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"Effect of Allelopathy of *Parthenium hysterophorous L.* and *Lantana Camara L. in different concentration with* Amrut Jal on *Phaseolus radiatus L.* with special reference to Morphological aspects."

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Abstract

Parthenium hysterophorus L. and *Lantana Camara L*. are collected and there extract of leaf and shoot are mixed and prepared with Amrut Jal in different concentration 5%,10%,15%,20% Amrut Jal is taken as controlled now these extract is used on the crop *Phaseolus radiatus* which is a leguminous plantthe material chosen for the study includes *Parthenium hysterophorus L* and *Lantana camara L.* the leaf and shoot of these plant is collected chopped in small pieces dried and crushed in mixture grinder after that the extract is mixed and soaked in distilled water for 24 hours

The aqueous extract is made of shoot after flowering of *Parthenium hysterophorus L.* and *Lantana camara L.* are taken and mixed then prepared different concentration of extract and Amrut Jal in following ratio 5:95,10:90,15:85,20:80. Amrut Jal is used as control. now the different concentration of extract is used on *Phaseolus radiatus L.* on seed and crop on different intervals then the seed of *Phaseolus radiatus L.* is sown in field on sterilized soil the extract in different concentration is sprayed on *Phaseolus radiatus L.* on different time intervals and seven parameters of *Phaseolus radiatus L.* are studied and results are calculated by statical method the parameters which are observed and calculated are 1. Plant height 2. Leaf no. 3. Branch no. 4. Flower no. 5. Pod no. 6. Seed weight of ten seeds 7. Root length. recorded.

The data are taken and collected through static. it is observed that from the above work the Allelopathic effect of *Partheniumhysterophorus L.* &*Lantana Camara L.* with Amrut Jal at 5:95% concentration gives the beneficial result on growth of *Phaseolus radiatus L.*

Introduction

Allelopathy from the Greek word allelo [one another or mutual] and pathy suffering refer's to the release of chemicals by one plant that 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 *Partheniumhysterophorus L.* &*Lantana Camara L.* Plant has Allelochemicals and due to this allelochemicals they inhibit other Plants growth and *Partheniumhysterophorus L.* &*Lantana Camara L.* are spreading all over in our country *Partheniumhysterophorus L.* &*Lantana Camara L.* have no use to humans and animals also *Partheniumhysterophorus L* causes skin disease to humans *Partheniumhysterophorus L.* &*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 *Partheniumhysterophorus L.* &*Lantana Camara L.*

Ecological studies on allelopathic potential of *Parthenium hysterophorus L.* in relation to *Phaseolus aureus L.* and *Triticum aestivum* 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 is a species of flowering plant in the aster 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 a significance weed *Lantana Camara L.* is a native from the tropical region of central and south America *Lantana* is a heavily branched shrub species name- *Lantana camaraL.* family Verbenaceae.

Both *Parthenium* and *Lantana* are extremely easy to grow requiring little attention and is seldom bothered by pest or disease. It has low water requirement *Lantana camara* this plant has poison characteristic also.The different parts of *Lantana camaraL.* contains allelochemicals aromatic alkaloids and phenolic compounds (Ambika et al., 2003)[3].

The allelopathic effect of 22 plant extract on seed germination of nine different weed was done. The plant extract obtained processed with Methanol acetone (10%) was used as control. *Lolium perenne l.* seed germination is inhibited by *Saliva officinalis L. Laurus nobilus L.* and *Artemisia vulgaris L.* and the germination of *Abutilon theophrastis L. medik, Amaranthus retroflexus L. Avena sterlis L. Rumex crispus L.* and *Trifolium repens L.* inhibits by the extract of some plants *Lepidium sativum L.* was slightly effects by weed extract*Lolium temulentum L.* stimulate the seed germination of *Descurania Sophia L.* so weed can be used as Herbicide to control other weeds this result was obtained (Izzet kadioglu and Yusuf yahar 2004)[4].

Allelopathic Impact of *LantanaCamaraL.* on Vegetative Growth and Yield Components of Green Gram (*PhaseolusradiatusL.*) the germination and growth of Green Gram (*PhaseolusradiatusL.*) is retarded and it decrease the growth. (P.K.Gantayet et. al., 2014)[5].

