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Effect of salinity and allelopathic extract *Amartanthus retroflexus* and *Chenopodium album* weeds on growth and production of effective medicinal substances in *Valeriana officinalis*

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ABSTRACT

Although each of these stress alone significantly affect the plant But if the interaction with other stress conditions, even in low situation plant ecosystems are able to change But little research has been to interference under stress. The aim of this experiment was interaction between biological and non biological stress, allelopathy and the salt that is applied to both the chemical impact on plants. Treatment was 4level salinity and weed organs extract (10 percent). The result showed that Organ extract treatment of weeds with greater deterrence, less impact on the salinity change is the result of interaction between stress. But in essence, low-intensity interference effect had much stronger deterrence. According this experimental result Both stress factors by reducing total number stem and non-fertile stems and stalks can reduce performance. The different characteristics of different intensity were affected by stress the different attributes of different intensity were affected by stress. the aim of this experimental was effect of extracts the *Amartanthus retroflexus* and *Chenopodium album* weeds, Different levels of salinity on germination and growth in *Valeriana officinalis*.

Key words: allelopathy, salinity, *Valeriana officinalis* and interaction.

INTRODUCTION

Salinity and allelopathy of stress that affect the entire process of development [1,2]. But the effect of each stress alone, they interact through their effects on ecological processes, biological structure and function of plant communities to determine [3].

Therefore, stress often had a close relationship with other stress (Such as high temperature, drought and high light) using similar mechanisms to ensure maximum control of changes in environmental factors is essential [4].

But when stress can have very different nature of the problem is more complex. The interaction of salinity and allelopathy Alam *et al* [5] on growth, germination and nutrient amount in wheat reported that combination of weed Leaf extract and NaCl with more intensity than any of these treatments reduced.

The aim of this experimental was the effect of extracts of different parts of the *Amaranthus retroflexus* and *Chenopodium album* weeds, Different levels of salinity on germination and growth in *Valeriana officinalis*.

MATERIALS AND METHODS

Treatment was salinity and water extracts of two weeds (*Amaranthus retroflexus* and *chenopodium album*) different parts and their interaction on *Valeriana officinalis* germination and growth. In this reason, water extracts of different weeds parts (root, shoot, total plant and control) prepared in 10 % concentration. Salinity levels also defined as control, 4, 8 and 12 ds/m. All statistical analysis using software M-STAT statistical model based on experimental design.

RESULTS

Interaction type of weeds and salinity had significant difference in leaf area, number of fertile tillers, and dry weight root, and leaf dry weight, seed weight per plant and total plant dry weight.

The interaction of various weeds in salinity in all traits except number of leaves had significant difference. 12 ds and control salinity between the two weed on *Valeriana officinalis* leaf area had great difference (figure1).

Regardless of the level of salinity, leaf area decreased with increasing salinity. But reason of that why leaf area decreasing in control after separation of extracts of different parts of the weed in figure 2 showed. It depends on how the treatments in the greenhouse and laboratory. The treatments that are used with both treatments, equal amounts of each extract was mixed and applied. This reduces the concentration of each extract was mixed in juice But in each of the extracts used in the control solution or other extracts, the extracts were applied with the same concentration. But at the same interference effect can be better evaluated.

Maximum effect in decreasing leaf area had EC=12. Although net EC of organs *Amaranthus retroflexus* and *chenopodium* with an average salinity of organ and salinity (EC ~ 12) was same, but the effect of shoot extracts were more (Figure2).

The root extract was true and interference effect was much stronger. This shows that salinity with extracts of low allelopathic property, the more interference, Effect interaction extract and salinity 12 was more than control level.

Effect of different levels of salinity and weed extract, the total dry weight in *Valeriana officinalis* has similar leaf area but is much less difference between the two weed (figure 3). It can be seen that the different characteristics in terms of sensitivity allelopathic extract weeds and salinity show a different reaction

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Biological and environmental stress can affect different locations [7].

Extract of shoot parts of weeds had the greatest impact in reducing the total number of flowering stems. Extract of aerial parts of *Chenopodium Murale* had more toxic effect than root extract on the germination of seeds was tested.

Extract of the aerial so that the different salinity treatments did not differ except for EC =4. But in other organs of various treatments weeds were more differences

For example, the root extract with EC = 12 had the greatest impact reduction.

