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Estimation of Effect of Coated Urea on Growth Attributes of Squash

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Abstract

Effect of coated urea & non coated urea on growth attributes of squash was evaluated by a research done at the Agri-farm of School of Agriculture, LPU, phagwara during zaid season of 2016. Different treatments consisted of various levels of prilled urea and neem coated urea doses. It was compared to control and absolute control. The research was done in Randomized complete block design with three replications. The results obtained showcased that neem coated urea used at 100 % RDF increased the plant height most as compared to other treatments and control. In absolute control, plant height was noticed to be smallest. Neem coated urea used as basal dose increased number of branches most as compared to other treatments and controlconditions.Maximum fruit diameter was found by use of neem coated urea at 125 % RDF. In control and absolute control conditions, fruit diameter was found to be lowest. So, coating of nitrogenous fertilizers can help in reducing losses and improving availability of nutrient in the soil for plant uptake.

Keywords: Coating, nitrogenous, RDF

INTRODUCTION

Squash is a summer crop belonging to cucerbitaceae family. It completes its life cycle in very less time in around 60 days. Its growth is erect and in form of bush. Medicinal properties of squash are benefits such as anti-diabetic, intestinal anti-parasitic, antalgic, anti- inflammation, hypercholesterolemics (Kostalova*et al.*, 2009). Growth of squash gets affected due to many causes. Nutrient deficiency is one of the main reasons for reduced growth. Vegetables require nutrients in varied quantities for growth and development (Gulab*et al.*, 2019). Squash growth gets affected well due to use of nitrogenous fertilizers such as urea. Nutrient utilization efficiency reduces in case of use of prilled urea due to more losses such as leaching, denitrification etc. Provision of coating on urea helps in reducing losses of nitrogen from soil. Use of coating decreased number of split applications in sandy soils for potato (Wilson *et al.*, 2009).

Use of coating of neem on urea inhibits the process of nitrification & hence slow release of available form of nitrogen to plants.Neem coated urea is available to plants for longer period of time in soil for uptake. Crops regularlymonitor nitrogen availability because its availability changes in soil and affects their development accordingly (Wilkinson *et al.,* 2019).Application of prilled and coated urea in split application in potato resulted in increased availability of nitrogen to plants. This showed that split application used for nitrogen application can improve the growth and reduce losses. Therefore, to increase efficiency of nitrogen utilization, coating is beneficial by use of different materials such as neem, sulphur, etc. Coating with neem results in increased availability of nitrogen in soil for longer time.Neem coated urea helps in decreasing leaching losses. Thus, coating of fertilizer with neemhelps in inhibition of nitrification process in soil, hence preventing losses and improving growth attributes.So, to verify this theory, research was conducted to estimate effect of coated and prilledurea on growth attributes of squash.

MATERIAL AND METHODS

The research was done during the year 2016, in the Agri Farm of LPU, Phagwara,Punjab. The location of Agri Farm was 31^{0}22/31.81''N latitude and 75^{0}23/03.02E longitude and 252 m above sea level. Recommended dose of fertilizer (RDF) for squash is 100: 50: 40 (N: P: K kg/ha) respectively. The experiment had 12 treatments. Texture of soil for treatment plots was sandy loam in nature. Organic Carbon Content was low, Available phosphorus was medium and available potassium was high. During land preparation full dose of phosphorus and potassium along with half dose of nitrogen was applied. Remaining dose of nitrogen was applied to squash after one month of sowing. Experiment had 12 treatments which are as follows: T1- Absolute control, T2- Control, T3- conventional prilled urea as basal dose @100 kg/ha, T4- Neem coated urea as basal dose @100 kg/ha, T5- conventional prilledurea at 100 % RDF @100 kg/ha, T6- Neem coated urea at 100 % RDF@ 100 kg/ha, T7- conventional prilledurea at 75 % RDF, T8- Neem coated urea at 75 % RDF, T9- conventional prilledurea@ 125 %RDF, T10 – Neem coated urea at 125 % RDF, T11- conventional prilledurea at 150 % RDF, T12- Neem coated urea at 150 % RDF. The data on growth attributes were measured at 30,45,60 days after sowing. Growth attributes measured were plant height (cm), number of branches per plant, fruit diameter (cm). Analysis of data was done in randomized complete block design and then ANOVA was evaluated.

RESULTS AND DISCUSSION

Observations related to growth attributes of treatments of squash were noted at 30,45, 60 days after sowing. Data of mean of these observations is calculated and analysed.

Growth attributes: Different attributes such as plant height, number of branches per plant and fruit diameter were noted after 30, 45 and 60 days after sowing. The data showed that use of neem coated urea at 100 % RDF resulted in highest plant height. In plots having absolute control conditions, lowest plant height was noticed. These findings match with results obtained by Chowdhury*et al.,* (2002), Reddy *et al.,*(2007), Ogundare*et al.,* (2015) who found that use of urea in split dose improved plant height.Use of neem coated urea as basal dose resulted in highest

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number of branches per plant. Use of prilled urea at 75 % RDF resulted in lowest number of branches per plant. These findings are supported by results obtained by Kashyap*et al.,* (2014) who found that use of coating of neem on urea improved number of branches.Use of neem coated urea at 125% RDF resulted in highest fruit diameter whereas lowest fruit diameter was noted in absolute control conditions. Data of these growth attributes is given in following table

Table: Effect of coated and non coated urea on growth attributes of squash

S No.	Treatments	Plant height (cm)	No. of branches	Fruit diameter (cm)
T1	Absolute control (No NPK)	29	10	4.36
T2	Control (No Nitrogen;P+K as basal)	32	12	4.44
T3	Prilled urea as basal dose	34	13	4.99
T4	Neem coated urea as basal dose	34	14	4.77
T5	100%RDF of prilled urea)	32	12	4.88
T6	100% RDF of neem coated urea	35	13	4.61
T7	75 % RDF of prilled urea	31	9	4.67
T8	75% RDF of neem coated urea	32	11	4.56
T9	125%RDF of prilled urea	34	11	5.09

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T10	125% RDF of neem coated urea	32	10	5.24
T11	150% RDF of prilled urea	32	13	4.95
T12	150% RDF of neem coated urea	32	12	4.73
	CD (P=0.05)	2.47	0.96	NA
	CV	4.48	4.86	8.98
	S.E(m)	0.83	0.31	0.24
	S.E(d)	1.18	0.45	0.35

Conclusions: Growth attributes were affected more positively by use of coating of neem on urea as compared to prilled urea. Use of neem coated urea at different levels gave better results. Neem coated urea losses are less as compared to prilled urea. We can conclude that neem coated urea increased the growth attributes better as compared to prilled urea. The reason may be that prilled urea gets lost early in soil due to various losses whereas neem coated urea gets absorbed in soil and is available to squash throughout the growing period. Thus, we can conclude that non coated urea gets lost via leaching, denitrification processes. But, coated urea slowly release in soil and is available for longer period of time in soil for plant uptake. Coating of neem inhibits the process of nitrification by affecting the activity of nitrosomonas bacteria. Inhibition in the nitrification process helps in more availability of nitrogen in the soil, hence improving the growth of squash better as compared to use of prilled urea.

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