Allelopathic effect of leaf, stem, flower and fruit of *Lantana Camara L.* extracton growth of *Parthenium hysterophorus L.* was observed and the results were *Lantana camara* extract inhibits the seed germination *Parthenium hysterophorus L.* (Mishra A & Singh, R 2009)[6]. 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

Preparation of aqueous extract: -

The material chosen for the study includes *Parthenium hysterophorus L* and *Lantana camara L.* shoot after flowering of these plant is collected chopped in small pieces dried and crushed in mixture grinder after that the extract is mixed and soaked in distilled water for 24 hours then following concentration of aqueous extract of *Parthenium hysterophorus L.* and *Lantana camara L.* are taken and mixed then prepared different concentration of extract withAmrut Jal in following ratio 5:95%,10:90%,15:85%,20:80%. Amrut Jal is used as control.. now the different concentration of extract is used on *Phaseolus radiatus L.* on seed and crop on different intervals then the seed of *Phaseolus radiatus L.* is sown in field on sterilized soil the extract in different concentration is sprayed on *Phaseolus radiatus L.* on different time intervals.

The preparation of Amrut Jal was explained by Mr. Deepak Suchde. Amrut Jal is prepared by fresh cow dung 1 kg, cow urine 1 lit, jaggery 1 kg and it is dissolved in 10-liter water these are the basic ingredients for this product. All the materials were mixed in a plastic tub and kept undisturbed for 3 days to promote microbial multiplication. they are kept for 3 days undisturbed According to them, cow dung is a rich source of beneficial microorganisms and contains bacteria per gram of cow dung. After 3 days, it is again mixed slowly by swirling hand/stick clockwise 12 times and anticlockwise 12 times. Stir slowly if you stir too violently then microbes may be killed. stir slowly in If you stir too violently then you'll be killing the microbes. stir it by using three times a day stir by using wooden stick three times a day. This helps in distributing the microbes uniformly in the solution. From the second day onward the fermentation process is started from the fourth day microbial activities reaches we observed that the fermentation process starts on fourth day now Amrut Jal is ready to use.Preparing of Amrut Jal and Amrut Mitti (Fertile Nursery Soil by Deepak Suchde)[7].

Theseven parameters of *Phaseolus radiatus L*. are studied and results are calculated by statical method the parameters which are observed and calculated are 1. Plant height 2. Leaves no. of a Plant 3. Branch no. of a Plant 4. Pod no. of a Plant 5. Seed no. in a Plant 6. Seed weight of ten seeds 7. Root length of plant is calculated.

Result and Discussion

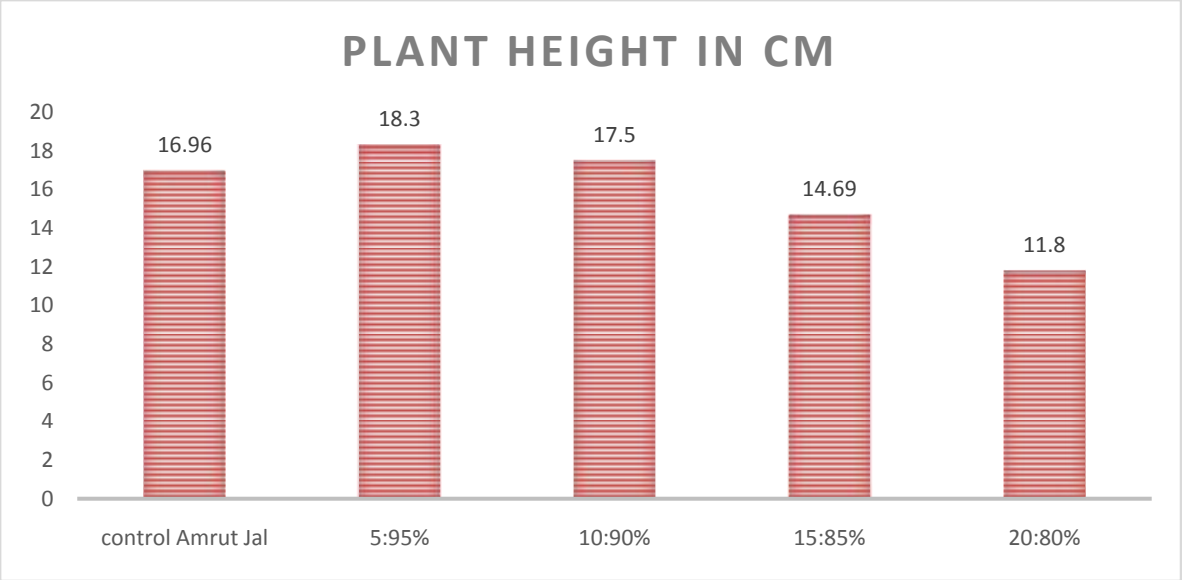
Parthenium hysterophorus L and *Lantana camara L* aqueous extract is mixed with Amrut Jal and different concentration in following ratio 5:95,10:90,15:85,20:80. Amrut Jal is used as control. Allelopathic effect of different concentration were observed on*Phaseolus radiatus L*.The different morphological parameters of *Phaseolus radiatus L*. are calculated and observed the different Parameters are 1. Plant height 2. Leaves no. of a Plant 3. Branch no. of a Plant 4. Pod no. of a Plant 5. Seed no. in a Plant 6. Seed weight of ten seeds 7. Root length.

