>Aristolochiaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.19</td>
<td>0.31</td>
<td>1.03</td>
</tr>
<tr>
<td>28</td>
<td>Amaryllidaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.28</td>
<td>0.18</td>
<td>1.00</td>
</tr>
<tr>
<td>29</td>
<td>Fumariaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.17</td>
<td>0.11</td>
<td>0.81</td>
</tr>
<tr>
<td>30</td>
<td>Caparidaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.04</td>
<td>0.20</td>
<td>0.77</td>
</tr>
<tr>
<td>31</td>
<td>Plantaginaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.05</td>
<td>0.06</td>
<td>0.64</td>
</tr>
<tr>
<td>32</td>
<td>Portulacaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.04</td>
<td>0.04</td>
<td>0.61</td>
</tr>
<tr>
<td>33</td>
<td>Equisetaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.03</td>
<td>0.03</td>
<td>0.59</td>
</tr>
<tr>
<td>34</td>
<td>Orobancheaceae</td>
<td>1</td>
<td>0.53</td>
<td>0.04</td>
<td>0.02</td>
<td>0.59</td>
</tr>
</tbody>
</table>

The results of FDI index indicated that Asteraceae, Poaceae and Brassicaceae with 62.56, 36.37 and 27.52 FDI, respectively, were dominant plant families in wheat fields of Uremia County. The maximum richness, relative density and relative coverage were found in Asteraceae family (Table 1). Although Poaceae family compare to Asteraceae had maximum relative diversity, but due to low richness, relative density and relative coverage in this family, it was in second order according to FDI (Table 1). Investigations show that in the world, only about 250 species (approximately 0.1% of the world’s flora) are sufficiently troublesome to be termed weeds, so that 70% of these weeds are found in 12 families, and 40%
alone being members of the Poaceae and Asteraceae (Cobb and Read, 2010). Rubiaceae family with minimum richness (only with two species; Gallium aparine L. and Gallium tricornutum Dandy), was located between ten dominant families in wheat fields according to FDI score. Presence of Gallium aparine in Rubiaceae family as a dominant weed species, according to RD index (Table 2.), caused that Rubiaceae get the top order in ranking compared with Ranunculaceae, Chenopodiaceae and etc (Table 1.). So, the highest amount of FDI for one family compares the others can be due to well adaptability of its members in dominant environmentally conditions.

Results of this survey showed that Secale cereale L., with RD equal 11.11 that found in 47 percentage of Uremia winter wheat fields, is a troublesome Grass species distributed in this region. This species is the main monocot weedy species in this county wheat fields. Early seed shattering of this weed before winter wheat harvest and lack of a practical method for it's control cause a problems to farmers of this region. Avena ludoviciana with relative dominance 9.81, is the second main grass species observed in Uremia county (Table 2). In this region of Iran, due to cold climate, only winter wheat sowing, so winter wild oat (Avena ludoviciana) is a dominant grass weed, however in warm areas of our country that spring wheat is sowing, spring wild oats (Avena fatua) is dominant. Hence, the date of cereal sowing in relation to wild oat emergence is crucial to weed control (Cobb and Read, 2010).

Our observations in the wheat fields of this county indicate perennial weed species such as Acroptilon repens, Convolvulus arvensis, and Chondrilla juncea are dominate. Increasing of these weeds may be due to minimal cultivation. Investigations show that the frequency of creeping perennials has increased with minimal cultivation, for example Convolvulus arvensis and Cirsium arvense (Cobb and Read, 2010).

Herbicide selection and use have also had a profound effect on the weed flora in cereals. The use of 2,4-D and MCPA in most wheat fields of this region has caused a decline in many susceptible weeds, such as Sinapis arvensis, Romeria refracta, Papaver dubium, Sinapis alba, Roemeria hibryda, and Papaver rheas in orders 27, 41, 45, 74, 92, and 107 or relative dominance equal 4.34, 2.75, 2.67, 1.34, 0.97, and 0.74 respectively (Table 2). Although more tolerant species such as Acroptilon repense, Polygonum aviculare, Convolvulus arvensis, Chondrilla juncea, Cirsium arvense, and Cardaria draba have prospered.

**Table 2:** Scientific name, family name, relative frequency (RF), relative uniformity (RU), relative mean density (RMD), relative mean coverage (RMC), and relative dominance (RD) of 190 main weeds of wheat fields during 2013–2014 in Uremia county.

