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REGIONAL ECOLOGICAL WEED RISK-RANK ASSESSMENT SYSTEM FOR NOXIOUS WEEDS IN DISTRICT MORADABAD, UTTAR PRADESH, INDIA

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ABSTRACT

The present research work deals with noxious weeds (agrestals and ruderals) of district Moradabad. This Eco-botanical study was based on extensive and intensive agricultural and non-agricultural ecosystems conducted during the period February 2022 – November 2023 in Moradabad district. Weed plant species are wreaking havoc on ecological and agricultural environments across the world. Early detection and mitigation of extremely dangerous introductions are crucial for reducing losses and enhancing benefits. The Australian weed risk assessment scoring methodology was used to generate a generalised weed risk score for different noxious weed plant species. The weed risk assessment method has been a successful prediction work for forecasting naturalisations of weed species in 8 blocks (BhagatpurTanda, Mundapandey, Chhajlet, Moradabad, Bilari, Kunderki, Thakurdwara and Dilari) of Moradabad District in Uttar Pradesh. During the period of present study agricultural and non-agricultural ecosystems sampling sites were randomly selected in each block for field observation, sample collection and interviews were conducted from farmers and local inhabitants of each site about noxious weeds and their impacts on agricultural crops, livestock and human beings also. A total of 160 interviews (mainly with farmers and other concerned individuals) discussing the detrimental impact of noxious weed species in different eight blocks in Moradabad district were planned. 60.62% of interview responses were gathered from farmers (97), closely followed by 20.62% by household females (33), 13.12% from shepherds (21) and 5.62% by local market livestock brokers (9). Twenty interviews were conducted in each block at random throughout various agro-climatic seasons. A total of 25 noxious weeds belonging to 2 monocot and 10 dicot APG-IV families were reported from the study area. Total 12 angiosperm APG-IV families of noxious weeds reported from all the sampling sites the predominance was shown by family Asteraceae having 7 noxious weeds in dicot followed by Cyperaceae as 1 species in monocot. Recorded noxious weed families were mostly related with APG-IV grade, Fabids, Lamiids and Commelinids (3 each). The study discovered that 7 weed species of the reported weed species were of high risk rank, followed by 13 were of medium rank and 5 in low risk rank status. In our investigation, we discovered that *Alternanthera philoxeroides* had the highest weed risk score (28), while *Cuscuta reflexa* had the lowest weed risk score (1.44). A study found that 20 of the weed species were herbs, 2 species as creeping herb, 2 as climbing herb and 1 species as shrub. Ruderal weeds (11 spp.) were the most common, followed by agrestal weeds (3 spp.) and (11 spp.) in both categories. In terms of the origin of weed species, mostly weeds were from Africa region (14 spp.). The study suggests a method for estimating noxious weed species risk rank status in different climates and agro- habitats, providing valuable insights for future research on troublesome weed species on the basic of risk rank information.

(Key words: APG-IV, Moradabad, noxious weed, weed risk assessment)

INTRODUCTION

Assessment of invasiveness is crucial for selecting agricultural and non-agricultural species. India imports seeds and planting materials from global sources, importing potential weeds. Australian Weed Risk Assessment helps determine invasiveness for most plant species. Weed invasion into agricultural and natural environments is considered a primary cause of productivity in agriculture loss and biodiversity decline globally (Rai, 2022; Storkey *et al.,* 2021).The risk analysis technique delivers an important framework for characterising the ecology of a route, detecting events that impact weed risk, and emphasising risk minimization or mitigation opportunities (Sreekanth *et al.,* 2022). Since 1997, Australia has made the Australian Weed Risk Assessment a key component of its federal regulatory framework for introducing new species (Weber *et al.,* 2009). The danger associated with bringing new

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weed species to India is determined not only by the amount of weed seeds found in compromised imported grain, but also by the specific species compositions present and the possibility of their dispersion to an appropriate habitat for installation and spread (Nagaraju *et al.,* 2021; Sreekanth *et al.,* 2022).

Weeds are inadvertently seeded, annoying, difficult plants that thrive in undesirable locations (Sagar *et al.,* 2023). In India, weeds have caused in excess of eleven billion dollars in revenue losses in only ten crops (Gharde *et al.,* 2018). Climate change, causing rising CO_2 levels, higher temperatures, and more weather events, is expected to exacerbate issues in weed control (Clements and Jones, 2021; Malhi *et al.,* 2021).

