

EVALUATION OF PROMISING GENOTYPES OF BER (*Zizyphus mauritiana* LAMARK) AGAINST IT'S PEST COMPLEX

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ABSTRACT

The investigation on evaluation of promising genotypes of ber against its pest's complex were carried out at AICRP, Arid Fruit Zone Project, Department of Horticulture, MPKV, Rahuri, Dist. Ahmednagar Maharashtra during 2016. Among the twenty genotypes screened against pest complex, the genotypes Chandegaon Sel. and Chalisgaon were found significantly superior in registering least damage due to leaf eating caterpillar and fruit damage due to fruit borer and stone weevil. Moreover, these genotypes were visually found free from powdery mildew disease, which could be used as best source of resistance in future.

KEY WORDS: Ber, fruit borer, stone weevil, *Zizyphus mauritiana* Lamark,

INTRODUCTION

The ber or Indian jujbe crop (*Zizyphus maruitiana* Lamark) is widely distributed in tropical and subtropical climate of the world. Its cultivation requires comparatively less care and is suitable to rehabilitate resources in poor area at large extent. Different by products like juice, jelly, squash are prepared from it.

About 130 species of insect pests have been recorded on ber in India (Lakra and Bhatti, 1985). However, few of them have attained the pest status and cause economic damage to the ber. Out of these, ber fruit borer, ber fruit fly and stone weevil are recorded as major pests on ber with infestation varied from high to very high. These are most important and common pests in Maharashtra, Gujarat and south Indian states. Improved varieties of the ber like Umran, Gola, Chhuhara, Kadaka, Mehrun, etc. suffer a huge loss to the tune of 58 per

cent and some time it may be reflect up to 100 per cent marketable yield loss (Jejurkar, 1986).

Present studies was undertaken to screened the promising 20 ber genotype against its pest complex, which could be helpful to identify some resistance and better yielding genotypes.

MATERIALS AND METHODS

Twenty genotypes of ber viz. Umran, Chuhhara, Popular Gola, Kaithili, CIAH-selection-1, CIAH hybrid-1, Gomakirthi, Narendra ber-1, Narendra ber-2, Seb, Kala Gola, Kadaka, Meharun-1, Jalgaon Chameli, Rahuri-1, Rahuri-2, Kopergaon selection, Chalisgaon, Apple ber and Chandegaon selection were assessed during the study to screen the resistance potential against ber pest complex. All the genotypes were selected based on their genetic potential and popularity in the market. The screening of ber genotypes against leaf eating caterpillar,

Thiacidas postica (Noctuidea : Lepidoptera), leaf webber, *Prorosticha zizyphi* (Oecophoridae : Lepidoptera), fruit borer, *Meridarchis scyrodes* Meyrick (Corposinidea : Lepidoptera) and stone weevil, *Abeus himalayanus* Voss (Curulionidea : Coleoptera) was conducted after pruning during the period from May, 2015 to January, 2016.

The observations on leaf eating caterpillar and leaf webber was assessed by counting damaged leaves by caterpillar at fortnightly interval after pruning from 23 to 39 MW. The total number of damaged and healthy leaves out of 100 randomly selected leaves per branch on each tree of all the genotypes was observed individually. The percentage of leaves damage was calculated. The observations on incidence of fruit borer were recorded on all the twenty genotypes by randomly selecting five branches on the tree from top, middle and bottom at fortnightly interval from fruit setting to harvest, whereas the observations on incidence of stone weevil on selected genotypes were recorded through periodical sampling at fortnightly interval. For recording the yield, the trees harvested separately and recorded kg per plant. The yield data was converted q/plant and data were subjected to statistical analysis.

RESULTS AND DISCUSSION

The data presented in Table 1 revealed that, the maximum intensity of leaf eating caterpillar was noticed during 29-30 MW. All the genotypes showed leaf infestation in the range of 0.70 to 8.46 per cent due to leaf eating caterpillar on ber. The maximum pest damage amongst all the genotypes tested was observed in the apple ber (8.46 %). Rahuri-1 has registered least damage of 0.70 per cent due to leaf eating caterpillar during the period of experimentation and it was at par with Rahuri 2 (0.87%), Meherun (0.99%) and Chandegaon sel (1.06%) in this respect. The

maximum infestation of leaf webber among all genotypes was observed during 33-34 meteorological week in the range of 0.19 to 2.74 per cent. The ber genotypes Chalisgaon and Chandegaon Selection registered least damage (0.19 %), which was found on par with Jalgaon Chameli (0.24%) and Rahuri-2 (0.26%). Moreover, among the rest of ber genotypes, the Rahuri-1, Umran and CIAH-1 were found the next promising genotype and registered the leaf damage due to leaf webber in range of 0.28 to 1.44 per cent damage. With regards to fruit borer infestation, the ber genotype Chalisgaon was to be found significantly superior in recording the least damage (0.85 %). Whereas, the ber genotypes viz., Chandegaon Sel., Seb, Gomakirathi and CIAH-I were found to be the next best promising genotype and registered low fruit damage in the range of 1.68 to 2.88 per cent. Rahuri-1, Therefore, these genotypes could be very good source resistant for fruit borer in future. The fruit infestation caused by stone weevil was noticed during 40-41 MW to 1-2 MW and the maximum pest intensity among all genotypes was noticed during the 47 to 50 meteorological weeks. Among the ber genotypes tested, Chandegaon Sel. registered least fruit damage (2.62 %) and it was noted the maximum in apple ber i.e. 19.79 due to stone weevil.