<table>
<thead>
<tr>
<th>NO.</th>
<th>Scientific name</th>
<th>family name</th>
<th>Habit</th>
<th>RF</th>
<th>RU</th>
<th>RMD</th>
<th>RMC</th>
<th>RD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gallium aparine L.</td>
<td>Rubiaceae</td>
<td>cw</td>
<td>2.38</td>
<td>6.688</td>
<td>9.540</td>
<td>4.326</td>
<td>22.94</td>
</tr>
<tr>
<td>2</td>
<td>Turgenia latifolia (L.) Hoff</td>
<td>Apiaceae</td>
<td>uw</td>
<td>2.46</td>
<td>5.38</td>
<td>6.930</td>
<td>6.025</td>
<td>20.80</td>
</tr>
<tr>
<td>3</td>
<td>Acroptilon repense (L.) D.C.</td>
<td>Asteraceae</td>
<td>cw</td>
<td>1.94</td>
<td>3.643</td>
<td>3.695</td>
<td>5.379</td>
<td>14.66</td>
</tr>
<tr>
<td>4</td>
<td>Polygonum aviculare L.</td>
<td>Polygonaceae</td>
<td>uw</td>
<td>2.66</td>
<td>4.703</td>
<td>4.469</td>
<td>1.955</td>
<td>13.79</td>
</tr>
<tr>
<td>5</td>
<td>Convolvulus arvensis L.</td>
<td>Convolvulaceae</td>
<td>cw</td>
<td>3.3</td>
<td>3.643</td>
<td>3.081</td>
<td>3.511</td>
<td>13.53</td>
</tr>
<tr>
<td>6</td>
<td>Secale cereale L.</td>
<td>Poaceae</td>
<td>sw</td>
<td>1.86</td>
<td>2.357</td>
<td>5.097</td>
<td>1.793</td>
<td>11.11</td>
</tr>
<tr>
<td>7</td>
<td>Chondrilla juncea L.</td>
<td>Asteraceae</td>
<td>sw</td>
<td>1.98</td>
<td>1.929</td>
<td>1.724</td>
<td>4.835</td>
<td>10.47</td>
</tr>
<tr>
<td>8</td>
<td>Avena ludoviciana</td>
<td>Poaceae</td>
<td>sw</td>
<td>1.15</td>
<td>2.188</td>
<td>4.873</td>
<td>1.600</td>
<td>9.814</td>
</tr>
<tr>
<td>9</td>
<td>Gyposphilla bicolor (Freyen ex Sint.) Grossh.</td>
<td>Caryophyllaceae</td>
<td>uw</td>
<td>1.86</td>
<td>1.387</td>
<td>1.002</td>
<td>4.972</td>
<td>9.230</td>
</tr>
<tr>
<td>10</td>
<td>Vaccaria pyramidata Medic.</td>
<td>Caryophyllaceae</td>
<td>sw</td>
<td>2.82</td>
<td>2.583</td>
<td>1.290</td>
<td>2.322</td>
<td>9.018</td>
</tr>
<tr>
<td>11</td>
<td>Tragopogon graminifolium L.</td>
<td>Asteraceae</td>
<td>cw</td>
<td>2.06</td>
<td>2.087</td>
<td>1.137</td>
<td>1.784</td>
<td>7.075</td>
</tr>
<tr>
<td>12</td>
<td>Cirsium arvense (L.) Scop.</td>
<td>Asteraceae</td>
<td>cw</td>
<td>1.07</td>
<td>1.579</td>
<td>1.918</td>
<td>2.263</td>
<td>6.834</td>
</tr>
<tr>
<td>13</td>
<td>Cardaria draba L.</td>
<td>Brassicaceae</td>
<td>cw</td>
<td>1.55</td>
<td>2.03</td>
<td>1.585</td>
<td>1.664</td>
<td>6.830</td>
</tr>
<tr>
<td>14</td>
<td>Reseda lutea L.</td>
<td>Resedaceae</td>
<td>uw</td>
<td>1.71</td>
<td>1.15</td>
<td>0.586</td>
<td>2.199</td>
<td>5.916</td>
</tr>
<tr>
<td>15</td>
<td>Silene conoidea L.</td>
<td>Caryophyllaceae</td>
<td>uw</td>
<td>1.19</td>
<td>1.624</td>
<td>1.978</td>
<td>1.078</td>
<td>5.873</td>
</tr>
<tr>
<td>16</td>
<td>Carthamus oxyacantha M. B.</td>
<td>Asteraceae</td>
<td>sw</td>
<td>1.39</td>
<td>1.478</td>
<td>1.155</td>
<td>1.617</td>
<td>5.642</td>
</tr>
<tr>
<td>17</td>
<td>Daucus Carrotol L. subsp. Carota</td>
<td>Apiaceae</td>
<td>uw</td>
<td>1.27</td>
<td>1.511</td>
<td>1.174</td>
<td>1.627</td>
<td>5.585</td>
</tr>
<tr>
<td>18</td>
<td>Ranunculus arvensis L.</td>
<td>Ranunculaceae</td>
<td>sw</td>
<td>0.87</td>
<td>1.557</td>
<td>2.419</td>
<td>0.612</td>
<td>5.463</td>
</tr>
<tr>
<td>19</td>