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.*on different Plant Parameter.

Mean value of plant morphological parameters with different concentration with Amrut Jal					
Plant Parameters/Treatment	**Control Amrut Jal**	**5:95%**	**10:90 %**	**15:85 %**	**20:80 %**
Plant height	16.96 cm	18.3 cm	17.5 cm	14.69 cm	11.8 cm
Leaves no. of a plant	7.1	7.2	6.4	5.5	4.4
Branch no. of a plant	8.7	9.6	10	7.2	6.5
Pod no. of a plant	19.6	20.8	18.8	12.1	8.4
Seed no. in a Pod	8.1	8.1	7.2	6.1	5.5
Seed weight of ten seeds	0.558 gm	0.577 gm	0.49 gm	0.418 gm	0.387 gm
Root length	5.1 cm	5.2 cm	4.3 cm	3.94 cm	3.59 cm

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Plant Height).

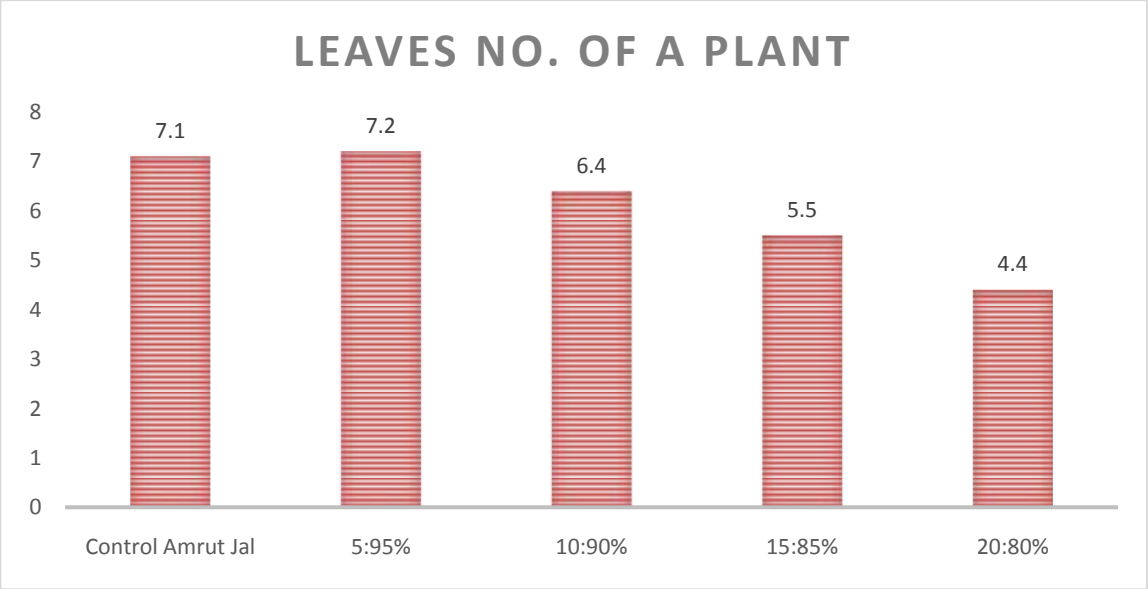
The highest Plant height of *Phaseolus radiatus L* we see in 5:95% Plant height is 18.3 cm then in Control Amrut Jal Plant height of *Phaseolus radiatus L* is 16.96 cm and 10:90% Plant height of *Phaseolus radiatus L* is 17.5 cm at 15:85% Plant height of *Phaseolus radiatus L* we got 14.69 cm and in 20:80% the plant of height of *Phaseolus radiatus L.* is 11.8 cmThe highest Plant height of *Phaseolus radiatus L* we see in 5:95% Plant height is 18.3 cm then in Control Amrut Jal Plant height of *Phaseolus radiatus L* is 16.96 cm and 10:90% Plant height of *Phaseolus radiatus L* is 17.5 cm at 15:85% Plant height of *Phaseolus radiatus L* we got 14.69 cm and in 20:80% the plant of height of *Phaseolus radiatus L.* is 11.8 cm.