The genotypes, Narendra Ber-1 was found superior and registered the maximum yield of ber fruits (2.16 q/plant), whereas the Narendra ber-2, Gola, Umran and Gomakirathi ranked the next promising genotypes registering the yield of 1.50, 1.50, 1.45 and 1.39 q/plant.

Some genotypes which are included in the current study are local selection, which were evaluated against commercially established varieties and found resistant to pest. The information on local genotypes are not documented earlier, but the results on pest damage and peak intensity are in

agreement with the results of an earlier workers who screened the germplasm of ber against its pest complex and yield which showed varying degree of pest intensity as well as their peak activity during the fruiting stage of the crop. The fruit borer incidence was noticed in the third week of November and prevailed till the end January by which the maximum damage due to fruit borer was noticed in Umran variety as reported by Patil and Patil (1997), Hosagoudar *et al* (1999) and Gopali *et al.* (2003). Similarly, the weevil infestation was found throughout the season with two peaks from mid November to December and severity of Umran due to fruit borer damage as reported by Karuppaiah *et al.* (2010) and Karuppaiah (2015), which are confirmative with this finding.

CONCLUSION

The genotypes Chandegaon Sel. and Chalisgaon were found significantly superior in registering least damage due to leaf eating caterpillar and fruit damage due to fruit borer and stone weevil. Moreover, these genotypes were visually found free from powdery mildew disease, which could be used as best source of resistance in future.

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Table 1: Screening of ber genotypes against pest complex of ber and yield

Sr. No	Genotypes	Average Per Cent Infestation of Pest Complex During MWs				
		leaf Eating Catterpillar	Leaf Webber	Fruit Borer	Stone Weevil	Fruit Yield (q /plant)
1.	Umran	6.08(14.26)	1.37(6.72)	7.77(16.19)	14.59(22.43)	1.45
2.	Chhauhara	5.06(12.99)	2.26(8.65)	7.76(16.18)	16.51(23.97)	1.12
3.	Gola	4.27(11.88)	2.04(8.20)	7.86(16.25)	11.46(19.77)	1.50
4.	Kaithili	4.68(12.49)	1.89(7.90)	5.75(13.88)	9.93(18.36)	0.84
5.	CIAH-I	6.96(15.29)	1.44(6.87)	2.88(9.67)	11.59(19.89)	1.09
6.	CIAH-II	4.99(12.90)	1.57(7.17)	6.67(13.78)	9.88(18.31)	1.07
7.	Gomakirthi	4.86(12.74)	2.74(7.69)	1.77(7.63)	18.79(25.68)	1.39
8.	Narendra ber-1	3.08(10.09)	1.99(8.09)	5.39(13.41)	11.42(19.71)	2.16
9.	Narendra ber-2	1.77(7.64)	1.98(8.08)	5.35(13.37)	10.84(19.22)	1.50
10.	Seb	3.02(10.00)	1.54(7.12)	1.74(7.57)	9.11(17.56)	1.02
11.	Kalagola	3.60(10.93)	2.07(8.26)	5.70(13.81)	5.08(13.02)	0.92
12.	Kadaka	2.52(9.14)	1.87(7.85)	5.21(13.19)	4.68(12.48)	1.15
13.	Meherun	0.99(5.70)	1.85(7.80)	3.78(11.21)	9.95(18.37)	1.09
14.	Jalgaon Chameli	1.94(8.00)	0.24(2.80)	3.90(11.39)	3.67(10.95)	0.84
15.	Rahuri-1	0.70(4.78)	0.28(3.02)	13.51(21.54)	14.75(22.58)	0.98
16.	Rahuri- 2	0.87(5.31)	0.26(2.89)	14.79(22.61)	15.64(23.29)	0.79
17.	Kopergaon Sel-1	1.98(8.58)	1.03(5.82)	5.22(13.20)	12.77(20.93)	0.73
18.	Chalisgaon	2.20(8.53)	0.19(2.49)	0.85(5.26)	3.55(10.86)	0.95
19.	Apple ber	8.46(16.91)	2.83(9.68)	22.80(37.13)	19.79(32.32)	0.87
20.	Chandegaon Sel.	1.06(5.90)	0.19(2.52)	1.68(7.39)	2.62(9.32)	0.76
	S.Em. $\pm$	0.45	0.18	0.463	0.55	
	CD at 5 %	1.33	0.52	1.371	1.63	

Figures in parentheses are arcsine transformed values