Noxious weeds are undesirable, troublesome, and difficult to control due to their rapid reproduction and dissemination, employing complex techniques to evade human efforts (Das, 2008). Ruderals are weed plants that grow in landfills, urban wastelands, docks, footpaths, railways, roadsides, and other places heavily impacted by human occupancy, industry, and trade (Frenkel, 1977). Phosphorus in the soil aids in root growth, cell proliferation, and makes plants more drought resistant (Yadav and Verma, 2019). Weed is not evenly spread across the landscape, and stains or dense woody structures reflect the infestation and spatial heterogeneity (Izquierdo *et al.,* 2009; Iwara *et al.,* 2011).

MATERIALS AND METHODS

Data collection

A study conducted in Moradabad district (28°-21´ to 28°-16´ Latitude North and 78°- 4´ to 79 Longitude East), western U.P., from February 2022 to November 2023, surveyed 40 field sites in 8 blocks *viz*., Bhagatpur Tanda, Mundapandey, Chhajlet, Moradabad, Bilari, Kunderki, Thakurdwara and Dilari of Moradabad district to understand the distribution and availability of ruderal and agrestal weed flora and estimate weed risk using the Australian Weed Risk Assessment scoring methodology (Randall, 2017). The field study gathered detailed information on the location, habitat, behaviour, ecological specifications, and diagnostic declarations of every weed species. A total of 160 interviews (mainly with farmers and other concerned individuals) discussing the detrimental impact of noxious weed species in different eight blocks in Moradabad district were planned. 60.62% of interview responses were gathered from farmers (97), closely followed by 20.62% by household females (33), 13.12% from shepherds (21) and 5.62% by local market livestock brokers (9). Twenty interviews were conducted in each block at random throughout various agro-climatic seasons. Weed plant specimens were identified using available documentation, including flora of Uttar Pradesh volume I (Singh *et al.,* 2016) and volume II (Sinha and Shukla 2020) and 'Handbook on Weed Identification' (Naidu, 2012). The recorded weed species were classified using the modern APG-IV system (Chase *et al.,* 2016). Weed risk evaluation inside each stage is cumulative, with the three stages and subsequent scores multiplied. Weed Risk Score Analysis Equation=Entry (A+B+C+D+E) x Dispersal (F+G+H+I+J) x Impact (K+L+M+N) (Randall, 2016).

RESULTS AND DISCUSSION

The study helped in explaining the mechanism of acclimatization and speciation with risk of the noxious weeds in Moradabad district. During the course of present botanical study a total of 25 noxious weeds belonging to 2 monocot and 10 dicot APG-IV families were reported from the study area of 8 blocks under the Moradabad district. A total 12 angiosperm families of noxious weeds the predominance was shown by family Asteraceae having 07 noxious weeds closely followed by Poaceae and Convolvulaceae (3 spp. each). Amaranthaceae, Solanaceae and Papaveraceae (2 spp. each), while the remaining families i.e. Fabaceae, Cyperaceae, Verbenaceae, Pontederiaceae, Urticaceae and Zygophyllaceae were represented by 1species each (Table 1). Singh and Singh (1967) evaluated the ecology of 10 noxious weeds from the upper gangetic plains, are generally in accordance. The current findings are in accordance with those of Singh and Dangwal (2014), who explored the different types of noxious weeds of district Rajouri, Jammu and Kasmir, India. Mainly three types of life forms of noxious weeds were reported during the study period i.e. herbs, shrubs and climbers. Herbs made the maximum proportion with 20 species of noxious weeds followed by creeping herb and climbing herb as 2 species each, and 1 species as shrub. In this botanical work of noxious weeds from Moradabad district, the weed families share their percentage within different Grades of APG-IV i.e. with maximum Campanulids (28%), followed by Lamiids (24%), Commelinids (20%), Fabids (12%), Eudicots (8%) and Superasterids (8%) (Table 1). According to the view of origin or native range mostly noxious weeds are related with Africa (14 spp.), North America (9 spp.) and Tropical America (2 spp.). On the other hand *Alternanthera, Argemone* and *Cuscuta* were the dominated genera (each 02 in number) among the all recorded noxious weeds. In the above study on noxious weeds, study represent that 46% weeds were recorded from the agricultural ecosystem, followed by 33% from waste places, 12% along the road side and 9% from the aquatic habitat. Among 25 noxious weeds *L. camara* was reported as shrub, while *C. arvensis* and *T. terrestris* as creeping herb, *C. chinensis* and *C. reflexa* were climbing herb, remaining all weeds were herbs. The noxious weeds like *P. hysterophorus*, *L. camara*, *U. dioica* etc. causes allergies, itching and dermatitis in humans as well as in livestock. The weeds like *A. pungens*, *S. marianum, S. virginianum, X. strumarium* and *T. terrestris* etc. are spinescent weeds which cause injuries to cattle grazing in pastures and also affect human beings with their spinescent parts. The seeds of some noxious weeds like *A. indica*, *A. mexicana*, *D. stramonium*, and *L. temulentum* cause poisoning in human as well as in cattle if they contaminate food or fodder respectively. The noxious weeds like *S. halepense* cause poisoning in livestock. The weeds like *A. philoxeroides*, *C. arvensis, C. rotundus, I. cylindrica*, and *T. procumbens* are difficult to control, they outcompete with native plant species and thus injurious to them. Twenty interviews were conducted in each block at random throughout various agro-climatic seasons, with 40% of noxious weed species responding in the context of the agro-ecosystem, 52% in livestock, and 32% in the human element of all 25 reported weed species. Out of 25 weed species, 10 demonstrated their deleterious impact on various agro-ecosystems, 13 on animals, and 8 on humans. *Tridax procumbens* and *Urtica dioica* were shown to have a deleterious impact on the agricultural ecology and animals. *Argemone ochroleuca, Datura stramonium, Lolium temulentum, Urtica dioica*, and *Xanthium strumarium* were shown to have a deleterious cumulative effect on cattle and humans (Table 1).

