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***Research Article***

# Effect of Nutritional source on growth of *Fusarium oxysporum f.udum* causing wilt of Red gram (*Cajanus cajan*)

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**Abstract**

The present investigation deals with the effect of three phosphate sources on the growth of *Fusarium oxysporum f.udum* causing wilt of Tur (*Cajanus cajan*) belongs to family Fabaceae is the most important grain legume of rain-fed agriculture in semi-arid tropics. The nutritional source (phosphate sources) like ammonium dihydrogen orthophosphate, potassium dihydrogen orthophosphate and sodium dihydrogen orthophosphate were used against the pathogen. Result was recorded that 0.1% concentration of ammonium dihydrogen orthophosphate and sodium dihydrogen orthophosphate reduced the growth while potassium dihydrogen orthophosphate stimulated the growth of *Fusarium oxysporum f.udum*

## INTRODUCTION

*Cajanus cajan L.*(Tur) has been cultivated in ancient Egypt, Africa and Asia since prehistoric times, and was later introduced to America. Now it acclimatizes in several tropical countries. The major producer is India contributing about 90% of world production. It is a rich source of vitamin A, B-6, C, D, (Ball, 2006; Koren, 2007). It is considered to be a rich source of diatery fibre, total carbohydrates, proteins also with calcium, cobalamin magnesium, potassium sodium minerals (Weaver and Heaney, 2006). Red gram it is severely affected by the various fungal, bacterial and viral diseases. The wilt is caused by *Fusarium oxysporum f.udum*,. Now a day's disease management is made necessary for high yield of production. Each microorganism requires proper nutritional source for their growth. The earlier workers studied the growth of various plant pathogens in different food sources, the present study deals with the effect of different phosphate sources on the growth of *Fusarium oxysporum f.udum to* know the nutrition requirement will help to control the growth of the pathogen.

## MATERIALS AND METHODS

The infected material of tur (wilt) were collected from the different localities of Renapur area during the period of 2017 to 2018.The infected plant material were brought to the Botany laboratory and isolated the pathogen on Czapek Dox Agar (CDA) medium, the pathogen is identified with the help of standard mycological literature (Subramanian, 1971), pure culture was maintained at 23 ± $2^0$C in BOD incubator for further study. For the study three phosphates sources like ammonium dihydrogen orthophosphate, potassium dihydrogen orthophosphate and sodium dihydrogen orthophosphate were used at 0.1% in Czapek Dox Agar (CDA) medium, 4mm freshly growing 8days old pure culture of *Fusarium oxysporum f.udum* grown on agar medium and incubated at *28* ± $2^0$C The plates without source treated as control. After the 8days of incubation linear growth of mycelium was measured at different intervals for five days.

## RESULTS AND DISCUSSION

For the present investigation three phosphate sources like ammonium dihydrogen orthophosphate, potassium dihydrogen orthophosphate and sodium dihydrogen orthophosphate were used. In the present study it was found that 0.1% concentration of ammonium dihydrogen orthophosphate and sodium dihydrogen orthophosphate reduced the growth while as potassium dihydrogen orthophosphate stimulated the growth of *Fusarium oxysporum f.udum*,.(Table 1). The results obtained from the present investigation are agreed with Bhale (2002), Waghmare (2015), similarly other workers studied the effect of nutritional sources on the growth of different plant pathogens Patil (2009), Khilare and Rafi (2011), Ramteke (2011), (Naim and Sharoubeem (1963), Steinber (1999), Wadikar (2002), Sharma and Mohinder Kaur (2014).

**Table.1 Effect of Phosphates sources on the linear growth (mm) *Fusarium oxysporum f.udum* causing wilt of Tur ( *Cajanus cajan*) on CDA medium.**

| Sr.no | Phosphate source | Days and radial growth of pathogen in mm | | | | |
|---|---|---|---|---|---|---|
| | | 2 | 4 | 6 | 8 | 10 |
| 1. | Potassium dihydrogen orthophosphate | 17.44 | 25.66 | 47.62 | 64.42 | **70.10** |
| 2. | Sodium dihydrogen orthophosphate | 14.20 | 20.22 | 33.14 | 40.56 | 43.27 |
| 3. | Ammonium dihydrogen orthophosphate | 13.32 | 18.41 | 28.10 | 34.12 | **39.22** |
| 4. | Control | 22.26 | 27.30 | 37.54 | 46.32 | 51.28 |

## CONCLUSION

For the management of, *Fusarium oxysporum f.udum* causing wilt of Tur ( *Cajanus cajan*) use of 0.1% concentration of Ammonium dihydrogen orthophosphate(39.22) and Sodium dihydrogen orthophosphate(43.27) is effective.

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