Treatments

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Leaves no. of a Plant)

The highest Leaves no. of *Phaseolus radiatus L* we see in 5:95% Leaves no. is 7.2 then in Control Amrut Jal Leaves no. of *Phaseolus radiatus L* is 7.1 In 10:90% Leaves no. of *Phaseolus radiatus L* is 6.4 at 15:85% Leaves no. of *Phaseolus radiatus L* we got 5.5 and in 20:80% the Leaves no. of *Phaseolus radiatus L.* is 4.4



Treatments

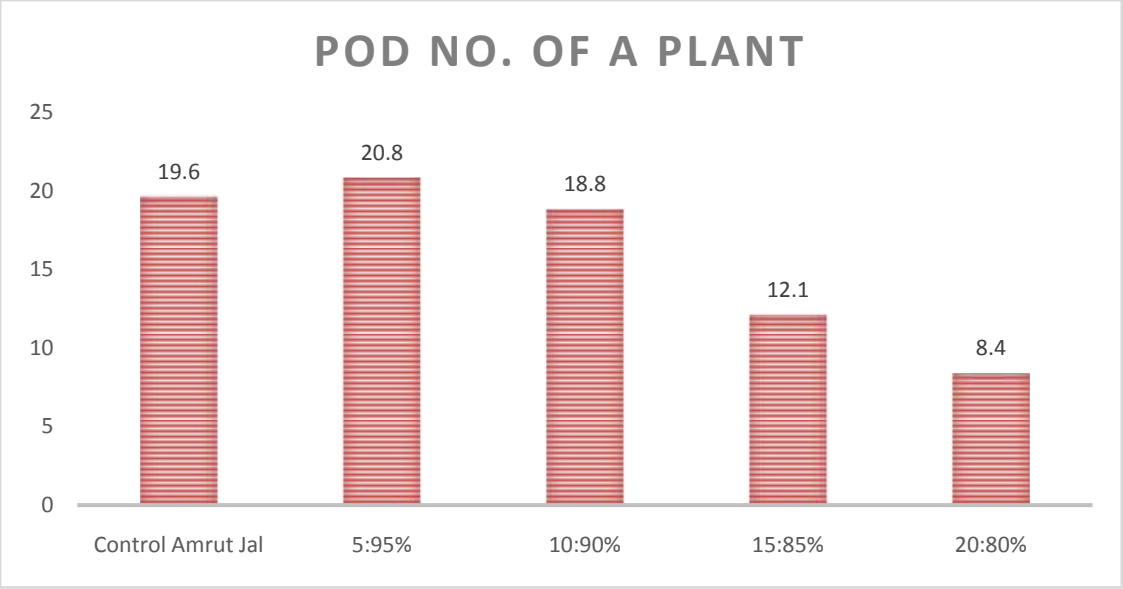
Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Branch no. of a Plant)

