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EFFECT OF ALLELOPATHY OF PARTHENIUM HYSTEROPHORUS L. AND LANTANA CAMARA L. IN DIFFERENT CONCENTRATION WITH DISTILL WATER ON SEED GERMINATION OF PHASEOLUS RADIATUS L.

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Abstract

Parthenium hysterophorus L. and Lantana camara L. are collected there extract of leaf and shoot are mixed and prepared with distilled water in different concentration 5%, 10%, 15%, 20% distilled water is taken as controlled now these extract is used on the crop Phaseolus radiatus L. which is a leguminous plant the material chosen for the study includes Parthenium hysterophorus L and Lantana camara L. the leaf and shoot of these plant is collected dried and with the help of mixture grinder extract was made after that the extract is mixed and soaked for 24 hours in Distilled water and then following concentration of extract in distilled water is prepared the concentration are as follows 5:95%, 10:90%, 15:85%, 20:80% distilled water is used as control respectively.

Now the different concentration of extract is used on the seed of Phaseolus radiatus L. and seed germination is recorded. The data are taken and collected through static. The highest germination we see in control Distilled Water is 100% and at 5:95% and 10:90% the 90% seed germination is seen in 15:85% we got 70% germination and in 20:80% the seed germination is 60% so the allelochemicals released by Parthenium hysterophorus L. and Lantana camara L. aqueous extract has the inhibitory effect on seed germination So we are absorbing that the Allelochemicals produced by Parthenium hysterophorus L. and Lantana camara L. aqueous extract is giving very adverse effect and inhibits seed germination of Phaseolus radiatus L.

Keyword: Allelopathy, Allelochemical

ISSN: 2347-2979

Introduction

Allelopathy from the Greek word allelo [one another or mutual] and pathy suffering refer's to the release of allelochemicals by plant which have some type of effect on another plant. The term is attributed to an Austrian professor Hans. Molisch who kind it in his 1937 book "The effect of plant on each other (Molisch)[1].

In India two weeds are found enormous and everywhere in agriculture fields grows with crops as a weed and causing very much inhibition of commercial crops and the production is reducing very much these two Plants are *Parthenium hysterophorus L.* and *Lantana camara L.* Plant has Allelochemicals and due to this allelochemicals they inhibit other Plants growth and *Parthenium hysterophorus L.* and *Lantana camara L.* are spreading all over in our country *Parthenium hysterophorus L.* and *Lantana camara L.* have no use to humans and animals also *Parthenium hysterophorus L* causes skin disease to humans *Parthenium hysterophorus L.* and *Lantana camara L.* can't be edible by animals also nor they are destroyed by insects or other microorganisms many research going on to get best use of *Parthenium hysterophorus L.* & *Lantana camara L.*

Effect of allelopathy of *Parthenium hysterophorus L.* is observed on *Phaseolus aureus L.* and *Triticum aestivum L.* is observed and inhibition is seen due to the allelochemicals produced by *Parthenium hysterophorus L.* (Agarwal, C. Anand, A. 1992)[2]. The chemical can be given off by different part of plant or can be release through natural decomposition Allelopathy is a survival mechanism that allow certain plants to compete with and often destroyed nearby plant by inhibiting Seed Sprouting, root development or nutrient uptake.

Parthenium hysterophorus L. belongs to family Asteraceae which is a noxious weed in America Asia Africa and Australia. This is on annual herb *Parthenium hysterophorus* scientific name *Parthenium hysterophorus L.* common name carrot weed.

Lantana camara L. is weed is a native from the tropical region of central and south America *Lantana* is a heavily branched shrub species name- *Lantana camara L.* family Verbenaceae.

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Both *Parthenium hysterophorus L* and *Lantana camara L.* are extremely easy to grow everywhere. It has low water requirement *Lantana camara* this plant has poison characteristic also. The different parts of *Lantana camara L.* contains allelochemicals like phenolic compounds and aromatic alkaloids (Ambika et al., 2003)[3].

The effect of Allelopathic influence of *Parthenium hysterophorus L.* their leaf extracts on seed germination of Pigeonpea *(Cajanus cajan)* were researched and studied and it was observed that due to allelochemicals of *Parthenium hysterophorus L.* when the germination and growth of Pigeonpea (*Cajanus cajan)* were searched the study revealed that due to the allelochemicals of *Parthenium hysterophorus L*. seed germination and growth of *Cajanus cajan* were inhibited and growth retards so by its allelochemical we can control weeds and herbs (Mehta et al. 2001)[4].

