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ROLE OF COPPER SULFATE AND VITAMIN-E ON SEED GERMINATION

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ABSTRACT

This study was conducted to evaluate the effect of copper sulfate and vitamin-E on seed germination. The decrease of concentration of copper sulfate solution increases the germination rate in case of blackgram and black eyed peas. When compared to simple copper sulfate solution, with the addition of vitamin-E to it the germination process rate enhanced. This study reports that we must take care in selecting copper containing pesticides which delays seed germination and vitamin-E has significant role in seedling growth.

INTRODUCTION

Due to scientific advancement various pollutants may reach the soil and may cause adverse effects on seed germination (1-3). Most of the metals are needed for living organisms but excess amount of these elements cause harm to plants and animals. Toxic metal contamination of soil in fields increases threat to agriculture. So it is necessary to analyse the soil for effective crop production. Hence it is thought worthwhile to study the effect of copper sulphate on germination of seeds of black gram and black-eyed peas(4-8).

MATERIALS AND METHODS

All the compounds used in this study were analytical reagent grade. The seeds of green gram and black-eyed peas were obtained from local market of Guntur.

To evaluate the effect of copper sulfate on germination of seeds of green gram and black-eyed peas the laboratory experiments were performed. The seeds were sterilized at 5% sodium hypo chlorate solution for 10 minutes in order to avoid contamination by fungi. Then the seeds were washed with deionized water. In a petri plate 20 sterilised uniform seeds were placed on a Whatman filter paper using a foceps. Then these filter papers were moistened by adding 10 ml of the six treatment solutions.The plates were covered with lids and kept at room temperature. The germinated seeds were counted daily.

Germination percentage= (No. of germinated seeds⁄Total No. of seeds sown) × 100

RESULTS

The results revels that there was increase of seed germination percentage with time. With increase of copper sulfate concentration the percentage of seed germination decreases. With the addition of vitamin-E along with the copper sulfate, marked increase of percentage of seed germination was noticed.

Sr.No.	Concentration of Copper sulphate mg/L	Germination Percentage											
		Blackgram			Vitamin-E			Blackeyedpeas			Vitamin-E		
		D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3
1	1000	40	70	75	65	80	95	40	60	93	73	86	100
2	1250	30	40	60	55	70	85	26	53	66	60	73	93
3	1500	35	50	55	50	65	75	20	40	60	53	66	80
4	1750	25	45	50	50	65	65	15	33	33	60	60	66
5	2000	30	34	40	25	35	45	13	30	33	46	53	60
6	2250	15	15	25	20	30	35	10	26	26	40	46	53

DISCUSSION

Certain enzymes such as tyrosinase, polyphenol oxidase contain copper as a constituent. The rate of germination decreases with increase of concentration of copper hence more care should be taken in use of pesticides that have higher copper concentrations. Vitamin-E is lipid soluble in nature. Drastic change in germination percentage is observed when vitamin-E is added to the copper sulfate solution

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