The highest Branch no. of *Phaseolus radiatus L* we see in 10:90% Branch no. is 10 then in 5:95% Branch no. of *Phaseolus radiatus L* is 9.6 in Control Amrut Jal Branch no. of *Phaseolus radiatus L*. is 8.7 at 15:85% Branch no. of *Phaseolus radiatus L*. we got 7.2 and in 20:80% the Branch no. of *Phaseolus radiatus L*.is 6.5

Treatments

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Pod no. of a Plant)

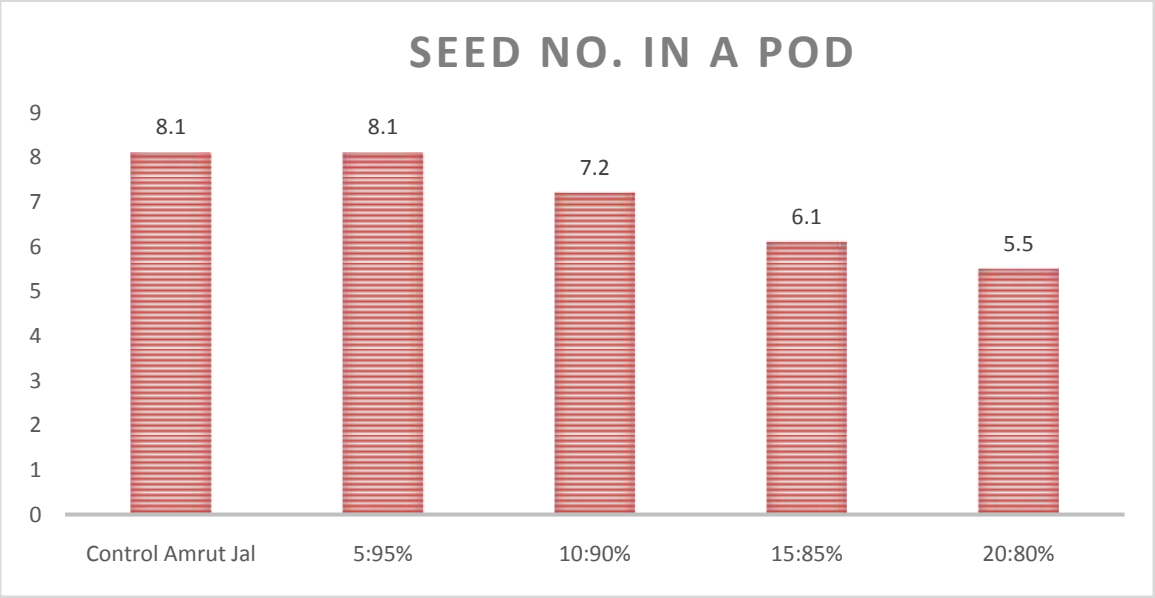
The highest Pod no. of *Phaseolus radiatus L* we see in 5:95% Pod no. is 20.8 then in Control Amrut Jal Pod no. of *Phaseolus radiatus L* is 19.6 in 10:90% Pod no. of *Phaseolus radiatus L*. is 18.8 at 15:85% Pod no. of *Phaseolus radiatus L*. we got 12.1 and in 20:80% the Pod no. of *Phaseolus radiatus L*.is 8.4



Treatments

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Seed no. in a Pod)

