

Introduction of the Weeds to Iranian Rangeland (A Case Study of the Cheshmehe Ali Watershed)

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Abstract: The necessity of knowing and of paying attention to the composition of plant species in rangeland is an important matter because the composition of the species in each rangeland, besides determining the condition and the carrying power of the rangeland, has a role in the minor usages of rangeland. Therefore, it is necessary to evaluate the composition of rangeland species in various years to determine whether there has been an increase or decrease in the weeds of the rangeland and to plan for the rangeland on that basis. In this study, which was carried out in the rangeland of Cheshmeh Ali watershed in the province of Semnan, the weeds, the poisonous plants, and the thorny plants of the rangeland are introduced and analyzed. Results obtained show that 31% of the plants in the region are rangeland weeds. This high percentage of rangeland weeds is very important as far as the management of grazing in the rangeland is concerned; and the way this trend will continue in the future is highly significant in investigating the condition of the rangeland.

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1. Introduction

Hundreds of different types of weeds infect artificial and natural rangeland. They include trees, brushes, herbaceous broad-leaved weeds, poisonous plants, and unwanted grasses (Asghari, 2000). Weeds are not special or specific plants which are innately weeds, but rather they are called weeds because they are not usable and also due to the fact that they cause damages and losses. It is very important to bear this in mind in the management of rangeland. Most rangeland weeds enjoy low palatability and are usually ignored by grazing stock, which causes an increase in the populations of these weeds in the rangeland. A continuation of this trend will decrease the suitability of the rangeland as a feeding ground for stock. Lack of attention to this seemingly simple matter will bring about the loss of valuable resources; and besides the losses due to the attack of weeds on crops, we will witness damages inflicted on rangeland, and hence on stock. Rangeland is land covered with plants that can be used as food for stock (Aslani, 2005). In fact, plants present in rangeland produce forage. Forage is that part of stems and leaves eaten by animals (Moghaddam, 2008). In the composition of the plant cover of rangeland, we find poisonous plants, and an abundance of these poisonous plants is due to mismanagement of the rangeland in past years. These poisonous plants contain special chemical compounds such as alkaloids, glycosides, saponins, organic acids,

lactones, some oils soluble in ether, and dyes and resins which upset stock, and in some cases cause their death. Poisonous plants have been of interest because of the damage they inflict on stock and due to the fact that they compete with rangeland plants, and hence, in some cases, it is necessary to control them (Moghaddam, 2008). Poisonous plants are a sub – group of weeds and are less palatable than forage plants. There are various ways of controlling poisonous plants, including mowing, uprooting, burning, plowing, and using herbicides (Rezvani and Hatami Moghaddam, 2008). Weeds, besides being unwanted plants, have other characteristics such as high seed production potential, great ability in rapidly establishing themselves, rapid occupation of crop and rangeland, and intense competition with crop plants. Therefore, upon noticing the presence of weeds in any region, the first thing to do is to identify them; and the action to take is to employ suitable management practices in order to prevent their spread and to exterminate them from rangeland or the cropland. A lot of research has been conducted to study and identify weeds: Samadani et al (2006) studied the use of cover plants for managing weeds in orchards, as compared with chemical and mechanical control methods, and concluded that cover plants can be suitable substitutes for the common ways of controlling weeds in orchards. Nekooee and Raheem Malek (2006) introduced the weeds in the vineyards of

Takestan and described their life forms. They identified 84 species belonging to 71 genera and to 26 families in the region of Kroon and Tiran, and 62 species belonging to 51 genera and to 23 families in Zarrinshahr. In both regions, the dominant species belonged to the Gramineae and the Compositae families. Integrated management of weeds is one of the best methods and tools of establishing farming systems that, while trying to control weeds, minimizes the adverse effects of the remaining weeds. Takdastan et al., (2007) studied the problems caused by rooty aquatic plants for water resources and the various ways of controlling them, in their research, used the management of sheep grazing on rangeland as a method for controlling rangeland weeds.

2. Materials and Methods

The Cheshmeh Ali watershed with an area of 10 square kilometers is situated in the warm steppes 50 kilometers away from the city of Damghan in the province of Semnan. There are 21 families and 52 species of plants in this region. The growth forms of the plants of the region are as follows: 11.76% phanerophytes, 25.49% hemicryptophytes, and 62.7% trophytes. In this study, the rangeland weed species of the region, including the poisonous, the thorny, and the unsuitable plants for stock were identified by using the various available sources; and the reasons they were not grazed by stock were investigated.