Water hyacinth (*Pontederia crassipes*) spreads in mats, and huge populations can cause a wide range of environmental and economic issues. *Pontederia crassipes* blooms on the surface shade out native aquatic plants below, reducing nutritional availability for native species (Bhattacharya *et al.,* 2015). *Parthenium hysterophorus* and *Lantana camara* (Nanjappa *et al.,* 2005) are two of the most invasive exotic weeds documented in India, *Ageratum conyzoides* (Bajwa *et al.,* 2016), and *Eichhornia crassipes, Mikania micrantha* (Banerjee and Anjana, 2012) are bothersome and have a negative ecological, economic, and societal effect.

In the phase of entry 14 weed spp. were in class-A, 1 sp. in class-B, 24 spp. in class-C, 10 spp. in class-D, 22 spp. in class-E. In the phase of dispersal, there were 25 weed spp. in class-F, 16 spp. in class-G, 17 spp. in class-H, 22 spp. were in class-I, 22 spp. in class-J. In the phase of impact, 14 weed spp. in class-K, 0 sp. in class-L, 25 spp. were in class-M and 25 weed spp. in class N (Table 2). Data revealed numerous weed species in grain materials, with some significant agricultural weeds believed to have spread as contaminants (Nagaraju *et al.,* 2021; Sreekanth *et al.,* 2022).Weed species and populations vary based on field and season, influenced by local conditions, agricultural practices, and weather (Singh *et al.,* 2022). 14 weed species were from Africa region, followed by 9 from North America and 2 from Tropical America, in term of origin. Study represent that 7 species were recorded in the high risk rank on the basic of generic weed risk score analysis i.e., *A. philoxeroides, C. arvense, C. rotundus, L. temulentum, P. hysterophorus, S. halepense and T. terrestris,* followed by 13 weed species were recorded in the medium risk rank i.e., *A. pungens* , *A. mexicana* , *A. ochroleuca* , *C. arvensis* , *D. stramonium* , *E. canadensis* , *I. cylindrica* , *L. camara* , *P. crassipes* , *S. vulgaris* , *T. procumbens* , *U. dioica* and *X. strumarium* and 5 weed in the low risk rank, i.e., *A. indica* , *C. chinensis* , *C. reflexa* , *S. marianum* and *S. virginianum* (Table 3). We identified two weed categories: Ruderal (11 spp.) and Agrestal (3 spp.), with 11 species as above for both.

