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# EVALUATION OF GERMPLASM ACCESSIONS FOR OKRA (*ABELMOSCHUS ESCULENTUS)* L.YVMV DISEASE

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**ABSTRACT**
Thirty okra accessions were screened for YVMV disease and severity grade was fixed.The results showed that the okra accessionIC 15027 showed resistant level along with 8 ohter accessions, as its coefficient of infection is 5 and above, followed byIC 90202,IC 90203, IC 90213,IC90214 showed a moderately resistant level with 7 other accessions and the variety Pusasawani is having the greater PDI with 60.54 and the RV of 0.75 and CI of 45.41 and grades as susceptible and thus the severity grade for the YVMV disease of okra is arrived.

## INTRODUCTION

Okra(*Abelmoschusesculentus*L.)(Moench), commonly known as Bhendi or lady's ûnger belongs to the familyMalvaceae and is an important vegetable crop grown across different states of the country throughout the year. The major production constraint for okra is the Yellow Vein Mosaic Disease, causing losses with regard to the quality and as well as the yield wherever the crop is grown.Among the disease causing viruses, yellow vein mosaic disease (YVMD) is the most serious and destructive one and the disease is transmitted by whitefly (*Bemisiatabaci* Genn) Prashant *et al*. (2008). Plants infected at the early stages remain stunted. The fruits of the infected plants exhibit pale yellow color, become deformed, small and tough in texture. Thus, the disease affects both the quality of fruits and yield of okra adversely as said by Solankey*et al*., (2014)Considering the residual and toxic nature of pesticides, an eco - friendly method of using the natural plant resistance to the pest attack is followed as one of the solution to manage the pest problem Rashid Khan., *et al* (2014). Therefore, the only practical solution of this problem is to develop tolerant varieties through screening of accessions as suggested by the methods of Bag et al., (2013), was undertaken to screen some of the germplasm/accessions of okra against sucking pests and the study was takenuptoidentifytheresistance in okra for YVMV disease.

## MATERIALS AND METHODS

A field trial was conducted at Dhadhagoundapatti village of Alanganallur block, Madurai district, Tamil Nadu during February 2015 to screen okra accessions against YVMD under natural infection conditions. Altogether 20 accessions (from NBPGR) and 10 accession/varieties from TNAU were screened. Theexperimental materials comprised two rows of each accession of 3 m length with a row to row distance 45 cm and plant to plant distance of 60 cm. All the recommended cultural practices were followed to raise the crop and no plant protection measures were followed.

Weekly observations were made to assess the YVMVD incidence and the severity grades were designated using the numerical from 0-4 on the basis of visual observations. To quantify the disease severity, the calculations were made using the table (1) as suggested Bag *et al*., (2013) and Solnakey*et al*., (2014)

The per cent disease incidence (PDI) was calculated by the given formula

$$PDI = \frac{\text{Number of diseased plants}}{\text{Total Number of plants observed/plot}} \times 100$$

The coefficient of infection (CI) was calculated by multiplying the per cent disease incidence to the response value assigned for each severity grade. Thus the coefficient value combines the amount of infection and its severity (Table 1). As suggested by Bag *et al*., 2012.

## RESULTS

The observed data was interpreted with the reaction of YVMD

**Table 1: Scaling of YVMV disease incidence**

| Symptoms | Severity grade | Response value(RV) | Coefficient of infection (CI) | Reaction |
|---|---|---|---|---|
| Symptoms absent | 0 | 0.0 | 0-4 | Highly resistant(HR) |
| Very mild upto 25% leaves | 1 | 0.25 | 5-9 | Resistant(R) |
| Appearance of symptom in 26 – 50% of leaves | 2 | 0.50 | 10-19 | Moderately resistant(R) |
| Appearance of symptom in 51-75% of leaves | 3 | 0.75 | 20-39 | Moderately susceptible(MS) |
| Severe disease infection in more than 75 % of leaves | 4 | 1.00 | 40-6970- 100 | Susceptible(S)Highly susceptible (HS) |