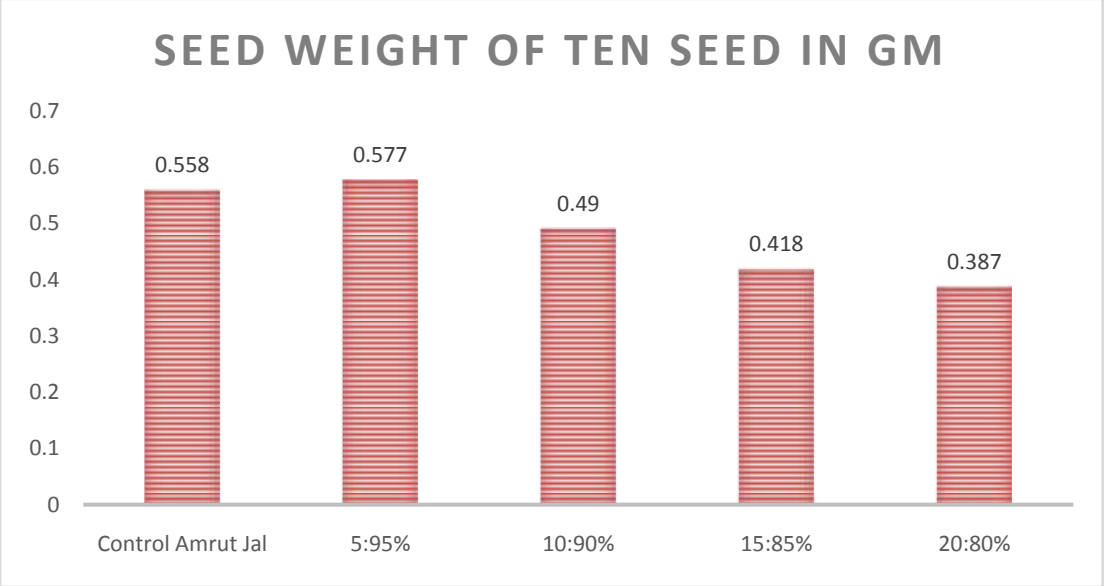
The highest Seed no. in a pod of *Phaseolus radiatus L* we see in 5:95% Seed no. in a pod 8.1 in Control Amrut Jal Seed no. in a pod of *Phaseolus radiatus L* is 8.1 in 10:90% Seed no. in a pod of *Phaseolus radiatus L*. is 7.2 at 15:85% Seed no. in a pod of *Phaseolus radiatus L*. we got 6.1 and in 20:80% the Seed no. in a pod of *Phaseolus radiatus L*.is 5.5



Treatments

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Seed weight of ten seeds)

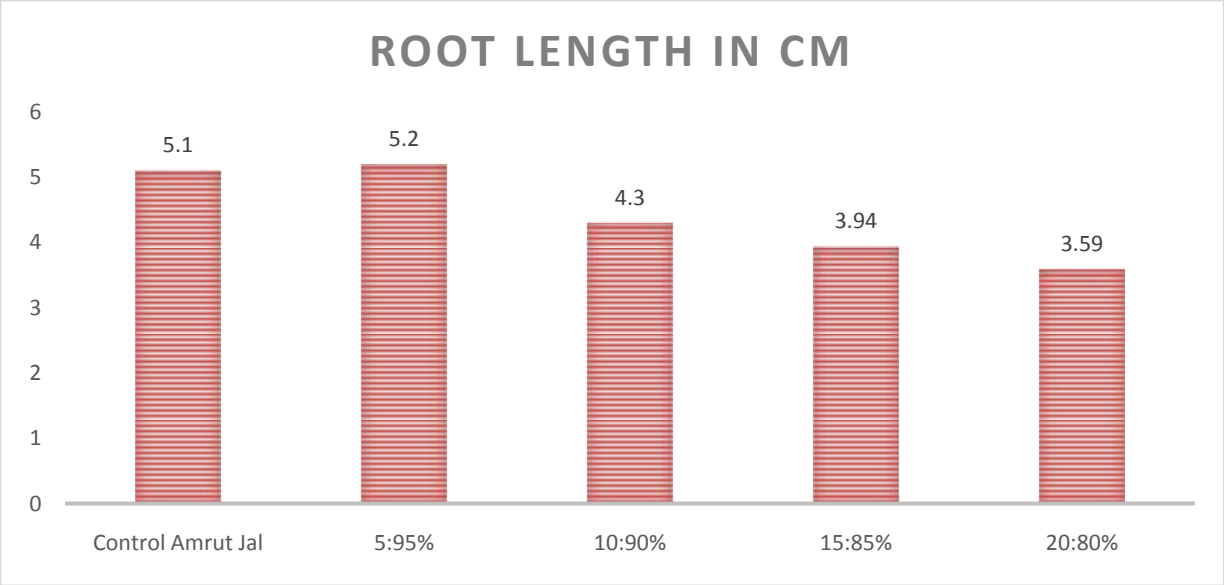
The highest Seed weight of ten seeds of *Phaseolus radiatus L* we see in 5:95% is 0.577 gm then in Control Amrut Jal Seed weight of ten seeds of *Phaseolus radiatus L* is 0.558 gm in 10:90% Seed weight of ten seeds of *Phaseolus radiatus L*. is 0.49 gm at 15:85% Seed weight of ten seeds of *Phaseolus radiatus L*. we got 0.418 gm and in 20:80% the Seed weight of ten seeds of *Phaseolus radiatus L*.is 0.387 gm.