Comparative representation of the current study with the findings of the Global Compendium of Weeds reveals that there were 0 weed species in the low rank status of the Compendium, and we recorded 5 species out of 25. We found that 13 species were in medium risk rank status although 4 species were in Compendium. We report that there were 7 species in the high and 0 species in extreme risk rank status, while there were 12 species and 8 species in the extreme risk rank status. There was 1 weed species in un-scored status in the compendium, and in our analysis, we found no species in un-scored status (Table 3), Findings of Compendium (Randall, 2017) weed species, i.e., in high risk rank status, species were *A. indica, A. pungens, A. mexicana, C. arvense, D. stramonium, L. camara, P. hysterophorus, P. crassipes, S. vulgaris, S. marianum, T. procumbens and X. strumarium*, but in our results weed species *A. philoxeroides* , *C. arvense*, *C. rotundus* , *L. temulentum* , *P. hysterophorus* , *S. halepense* and *T. terrestris* were found in high risk rank status. There were no species in low risk rank of compandium finding and we reported *A. indica* , *C. chinensis*, *C. reflexa* , *S. marianum* and *S. virginianum* and *A. ochroleuca* , *C. chinensis* , *C. reflexa* and *E. canadensis* were enlisted in the medium risk rank of global compendium and we found that *A. pungens* , *A. mexicana* , *A. ochroleuca*, *C. arvensis* , *D. stramonium* , *E. canadensis* , *I. cylindrica* , *L. camara* , *P. crassipes* , *S. vulgaris*, *T. procumbens* , *U. dioica* and *X. strumarium* in medium risk rank status. The examination and monitoring of weed seeds during import ensures compliance with import rules (Nagaraju *et al.,* 2021). The desire for decorative species is frequently motivated by fashion, promotion, and pricing, resulting in countless successful plant invasions caused by human error (Dehnen-Schmutz and Touza 2007). The economy of farmers and agriculturalists is harmed by noxious weeds. They out-compete native plants, diminishing the amount of food available for livestock grazing. These weeds affect humans and livestock by producing large amounts of pollen and chemicals that cause severe allergies, skin irritation, and eye discomfort. According to the study, the approach can successfully estimate the danger rank status of certain weed species under various climatic and ecological circumstances. The data will offer valuable insights into the future of the problematic weed species, which we can confirm. The study will aid in determining the most suitable weedicide applications and concentrations for specific weed species in various agricultural settings.

Table 1. Noxious weed with their effects on agricultural crops, livestock and human beings

Sr. No.	Botanical name of weeds	APG-IV family	APG-IV grades	Effect on agro-ecosystem, livestock and human
1.	*Aeschynomene indica*	Fabaceae	Fabids	The seeds are toxic to livestock.
2.	*Alternanthera philoxeroides*	Amaranthaceae	Superasterids	Forms a dense mat on the water's surface, obstructing light penetration
3.	*Alternanthera pungens*	Amaranthaceae	Superasterids	Causing stomach problems in cattle.
4.	*Argemone mexicana*	Papaveraceae	Eudicots	Cattle and humans are injured by the spines.
5.	*Argemone ochroleuca*	Papaveraceae	Eudicots	Spines are injurious to cattle as well as human
6.	*Cirsium arvense*	Asteraceae	Campanulids	It grows in dense stands, blocking out and displacing native plants.
7.	*Convolvulus arvensis*	Convolvulaceae	Lamiids	Hard to control due to its extensive root system.
8.	*Cuscuta chinensis*	Convolvulaceae	Lamiids	It is a plant parasite which wraps itself around the host plant and develops haustoria to obtain nutrients from host plant.
9.	*Cuscuta reflexa*	Convolvulaceae	Lamiids	It is a plant parasite which wraps itself around the host plant and develops haustoria to obtain nutrients from host plant.
10.	*Cyperus rotundus*	Cyperaceae	Commelinids	Due to the extensive underground tuber system, it is difficult to control.
11.	*Datura stramonium*	Solanaceae	Lamiids	Seeds are toxic, cynogenicglucoside,
12.	*Erigeron canadensis*	Asteraceae	Campanulids	Many people are allergic to its pollen, and even handling the plant can cause a reaction.
13.	*Imperata cylindrica*	Poaceae	Commelinids	The rough edges of mature leaves contain silica body and become stiff and sharp, causing cuts on the mouth portions of calves feeding on them.
14.	*Lantana camara*	Verbenaceae	Lamiids	In humans, it causes itching and allergies.
15.	*Lolium temulentum*	Poaceae	Commelinids	Seeds are poisonous to cattle and humans.
16.	*Parthenium hysterophorus*	Asteraceae	Campanulids	Negative impact on the germination and growth of a number of crop plants.It can activate allergies and is a typical source of pollen allergy.
17.	*Pontederia crassipes*	Pontederiaceae	Commelinids	This weed is extensively plagued in Deeporbeel, a freshwater lake and water bodies.
18.	*Senecio vulgaris*	Asteraceae	Campanulids	Ragwort is poisonous to animals because it includes a number of alkaloids.
19.	*Silybumm arianum*	Asteraceae	Campanulids	Plant has been reported to be toxic to cattle and sheep due to its potassium nitrate concentration.
20.	*Solanum virginianum*	Solanaceae	Lamiids	It causes damage to the mouth portions of cattle grazing in pastures due to the presence of spines.
21.	*Sorghum halepense*	Poaceae	Commelinids	It has proven lethal to cattle during the initial stages.
22.	*Tribulus terrestris*	Zygophyllaceae	Fabids	Grazing animals are seriously injured by the fruits, which have a sharp, strong spine.
23.	*Tridax procumbens*	Asteraceae	Campanulids	Widely distributed and difficult to control.
24.	*Urti cadioica*	Urticaceae	Fabids	Intense pain and irritated skin rashes in both humans and cattle.
25.	*Xanthium strumarium*	Asteraceae	Campanulids	Livestock are poisoned by the plants, especially fresh seedlings. Humans are also injured by their spines.

