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Effect of Cow Urine on Fertility Levels of Wheat (Triticum aestivum) and its Liquid Spray on Growth and Yield of Wheat (Triticum aestivum).

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Abstract: The present study was conducted to see the effect of cow urine on fertility levels and cow urine spray on growth and yield of Wheat (*Triticum aestivum).* Wheat (*Triticum aestivum)* is one of the important crop in the whole world and is consumed by nearly 65% of the Indian population. Among different organic sources cow urine is very unique product obtained from dairy and it has a high potential to prove as a organic fertilizer ,antimicrobial agent and disinfectant.The cow urine has proved to be a boon in the areas of agriculture, science and technology, industry, energy, medicine etc. for the development of any nation, there is a need in addition being eco-friendly in nature. Cow urine contains 95% water, 2.5% mineral salts and enzymes and remaining 2.5% contains the urea.In organic farming cow urine is used for enhancing the fertility level of plant and also the soil fertility. The nutritional effect of cow urine on plant growth was also tested with Wheat (*Triticum aestivum)* plant and protein and chlorophyll content was also estimated.

Index Terms Cow urine, Biofertilizer, Soil fertility, Antimicrobial agent,Organic farming

Introduction:

Cow urine contains nitrogen, sulphur, phosphate, sodium, manganese, iron, silicon, chlorine, magnesium, maleic, citric, tartaric and calcium salts, vitamin A, B, C, D, E, minerals, lactose, enzymes, creatinine and hormones. In organic farming, cow urine is used for preparation of number of growth promoter and bio-pesticides, which are effective in improving soil fertility, and management of large number of pests and diseases in varied group. The biochemical contents of the plants increased with cow urine application. Vegetable plants suffer from diseases caused by various kinds of pathogens such as bacteria, fungi, viruses, nematodes, and mycoplasma. Among these, fungi are considered as most aggressive pathogens causing qualitative and quantitative damage. Fungal pathogens, namely, *Fusarium oxysporum*, *Rhizoctonia solani,* and *Sclerotium rolfsii,*. The plant diseases have significant role in agriculture in terms of reduction of yield and economy. One of the most widely used strategies to control plant diseases is the use of chemical agents. However, overuse and abuse of these chemical agents resulted in certain hazardous effects. These chemicals suffer from drawbacks such as high cost, toxicity to non-target organisms and development of resistance in pathogens. So , this situation triggered interest in searching alternates for this type of disease control. Natural products, particularly from the plants, can be the highly potential source which can be used against phytopathogenic fungi. The use of these agents is risk-free as compared to the synthetic chemicals. In ancient Ayurveda cow urine has been greatly mentioned for its pharmacological importance. Cow urine is one of the ingredients of "Panchagavya" (urine, dung, milk, curd, and ghee) which is capable of treating many diseases as it has several medicinal properties and it is the best remedy to cure fungal and bacterial diseases. It has an excellent germicidal power, antibiotics and antimicrobial activity. Therefore, cow urine can kill varieties of germs and it also boosts immunity. Cow urine contains many beneficial elements, that is, chemical properties, potentialities, and constituents which help in removing all the ill effects and imbalances of body caused by infectious agents. Cow urine contains 95% water, 2.5% urea, and the remaining 2.5% a mixture of salts, hormones, enzymes, and minerals. It has been considered that cow urine is very useful in agricultural operations as a bio fertilizer and bio pesticide because it can kill number of pesticide and herbicide resistant bacteria, viruses, and fungi. Majority of people in India use cow urine to get rid of various diseases due to its therapeutic values. Organic nutrients can be obtained from the fermentation of cow urine thereby enhancing soil fertility. In addition, it can be turned into liquid fertilizer as a pesticide for crops. Liquid manure from cow urine is very easy and does not take long and is good for plants compared with artificial fertilizer.

Methodology:

1. Collection of cow urine

Cow urine was collected from the well maintained cow shed from the local area of Manchar city. The cow is selected for this research was healthy Gir cow having age eight years being fed on a healthy and uniform diet and undergoing the regular vaccination. The cow urine was collected in sterile flask and brought to the laboratory for testing purpose. Then it was filtered through the filter paper before testing then it was stored at 4^0C temperature for further use.

2. Effect of cow urine on Wheat plant growth-

a. Collection of wheat seeds

The seeds of wheat (*Triticum aestivum)*were collected from the local market of Manchar,Pune,Maharashtra.

b. Pot culture experiment

The pot culture experiment was done to find out the effect of various concentrations of cow urine on the growth of wheat plants.

For this experiment the 50 wheat seeds were soaked in the water overnight and then sown into the pot contains soil. Then each pot was irrigated with the cow urine twice in day. The concentrations of cow urine was 20%,40%,60%,80% and 100% .The control pot was irrigated with the water instead of cow urine. After 25 days when all plants grew at that time randomly 5 seedlings from each treated pot were uprooted and measure different parameters of plant such as plant height,root length,shoot length ,leaf length etc.

Results and Discussion:

Pot culture experiment:

Pot culture experiment was carried out to find the effects of cow urine spray on the phenotypic characters such as plant height, root length, leaf length, and shoot length of wheat plant after 25 days. From these results it is clear that the wheat plant height get increased with increasing the concentration of cow urine and the time duration. At the maximum concentration of cow urine i.e.100% the plant height of wheat was 15.9cm and minimum concentration of cow urine i.e.20% the plant height of wheat was 7.9cm

Sr. No.	Conc. of Cow Urine (%)	Plant Height (cm)	Root Length (cm)	Stem Length (cm)	Leaf Length (cm)
1.	20	7.5	2	2	3.5
2.	40	8.8	2.6	2.2	4
3.	60	10.7	3.7	2.5	4.5
4.	80	12.5	5	2.7	4.8
5	100	15.9	6.4	3.5	6
6.	Control	4.3	1	1.1	2.2

2. Effect of Cow Urine on External Characters of Wheat *(Triticum aestivum)* by pot culture experiment

3. Effect of cow urine on percentage germination of Wheat plant

Sr. No.	Conc.of cow urine (%)	No. of Germination	Percent Germination(%)
1.	20	14	56
2.	40	15	60
3.	60	17	68
4.	80	19	76
5.	100	22	88
6.	Control	10	44

Conclusion:

The Biochemical content of crop plant increase when sprayed with cow urine. Therefore the cow urine provide better alternative to chemicals which are expensive and also harmful to the farmers, soil and also environment. The treatment of cow urine to the crop plant growth showed higher N uptake in wheat grain and straw. So,the cow urine can be an effective research to improve the nutritional value of food and fodder.

But,because of the wrong management and poor practices of handling of cow urine if it is not utilized properly and hence,cow urine losses occurs due to the volatilization of N from the cattle shed.This project provides definitely better scope to increase the proper utilization of cow urine in Agriculture for the enhancement of growth of crop plants.

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