The effect of allelopathy of *Parthenium hysterophorus L.* leaf extract were observed on seed germination of Urad (*Vigna mungo*) were researched and studied and it is found that due to the allelochemicals of *Parthenium hysterophorus L*. the seed germination of Urad (*Vigna mungo*) retards at higher concentration of *Parthenium hysterophorus L* leaf extracts so it can be used as weedicide at the higher concentration and this will be the best biological weedicide good for environment. (Mehta et al. 2001)[5].

To observe the effect of allelopathy Izzet kadiogolu and yusuf has researched on 22 plant extract and seed germination of nine different weed was observed. The Extract of the plants were processed with Methanol acetone (10%) and used as control. It is observed that due to Allelochemicals we found inhibition in seed germination and growth also reduces. So as observation weed can be used as Herbicide to control other weeds this result was obtained (Izzet kadioglu and Yusuf yahar 2004)[6].

Effect of Allelopathy of *Lantana camara L.* and Vegetative Growth on Green Gram (*Phaseolus radiatus L.*) and it is observed that the seed germination and growth of *Phaseolus radiatus L*. decreases (P. K. Gantayet et. al., 2014)[7].

ISSN: 2347-2979

Parthenium hysterophorus L. its aqueous extract taken and treated on *Glycine max L.* and *Phaseolus vulgaries L.* the germination of seed, root growth and shoot growth and their dry matter production is analyzed. the allelopathic effect is varied at higher level of concentration seed germination and subsequeted shoot and root growth is inhibited (Antenh Netser and mendesil may 20,2011)[8.]

The allelochemicals of *Lantana camara L.* effects inhibits photosynthesis and the respiratory chain (Abarahim et al 2000)[9]. Effect of allelopathy of *Lantana camara L.* on germination and growth of *Zea mays, Eragrostis tef, Eleusine coracana.* The aqueous extract of *Lantana camara L.* at 5%,10%,15%,25%,50%,75% and control and the growth is retarded with increasing concentration of aqueous extract (Dasalegn Tadele 2014)[10].

Effect of allelopathy of plants parts leaf, stem, flower and fruit of *Lantana camara L.* extract were taken and growth of *Parthenium hysterophorus L.* was observed and the results were *Lantana camara L.* extract inhibits the seed germination *Parthenium hysterophorus L.* (Mishra A & Singh, R 2009)[8]. According to this *Lantana camara L.* allelochemicals can inhibits the *Parthenium hysterophorus L.* germination and growth but we know *Lantana camara L.* and *Parthenium hysterophorus L.* both are noxious weed so we have to search for better option for better results

Material and methodology

Parthenium hysterophorus L and *Lantana camara L.* is collected when the Plant starts flowering is collected and cut up to one feet on the top side with flower and then dried up to the room temperature in February month.500 gm each *Parthenium hysterophorus L* and *Lantana camara L.* extract is mixed and soaked in 5 liter distilled water so that it can easily imbibe in distilled water easily for 24 hours after 24 hours by the help of a muslin cloth. *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract of leaf and shoot is prepared different concentration of extract and distilled water 5:95, 10:90,15:85, 20:80, respectively, and Distilled water is used as control.

ISSN: 2347-2979

The seeds of *Phaseolus radiatus L*. of summer variety is collected which is grown on organically and the best seeds of *Phaseolus radiatus L*. is collected.

To see the seed germination of seeds of *Phaseolus radiatus L*. pots are kept and 10 seeds of *Phaseolus radiatus L*. are put on pots to see the *Parthenium hysterophorus L* and *Lantana camara L* effect of allelopathy was observed on the seed germination of *Phaseolus radiatus L*.

Seed germination is calculated by using the Formula

$$\% \text{ Seed germination} = \frac{\text{No. of germinated seed}}{\text{Total no. of seed plotted}} \times 100$$

Result and Discussion

Five plates are taken for the seed germination test muslin cloth are taken and cut so it covers the whole plate and 10 seeds of *Phaseolus radiatus L*. are kept in each plate and the *Parthenium hysterophorus L* and *Lantana camara L*. effect of allelopathy on the seed germination of *Phaseolus radiatus L*. is observed.