Table 2. The system categories, total species numbers, weed percentages and allocated values for each species

Sr.No.	Weed name	Entry					Dispersal					Impact				Origin status	GWRR score according to current study	Risk Rank status according to current study
		A	B	C	D	E	F	G	H	I	**J**	**K**	L	M	N			
1.	*Aeschynomene indica*	-	-	+	-	+	+	-	+	-	+	-	-	+	+	NAM	3.24	LOW
2.	*Alternanthera philoxeroides*	+	-	+	+	+	+	+	+	+	+	+	-	+	+	TAM	28.0	HIGH
3.	*Alternanthera pungens*	+	-	-	+	-	+	-	-	+	+	+	-	+	+	TAM	11.4	MEDIUM
4.	*Argemone mexicana*	-	-	+	-	+	+	+	+	+	+	+	-	+	+	NAM	9.0	MEDIUM
5.	*Argemone ochroleuca*	-	-	+	-	+	+	+	+	+	+	+	-	+	+	NAM	9.0	MEDIUM
6.	*Cirsium arvense*	+	-	+	-	+	+	+	+	+	+	+	-	+	+	NAM	22.0	HIGH
7.	*Convolvulus arvensis*	+	-	+	+	+	+	+	+	-	+	-	-	+	+	AF	13.44	MEDIUM
8.	*Cuscuta chinensis*	-	-	+	-	-	+	-	-	+	+	+	-	+	+	AF	3.6	LOW
9.	*Cuscuta reflexa*	-	-	+	-	-	+	-	-	+	+	-	-	+	+	AF	2.16	LOW
10.	*Cyperus rotundus*	+	-	+	+	+	+	+	+	+	-	+	-	+	+	AF	22.4	HIGH
11.	*Daturas tramonium*	-	-	+	+	+	+	+	-	+	+	-	-	+	+	NAM	7.2	MEDIUM
12.	*Erigeron canadensis*	+	-	+	-	+	+	-	+	+	-	+	-	+	+	NAM	13.2	MEDIUM
13.	*Imperata cylindrica*	+	-	+	+	+	+	-	+	+	+	-	-	+	+	AF	13.44	MEDIUM
14.	*Lantana camara*	-	+	+	-	+	+	+	+	+	+	-	-	+	+	NAM	12.6	MEDIUM
15.	*Lolium temulentum*	+	-	+	+	+	+	+	+	+	+	-	-	+	+	AF	16.8	HIGH
16.	*Parthenium hysterophorus*	+	-	+	-	+	+	+	+	+	-	+	-	+	+	NAM	17.6	HIGH
17.	*Pontederia crassipes*	+	-	+	-	+	+	-	+	+	+	-	-	+	+	AF	10.56	MEDIUM
18.	*Senecio vulgaris*	-	-	+	-	+	+	+	+	+	+	+	-	+	+	AF	9.0	MEDIUM
19.	*Silybum marianum*	-	-	+	-	+	+	+	+	+	+	-	-	+	+	AF	5.4	LOW
20.	*Solanum virginianum*	-	-	+	-	+	+	-	-	-	+	+	-	+	+	AF	3.6	LOW
21.	*Sorghum halepense*	+	-	+	-	+	+	+	+	+	+	+	-	+	+	AF	22.0	HIGH
22.	*Tribulus terrestris*	+	-	+	+	+	+	+	-	+	+	+	-	+	+	NAM	22.4	HIGH
23.	*Tridax procumbens*	+	-	+	-	+	+	-	-	+	+	+	-	+	+	AF	13.2	MEDIUM
24.	*Urtica dioica*	+	-	+	+	+	+	+	-	+	+	-	-	+	+	AF	13.44	MEDIUM
25.	*Xanthium strumarium*	-	-	+	+	+	+	+	+	+	+	-	-	+	+	AF	9.0	MEDIUM