<td>Centaurea cyanus L.</td>
<td>Asteraceae</td>
<td>uw</td>
<td>1.15</td>
<td>1.5</td>
<td>1.279</td>
<td>1.077</td>
<td>5.009</td>
</tr>
<tr>
<td>20</td>
<td>Paeonomas acrinus (L.) Cass.</td>
<td>Asteraceae</td>
<td>uw</td>
<td>1.82</td>
<td>1.432</td>
<td>0.688</td>
<td>1.053</td>
<td>5.003</td>
</tr>
<tr>
<td>21</td>
<td>Lactuca serriola L.</td>
<td>Asteraceae</td>
<td>sw</td>
<td>1.75</td>
<td>1.173</td>
<td>0.658</td>
<td>1.298</td>
<td>4.879</td>
</tr>
<tr>
<td>22</td>
<td>Conringia orientalis L.</td>
<td>Brassicaceae</td>
<td>sw</td>
<td>1.55</td>
<td>1.399</td>
<td>0.781</td>
<td>0.966</td>
<td>4.697</td>
</tr>
<tr>
<td>23</td>
<td>Phragmites australis (Cav.)Trin. ex Steud.</td>
<td>Poaceae</td>
<td>sw</td>
<td>0.67</td>
<td>1.173</td>
<td>1.245</td>
<td>1.597</td>
<td>4.691</td>
</tr>
<tr>
<td>24</td>
<td>Ceratocarpus arenarius L.</td>
<td>Chenopodiaceae</td>
<td>cw</td>
<td>0.63</td>
<td>1.308</td>
<td>1.484</td>
<td>1.162</td>
<td>4.591</td>
</tr>
<tr>
<td>25</td>
<td>Goldmarka laevigata L.</td>
<td>Brassicaceae</td>
<td>uw</td>
<td>0.59</td>
<td>1.241</td>
<td>1.511</td>
<td>1.103</td>
<td>4.452</td>
</tr>
<tr>
<td>26</td>
<td>Vicia pugina L.</td>
<td>Fabaceae</td>
<td>sw</td>
<td>0.95</td>
<td>1.139</td>
<td>0.860</td>
<td>1.451</td>
<td>4.404</td>
</tr>
<tr>
<td>27</td>
<td>Sinapis arvensis L.</td>
<td>Brassicaceae</td>
<td>cw</td>
<td>1.43</td>
<td>1.015</td>
<td>0.478</td>
<td>1.411</td>
<td>4.336</td>
</tr>
<tr>
<td>28</td>
<td>Glycyrrhiza glabra L.</td>
<td>Fabaceae</td>
<td>uw</td>
<td>0.83</td>
<td>1.128</td>
<td>0.856</td>
<td>1.393</td>
<td>4.212</td>
</tr>
<tr>
<td>29</td>
<td>Bromus dantliiaceae Trin.</td>
<td>Poaceae</td>
<td>uw</td>
<td>1.15</td>
<td>0.801</td>
<td>1.630</td>
<td>0.357</td>
<td>3.941</td>
</tr>
<tr>
<td>30</td>
<td>Euphorbia heteradenia Jaub. &amp; spach.</td>
<td>Euphorbiaceae</td>
<td>sw</td>
<td>1.55</td>
<td>0.846</td>
<td>0.504</td>
<td>0.946</td>
<td>3.847</td>
</tr>
<tr>
<td>31</td>
<td>Salisola kali L.</td>
<td>Chenopodiaceae</td>
<td>uw</td>
<td>0.83</td>
<td>0.902</td>
<td>1.129</td>
<td>0.876</td>
<td>3.742</td>
</tr>
<tr>
<td>32</td>
<td>Cynodon dactylon (L.) Pers.</td>
<td>Poaceae</td>
<td>cw</td>
<td>1.03</td>
<td>0.868</td>
<td>0.935</td>
<td>0.729</td>
<td>3.566</td>
</tr>
<tr>
<td>33</td>
<td>Salvia syriaca L.</td>
<td>Lamiaceae</td>
<td>sw</td>
<td>0.51</td>
<td>0.914</td>
<td>0.905</td>
<td>1.108</td>
<td>3.444</td>
</tr>
<tr>
<td>34</td>
<td>Cephalaria syriaca (L.) schrod.</td>
<td>Dipsacaceae</td>
<td>uw</td>
<td>1.43</td>
<td>0.902</td>
<td>0.389</td>
<td>0.695</td>
<td>3.418</td>
</tr>
<tr>
<td>35</td>
<td>Vicia sativa L.</td>
<td>Fabaceae</td>
<td>cw</td>
<td>0.75</td>
<td>0.835</td>
<td>0.609</td>
<td>1.057</td>
<td>3.257</td>
</tr>
<tr>
<td>Species Name</td>
<td>Family</td>
<td>Common Name</td>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
<td>-------------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alyssum Szowitsianum</td>
<td>Boraginaceae</td>
<td>Alyssum</td>
<td>113.71%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mentha longifolia</td>
<td>Lamiaceae</td>
<td>Mint</td>