In first experiment the seed germination test is done with control Distilled water and the different concentration are 5:95%, 10:90%,15:85% and 20:80% with distilled water is made *Parthenium hysterophorus L.* and *Lantana camara L.* there we got the results are in control Distilled Water the 100% germination is observed thus 0% is seed germination inhibition in 5:95% concentration where 5% is *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract and 95% is Distilled Water the result we obtained is 90% seed germination is observed thus 10% is seed germination inhibition in 10:90% concentration where 10% is Parthenium hysterophorus L. and Lantana camara L .aqueous extract and 90% is Distilled Water the result we obtained is 90% seed germination is observed thus 10% is seed germination inhibition in 15:85%

ISSN: 2347-2979

concentration where 15% is *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract and 85% is Distilled Water the result we obtained is 70% seed germination is observed thus 30% is seed germination inhibition in 20:80% concentration where 20% is *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract and 80% is Distilled Water the result we obtained is 60% seed germination is observed thus 40% is seed germination inhibition. Hence it is observed that by increasing concentration of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Distilled Water the seed germination decreasing gradually. The highest germination we see in control Distilled Water is 100% and at 5:95% and 10:90% the 90% seed germination is seen in 15:85% we got 70% germination and in 20:80% the seed germination is 60% so the allelochemicals released by *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract has the inhibitory effect on seed germination So we are absorbing that the Allelochemicals produced by *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract inhibitig the seed germination of *Phaseolus radiatus L.*

% Seed Germination

Effect of allelopathy of Parthenium hysterophorus L. and Lantana camara L. aqueous extract with Distilled Water on seed germination of *Phaseolus radiatus L.*					
% Seed Germination/Treatment	**Control - Distilled Water**	**5:95%**	**10:90%**	**15:85%**	**20:80%**
$\frac{No.\,of\ Seed\ germinated}{Total\ No\ of\ Seed} \times 100$	$\frac{10}{10} \times 100 = 100\%$	$\frac{9}{10} \times 100 = 90\%$	$\frac{9}{10} \times 100 = 90\%$	$\frac{7}{10} \times 100 = 70\%$	$\frac{6}{10} \times 100 = 60\%$
	100% Seed Germination	90% Seed Germination	90% Seed Germination	70% Seed Germination	60% Seed Germination
	0% Seed Germination Inhibition	10% Seed Germination Inhibition	10% Seed Germination Inhibition	30% Seed Germination Inhibition	40% Seed Germination Inhibition

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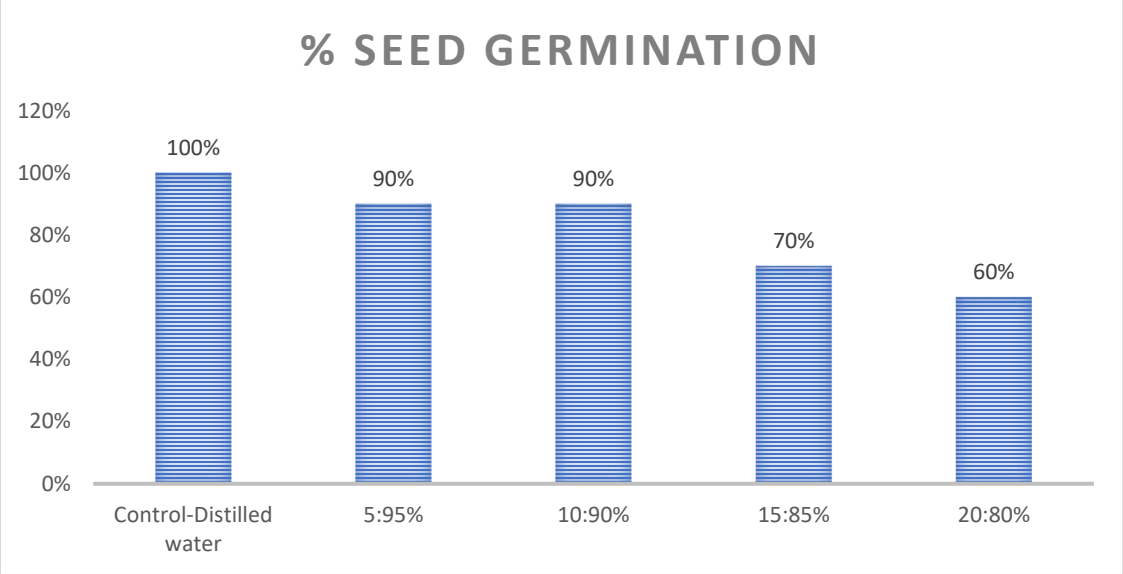
Effect of allelopathy of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Distilled Water on seed germination of *Phaseolus radiatus L.*



Parthenium hysterophorus L. and *Lantana camara L.* aqueous extract has the inhibitory effect on seed germination so if we research the allelochemical effect on weeds then apply this on the weeds we can get the bio weedicide. Allelochemicals effects absorption of water, division of cell, function of enzymes, respiration (singh and Thapar 2003)[11]. Allelochemicals responsible for reducing plant growth. The Allelochemical disturbs and inhibit the performance of stomata carbon di oxide supply and photosynthesis process of other plants. Hence to remove herbs and weeds we can use this *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract and can get better crop production.

ISSN: 2347-2979

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