**Table 2: Screening of Okra accessions for YVMV incidence**

| S.NO | Accessions | PDI | RV | CI | Reaction |
|---|---|---|---|---|---|
| 1 | IC90202 | 22.78 | 0.50 | 11.39 | MR |
| 2 | IC90203 | 24.64 | 0.50 | 12.32 | MR |
| 3 | IC90213 | 26.32 | 0.50 | 13.16 | MR |
| 4 | IC90214 | 34.54 | 0.50 | 17.27 | MR |
| 5 | IC90218 | 20.21 | 0.75 | 15.16 | MR |
| 6 | IC90219 | 37.99 | 0.75 | 28.49 | MS |
| 7 | IC90223 | 30.98 | 0.75 | 23.24 | MS |
| 8 | IC90285 | 19.23 | 0.75 | 14.42 | MR |
| 9 | IC90269 | 28.90 | 0.50 | 14.45 | MR |
| 10 | IC90270 | 34.87 | 0.50 | 17.44 | MR |
| 11 | IC90284 | 45.43 | 0.50 | 22.72 | MS |
| 12 | IC15438 | 52.41 | 0.50 | 26.21 | MS |
| 13 | IC15537 | 65.42 | 0.50 | 32.71 | MS |
| 14 | IC15027 | 10.35 | 0.50 | 5.18 | R |
| 15 | IC45827 | 43.44 | 0.75 | 32.58 | MS |
| 16 | IC45828 | 25.47 | 0.50 | 12.74 | MR |
| 17 | IC48281 | 27.65 | 0.50 | 13.83 | MR |
| 18 | IC48948 | 29.69 | 0.75 | 22.27 | MS |
| 19 | IC14909 | 7.84 | 0.75 | 5.88 | R |
| 20 | IC52301 | 38.54 | 0.74 | 28.52 | MS |
| 21 | VRO-104 | 16.54 | 0.50 | 8.27 | R |
| 22 | Kashimangali | 9.87 | 0.75 | 7.40 | R |
| 23 | Kashipragathi | 26.72 | 0.25 | 6.68 | R |
| 24 | Kashivibuthi | 36.98 | 0.50 | 18.49 | MR |
| 25 | Arkaanamika | 56.67 | 0.50 | 28.34 | MS |
| 26 | Punjab-8 | 17.43 | 0.50 | 8.72 | R |
| 27 | Varshauphar | 25.54 | 0.25 | 6.39 | R |
| 28 | VRO 106 | 9.76 | 0.75 | 7.32 | R |
| 29 | PUSA A4 | 10.50 | 0.50 | 5.25 | R |
| 30 | Pusasawani | 60.54 | 0.75 | 45.41 | S |

is given in Table 2. Results indicated a wide range of response within the tested accessions, ranging from resistance to highly susceptible. The accessions IC 90202, showed a PDI of 22.78 and RV of 0.50 and CI of 11.39 and categorized to the moderately resistant. Similarly, the accessions IC 90203, IC 90213,IC 90214, IC 90218,IC 90285, IC 90269, IC 90270,IC 45828, IC 48281, and KashiVibhuti all showed the moderately resistant one with the RV value of 0.5 to 0.75, and PDI ranging from 12.32 to 18.49 respectively.The accessions / varieties Kashimanghali had the response value of 0.50 along with Kashivibhuti, whereas Kashipragathi had the response value of 0.25 and the PDI of 26.72 and the reaction to the YVMV is resistant source. Also the varieties of Punjab – 8, Varshauphar, VRO 106, PUSAA4 showed the reaction of resistant source with the RV ranging from 0.5 to .75. The variety Pusasawani is having the greater PDI with 60.54 and the RV of 0.75 and CI of 45.41 and reacts as the susceptible check for the above accessions.

## DISCUSSION

In the current study, the accessions like IC 90202, IC 90203, IC 90213,IC 90214, IC 90218,IC 90285, IC 90269, IC 90270, IC 45828, IC 48281, and Kashivibhuti all showed the moderately resistant one with the RV value of 0.5 to 0.75, and this is in close conformity with the studies of Bag *et al.* (2013) categorizing based on the severity grade of CV and PDI.

The accessions / varieties Kashimanghali had the response value of 0.50 along with Kashivibhuti, Kashipragathi, Punjab - 8, Varshauphar, VRO 106, PUSAA4 showed the reaction of resistant source with the RV ranging from 0.5 to .75 and this results are on par with the experimental results of Vanitha, (2014) on safflower screening for resistance and also in close conformity of the results of Jalgaonkar, 2002.The accessions IC 90219,IC 90223, IC 90284, IC 15438. IC 15537, IC 52301 and variety Arkaanamika were resulted in the rating of moderately susceptible with the PDI of 37.99 to 56.67 and

the reaction is moderately susceptible and this study is at par with the results of Gonde. *et al*. (2012) Solankey *et al*. (2014) and Patel *et al*. (2009). The resistant sources are needed to be further studied through breeding programmes for resistance against YVMVD.

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