<td>112.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amaranthus viridis</td>
<td>Amaranthaceae</td>
<td>Amaranth</td>
<td>110.67%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyoscyamus pusillus</td>
<td>Solanaceae</td>
<td>Grey Hogweed</td>
<td>109.28%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triticum turgidum</td>
<td>Poaceae</td>
<td>Emmer wheat</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capsella bursapastoris</td>
<td>Brassicaceae</td>
<td>Chickweed</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eichhornia crassipes</td>
<td>Pontederiaceae</td>
<td>Water hyacinth</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrilla verticillata</td>
<td>Hydrocharitaceae</td>
<td>Water hyacinth</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasturtium officinale</td>
<td>Nasturtiaceae</td>
<td>Watercress</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potamogeton natans</td>
<td>Hydrocharitaceae</td>
<td>Water chestnut</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eichhornia crassipes</td>
<td>Pontederiaceae</td>
<td>Water hyacinth</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butomus umbellatus</td>
<td>Butomaceae</td>
<td>Butomus</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrilla verticillata</td>
<td>Hydrocharitaceae</td>
<td>Water hyacinth</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nasturtium officinale</td>
<td>Nasturtiaceae</td>
<td>Watercress</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potamogeton natans</td>
<td>Hydrocharitaceae</td>
<td>Water chestnut</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eichhornia crassipes</td>
<td>Pontederiaceae</td>
<td>Water hyacinth</td>
<td>108.87%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The percentages listed might not add up exactly due to rounding or calculation errors.
4. CONCLUSION

Investigations in Uremia wheat fields show richness in weed species diversity. Higher diversity in this region may be due to minimum management methods. Observation of 167 dicotyledonous weeds from 190 weed species in wheat fields of this county indicated misuse of MCPA+2,4-D as broadleaf weeds controller. *Gallium aparine* L., *Turgenia Latifolia* (L.) Hoff, *Acrotyphon repense* (L.) D.C., *Polygonum aviculare* L., and *Convolvulus arvensis* L. as dominant dicotyledonous weed species can be due to well adaptability of these weeds in dominant environmental conditions and weed control methods. On the other hand, observation of *Secale cereale* L. and *Avena ludoviciana* as troublesome Grasses species distributed in Uremia county wheat fields may be due to lack of suitable management method for control of them. Low-input cultivation and misuse of suitable herbicides and inattention of farmers to control of weed species observed in harvesting period of wheat cause that some of perennial weed species such as *Acrotyphon reopens*, *Convolvulus arvensis*, and *Chondrilla juncea* are dominant in these fields.

REFERENCES


Damghani AM, Kamkar B (2009). A review on competition between weeds and crops. Gorgan University of Agricultural Sciences and Natural Resources Press, Gorgan, Iran.