3. Results

Losses incurred due to the presence of weeds in rangeland include the reduction in the population of

forage plants that can be grazed, which is caused by the competition of weeds with forage plants, the destruction of rangeland because of the attack by and the dominance of weeds, the reduction in the intensity of grazing of stock on the rangeland, the lower palatability and digestibility of the forage due to the decrease in the coefficient of conversion of forage that can be grazed, the physical injuries suffered by stock, the poisoning of the forage because of the presence of poisonous weeds, and the production of low quality skins and wool. Asghari (2000) in his research on the study and identification of the weeds in this region showed that 31% of the plants in the watershed studied were rangeland weeds (Figure 1).

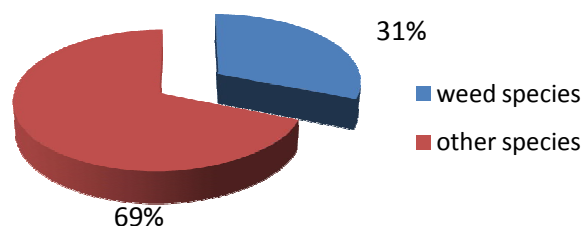


Figure 1. The percentage of weeds in the watershed of Cheshmeh Ali

The weeds in the rangeland are tabulated in the following table (Table 1):

Table 1. The list of rangeland weeds in the watershed of Cheshmeh Ali

Number	Species scientific name	Family	Life form	Plant type	Life cycle	Palatability class
1	<i>Consolida orientalis</i>	Ranunculaceae	Trophyte	Herb	Annual	III
2	<i>Peganum harmala</i>	Zygophyllaceae	Hemicryptophyte	Herb	Perennial	III
3	<i>Heliotropium aucheri</i>	Boraginaceae	Hemicryptophyte	Brush	Perennial	II
4	<i>Bromus tectorum</i>	Gramineae	Trophyte	Herb	Annual	II
5	<i>Euphorbia heliscopia</i>	Euphorbiaceae	Hemicryptophyte	Herb	Perennial	III
6	<i>Linaria michauxii</i>	Scrophulariaceae	Trophyte	Herb	Annual	III
7	<i>Veronica macropoda</i>	Scrophulariaceae	Trophyte	Herb	Annual	III
8	<i>Acantholimon spp.</i>	Plumbaginaceae	Hemicryptophyte	Brush	Perennial	III
9	<i>Erodium oxycorynchum</i>	Geraniaceae	Trophyte	Herb	Annual	III
10	<i>Erodium cicutarium</i>	Geraniaceae	Trophyte	Herb	Annual	III
11	<i>Ranunculus arvensis</i>	Ranunculaceae	Trophyte	Herb	Annual	III
12	<i>Glaucium elegans</i>	Papaveraceae	Trophyte	Herb	Annual	III
13	<i>Astragalus albisnopium</i>	Papilionaceae	Hemicryptophyte	Brush	perennial	III
14	<i>Crepis sancta</i>	Compositae	Trophyte	Herb	Annual	III
15	<i>Ebenus stellata</i>	Papilionaceae	Phanerophyte	Scrub	Perennial	III
16	<i>Senecioglaucus</i>	Compositae	Trophyte	Herb	Annual	III

Peganum harmala (harmel peganum, African rue, Syrian rue, harmel) contains the beta-harmalin neurohormone alkaloids which in stock, especially in cattle, cause poisoning, trembling, salivation, frequent urination, and a drop in body temperature. *Heliotropium aucheri* is one of the main causes of cattle fatality in Australia; and sometimes up to 70%, and occasionally up to 90%, of herds are lost due to poisoning by this weed. Moreover, sheep grazing this plant become susceptible to reproductive disorders and also to chronic poisoning. *Ranunculus arvensis* causes swelling, together with blistering, of the mouth, salivation, lack of coordination, and abortion.

Euphorbia helioscopia causes swelling of the mucus of the mouth, salivation, and diarrhea. The sap and the leaves of this plant can cause poisoning in horses, the symptoms of which are diarrhea and spasm. The poisoned animal may die. *Consolida orientalis* contains cyanogenic glycosides in all of its organs. These substances can poison stock. *Erodium cicutarium*, which grows in fields and in wasteland, causes sensitivity of stock to the first light of the day.

Astragalus albispinus contains a poisonous glycoside that causes breathing disorder and paralysis in stock. It is a weed in sugar beet, vegetables, summer crops, and sugarcane.

Populations of weeds need to be controlled and managed. The basis of such management should be to stop or reduce the speed of their spread (Tahbaz et al., 1998). However, weeds present in rangeland and used by stock need to be managed. It may very well be possible, if the plants are considered weeds because they are ligneous (fibrous) or contain essences, to use them through employing good management practices in grazing and by paying attention to the phenological stages of the plants (Moghaddam, 2008). In the final analysis, we must know that even invasive plants have their own special role in the ecosystem, and though they may not be usable, yet their presence as servants devoted to protecting the soil is very important.

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