Treatments

Allelopathic effect of *Parthenium hysterophorus L.* and *Lantana camara L.* aqueous extract with Amrut Jal on *Phaseolus radiatus L.* (Root length)

The highest Root length of *Phaseolus radiatus L* we see in 5:95% Root length is 5.2 cm then in Control Amrut Jal Root length of *Phaseolus radiatus L* is 5.1 cm in 10:90% Root length of *Phaseolus radiatus L*. is 4.3 cm at 15:85% Root length of *Phaseolus radiatus L*. we got 3.94 cm and in 20:80% the Root length of *Phaseolus radiatus L*.is 3.59 cm



Treatments

Highest Plant height of *Phaseolus radiatus L* we see in 5:95% Plant height is 18.3 cm.The highest Leaves no. of *Phaseolus radiatus L* we see in 5:95% Leaves no. is 7.2.The highest Branch no. of *Phaseolus radiatus L* we see in 10:90% Branch no. is 10.The highest Pod no. of *Phaseolus radiatus L* we see in 5:95% Pod no. is 20.8.The highest Seed no. in a pod of *Phaseolus radiatus L* we see in 5:95% Seed no. in a pod 8.1.The highest Seed weight of ten seeds of *Phaseolus radiatus L* we see in 5:95% is 0.577 gm.The highest Root length of *Phaseolus radiatus L* we see in 5:95% Root length is 5.2 cm. after that control

Both Plants we are using *Parthenium hysterophorus L* and *Lantana camaraL*. contain allelochemicals which have toxin and inhibitory effect on *Phaseolus radiatus L. Parthenium hysterophorus L* has allelochemical parthenin of sesquiterpene lactones group phenolics such as caffeic acid, vanilic acid, p-cumaric acid, anisic acid, p-anisic acid, frolic acid and chlorogenic acid (Mersie and Singh 1988)[8].The *Lantana camaraL*. plant has allelochemicals are phenolics, with umbelliferone, methylcoumarin, and salicylic acid being the most phytotoxic. In addition to phenolics, a recent report indicates lantadene A and B as more potent allelochemicals (Sharma et., al 2007)[9]. Parthenin, ferlic acid and chlorogenic acid are the primary inhibitors present in the plant (Kanchan and Jayachandra, 1979)[10].

Cow urine is component of Amrut Jal it has 95% water, 2.5% urea, 2.5% mineralsenzyme, salts and hormones,contains iron,carbonic acid, potash, nitrogen, ammonia, calcium, phosphorus, salts, manganese, Sulphur, phosphate, potassium, urea, uric acid, amino

acids, enzymes, cytokines, lactose etc.these are the growth enhancer.The AmrutJal is prepared in this ratio, one liter cow dung, one liter cow urine, 50gram black jaggery and 10 liter water.Preparing of Amrut Jal and Amrut Mitti (Fertile Nursery Soil by Deepak Suchde)[11].

Thus, at 5:95% concentration 5:95 aqueous extract concentration is prepared 5% = *Parthenium hysterophorus L.* and *Lantana camara L.* and 95% = Amrut Jal. the growth of Phaseolus radiatus L. and all the seven parameters we observed is maximum and all seven parameters have the highest value then Control Amrut Ja land at 10:90%, 15:85%, and 20:80% *Parthenium hysterophorus L* and *Lantana camaraL*. with Amrut Jal aqueous extract the results we get minimum value. So here we observe that at 5:95 aqueous extract concentration is prepared 5% = *Parthenium hysterophorus L.* and *Lantana camara L*. and 95% = Amrut Jal it is giving positive effect with allelochemicals of *Parthenium hysterophorus L* and *Lantana camaraL*. and microbial activity of Amrut Jal giving good results in growth and production. If we do more research with the different crops, we will get the better fertilizer and *Parthenium hysterophorus L* and *Lantana camaraL*. weeds will be of very useful for us.

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