

## Management Of Urd Bean Leaf Crinkle Virus In Urd Bean (*Vigna Mungo* L. Hepper)

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### ABSTRACT

Six plant extracts viz., *Mirabilis jalapa*, *Carthamus roseus*, *Datura metel*, *Bougainvillea spectabilis*, *Boerhaavia diffusa* and *Azadirachta indica* recorded maximum reduction in the incidence of urd bean leaf crinkle virus (ULCV) in urd bean crops at field level. Among the antiphytoviral chemicals tested, DHT reduced the transmission to the maximum extent and increased the incubation period of virus in the urd bean plant. Fresh buttermilk was significantly superior to fermented buttermilk in reducing the disease spread and increasing the incubation period of the virus in the plant. Casein was found effective in reducing the per cent transmission and increased the incubation period of the virus. Raising barrier crops viz., maize, sorghum and pearl millet were equally effective in reducing the spread of the disease in field. Spraying of DHT at two intervals, 7 and 22 DAS was found effective in reducing the disease spread when compared with *Thuja*, buttermilk, *M. jalapa* and *neem oil*.

**Key words** : Urd bean Leaf crinkle virus.

### INTRODUCTION

The urd bean (*Vigna mungo* (L.) Hepper) is commonly known as black gram. Most urd bean cultivars produce black-colored seeds. The urd bean is a staple crop in India, Burma, Bangladesh, Pakistan, and Thailand (Lawn and Ahn 1985; Rubatzky and Yamaguchi 1997). Urd bean plant becomes a victim of a large number of diseases caused by both fungi and viruses. Among the virus diseases, Urd bean leaf crinkle virus (UCLV) is considered to be the most serious one causing considerable damage to the crop depending on season and variety cultivated. Studies on management of urd bean leaf crinkle virus by using botanical, antiphytoviral chemicals and animal products are the important areas which needs focused research.

### MATERIALS AND METHODS

*Effect of chemicals, plant and animal products on infection*  
*Pot culture studies using chemicals:*

Urd bean seeds of T9 variety were sown in 9 inch diameter pots in glasshouse and were thinned to five plants/pot. Aqueous solutions of 0.1 per cent DHT (2,4-dioxohexahydro 1,3,5-triazine), carbendazim and benzoic acid, 0.02 per cent salicylic acid acetyl salicylic acid and 2 per cent *Thuja* (an aurvedic preparation) were sprayed

on 10 day old seedlings. Plants were inoculated with infective sap for 24 hr before inoculation at 0 hr (mixing equal quantities of chemical and infective sap) and 24 hr after inoculation and five days after inoculation. A total of 18 plants were inoculated for each treatment. Checks were maintained by inoculating with infective sap alone. Number of infected plants and incubation period were recorded 30 days after inoculation to find out the effects of different chemicals on virus infection.

*Pot culture studies with animal products :*

Three types of buttermilk viz., fresh, 1 and 2 day-fermented samples were taken and diluted 10-fold with water. Casein was dissolved in small quantity of 0.1N NaOH and then diluted to 2, 3 and 4 per cent with water. They were sprayed on urd bean plants following the method described under effect of chemicals.

*Pot culture studies with plant products :*

Fresh leaves of Four-o' clock plant (*Mirabilis jalapa* L.), Algaroba (*Prosopis chilensis* (Molina) Stuntz.), Sadahdhatura (*Datura metel* L.), Coconut (*Cocos nucifera* L.), Sorghum (*Sorghum bicolor* (L.) Moench.), Bougainvillea (*Bougainvillea spectabilis* Wild.), Safflower (*Catharanthus roseus* (L.) G. Don.), Pongam (*Pongamia pinnata* (L.) Pierre.), Indian spinach (*Basella alba* L.), Horse-purslane (*Boerhaavia diffusa* L.), and Neem (*Azadirachta indica* A. Juss.), were collected. Coconut and sorghum leaves were air dried and ground into powder

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