Table 1: Variance analysis on traits

S.V	df	Leaf area	Leaf number	Shoot number	umber of fertile tillers	Total dry weight
Weed type	1	1874047/594**	107/ 385 ^{n.s}	2/325**	2/530**	0/036**
Different organs	3	094.7881222**	426/866**	110/800**	65/425**	1/356**
Weed type* Different organs	3	212810/205**	38/021 ^{n.s}	0/724 ^{n.s}	1/760**	0/014*
salinity	3	7332401/733**	529/307**	63/805**	52/812**	0/888**
Salinity* Weed type	3	228808/122**	16/125 ^{n.s}	0/966 ^{n.s}	1/180**	0/016**
Different organs* Salinity	9	1569736/936**	37/062 ^{n.s}	9/110**	11/479**	0/148**
Weed type* Different organs* salinity	9	57209/918 ^{n.s}	4/359 ^{n.s}	1/235**	1/279**	0/018**
Error	64	63588/531	36/127	0/424	0/249	0/004
(%)CV		8/75	51/53	15/94	16/61	14/75

Table2: EC After preparation of extracts

<i>Chenopodium album</i>						<i>Amartanthus retroflexus</i>						sality organ
total	shoot	root	total	shoot	root	total	shoot	root	total	shoot	root	
9.98	12.45	5.19	11.83	13.6	10.3							0
7.29	9.345	4.59	8.65	9.415	7.835							4
9.91	11.13	6.57	10.29	10.89	9.065							8
11.59	13.35	8.40	12.53	13.24	11.21							12

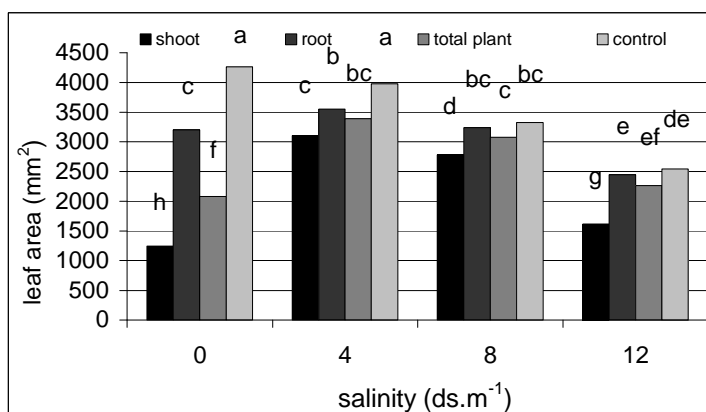


Figure 2: Effects of Salinity and extract various parts on the leaf area

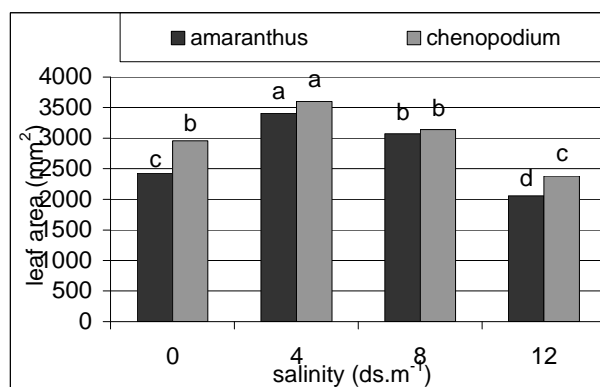


Figure1: The effect of different levels of salinity and weeds on the leaf area

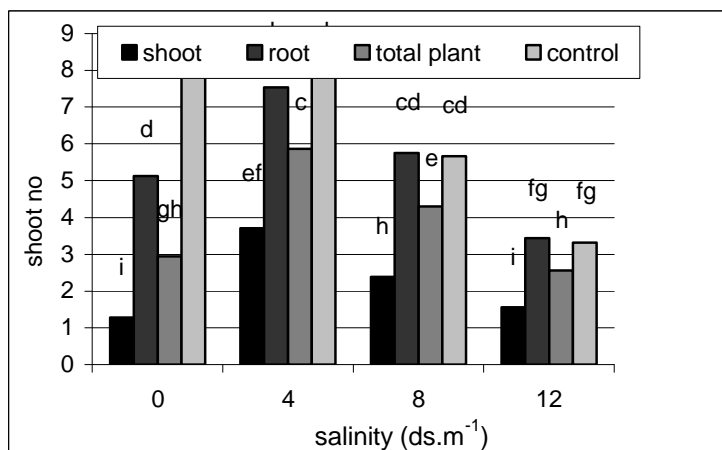


Figure 4: Effects of Salinity and extract various parts of the weeds on the number of stem

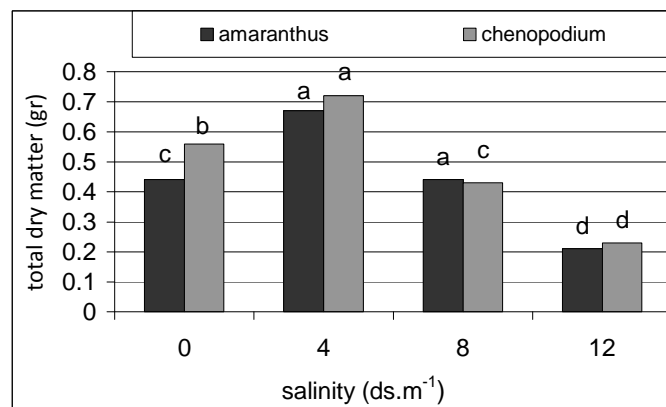


Figure 3: Effects of Salinity and weeds on total dry weight

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