Origin: **NAM** = North America, **TAM** =Tropical America, **AF** =Africa

Table 3. Comparative representation of the current findings with the findings of global compendium of weeds

Sr. No.	Weed species	APG-IV Families	Life forms	Weeds type		Generalize weed risk score		Weed risk rank status	
				RW	AW	According global weed compendium	According to current study	According global weed compendium	According to current study
1.	*Aeschynomene indica*	Fabaceae	H	+	-	26.88	3.24	HIGH	LOW
2.	*Alternanthera philoxeroides*	Amaranthaceae	H	+	+	44.8	28.0	EXTREME	HIGH
3.	*Alternanthera pungens*	Amaranthaceae	H	+	+	19.2	11.4	HIGH	MEDIUM
4.	*Argemone mexicana*	Papaveraceae	H	+	+	24	9.0	HIGH	MEDIUM
5.	*Argemone ochroleuca*	Papaveraceae	H	+	+	14.4	9.0	MEDIUM	MEDIUM
6.	*Cirsium arvense*	Asteraceae	H	+	+	24	22.0	HIGH	HIGH
7.	*Convolvulus arvensis*	Convolvulaceae	CRH	+	-	44.8	13.44	EXTREME	MEDIUM
8.	*Cuscuta chinensis*	Convolvulaceae	CLH	+	+	7.68	3.6	MEDIUM	LOW
9.	*Cuscuta reflexa*	Convolvulaceae	CLH	+	-	7.68	2.16	MEDIUM	LOW
10.	*Cyperus rotundus*	Cyperaceae	H	-	+	44.8	22.4	EXTREME	HIGH
11.	*Daturas tramonium*	Solanaceae	H	+	-	24	7.2	HIGH	MEDIUM
12.	*Erigeron canadensis*	Asteraceae	H	-	+	14.4	13.2	MEDIUM	MEDIUM
13.	*Imperata cylindrica*	Poaceae	H	+	-	35.84	13.44	EXTREME	MEDIUM
14.	*Lantana camara*	Verbenaceae	S	+	-	24	12.6	HIGH	MEDIUM
15.	*Lolium temulentum*	Poaceae	H	+	-	44.8	16.8	EXTREME	HIGH
16.	*Parthenium hysterophorus*	Asteraceae	H	-	+	28.16	17.6	HIGH	HIGH
17.	*Pontederia crassipes*	Pontederiaceae	H	+	-	35.84	10.56	HIGH	MEDIUM
18.	*Senecio vulgaris*	Asteraceae	H	+	+	24	9.0	HIGH	MEDIUM
19.	*Silybum marianum*	Asteraceae	H	+	-	24	5.4	HIGH	LOW
20.	*Solanum virginianum*	Solanaceae	H	+	+	UNSCORED	3.6	UNSCORED	LOW
21.	*Sorghum halepense*	Poaceae	H	+	+	44.8	22.0	EXTREME	HIGH
22.	*Tribulus terrestris*	Zygophyllaceae	CRH	+	+	44.8	22.4	EXTREME	HIGH
23.	*Tridax procumbens*	Asteraceae	H	+	+	26.88	13.2	HIGH	MEDIUM
24.	*Urtica dioica*	Urticaceae	H	+	-	44.8	13.44	EXTREME	MEDIUM
25.	*Xanthium strumarium*	Asteraceae	H	+	-	24	9.0	HIGH	MEDIUM

H = Herb, **S** = Shrub, **CRH** = Creeping herb, **CLH** = Climbing Herb; **AW** =Agrestals weeds, **RW** =Ruderals weeds

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