

VARIETAL REACTION AND CHEMICAL CONTROL OF POMEGRANATE FRUIT ROT CAUSED BY *XANTHOMONAS CAMPESTRIS* PV *PUNICAE*

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Pomegranate (*Punica granatum* L.) is an important fruit crop for arid and semi-arid regions of the country and subjected to attacked by several fruit rot diseases caused by fungi (Kanwar and Thakur, 1974). Bacterial leaf spot and fruit rot disease caused by *Xanthomonas campestris* pv *punicae* (Hingorani and Singh) Dye has been observed in severe form for the last four years in the orchard of Haryana Agricultural University, Hisar. Keeping in view its seriousness and the lossess caused by this disease, screening of all the available germplasm/vareities was done to find out the source of resistance and experiments were conducted to evolve suitable control measures.

Disease incidence on leaves and fruits of all the varieties were recorded under natural field conditions during the years 1984 and 1985 in the orchard of Haryana Agricultural University, Hisar. Disease index was calculated by reckoning six ratings (0=No infection, 1=1-10 per cent infection, 2=11-25 per cent infection, 3=26-50 per cent infection 4=51-75 per cent infection and 5=76-100 percent infection 3 = 26-50 percent infection, 4 = 51-75 percent infection and 5=76-100 percent infection). An everage index of three replicates was worked out and the varieties grouped as resistant (1-5 per cent), moderately susceptible (6-20 per cent), susceptible (21-50 per cent) and highly susceptible (51-100 per cent).

Three antibiotics namely Agrimycin, Streptocycline and Aureofungin at two concentrations i.e. 250 and 500 ppm and one fungicide Blitox-50 (Copper oxychloride) at 500, 1000 and 2000 ppm concentrations were evaluated for their efficacy against the disease during the year 1984 and 1985. One plant was designed as one treatment and each treatment was replicated three times in a randomised block design. The highly susceptible variety "Banipur Selection" was used for the present study. Two sprays were given in the third week of June and in second week of July. The disease incidence was recorded after 20 days of final spray as per the rating mentioned above and disease index and disease control was calculated as per the standard formula.

Varietal reaction : The varietal screening of all 44 varieties against bacterial leaf spot/fruit rot disease was conducted under the natural field conditions. Among the 44 varieties screened, ten varieties showed field resistance, thirteen were moderately susceptible, fifteen were susceptible and rest of the six varieties were highly susceptible to bacterial leaf spot (Table 1).

Table 1: Grouping of pomegranate varieties against bacterial leaf spot/fruit rot under natural field condition

Grouping	Varieties
Resistant	Gulsared, PS-75-K ₃ , H-3, Russian Seedling, Ganganar, Shirin Anar, Anar Shirin (Md. Ali), Khog, Kandhari-Ganganagar, HS-79-2.
Moderately susceptible	Spin Sakari, AK-Ahar, Jodhpur-White grain, HS-80-29, PS-77-H ₂ , PS-75-K ₅ , Kazkai-Anar Baskal-Naski, HS-3, PS-75-K ₁ , HS-79-1, PS-77-H ₇ , PS-76-H ₂ .
Susceptible	Kali-Shirin, Panipat-Selection, No. 3 (3), Kadhari-Hansi, Surkh-Anar, Baskal-Naski B, Chawla, Nabha, PS-76-B, No.4, PS-77-H ₁₂ , PS-77-H ₁₁ , H ₃ , country large-red Jodhpur Red.
Highly susceptible	Bedana-Seedana, Seedling Selection, Utkhul, Seedless-Basine, Achikdana, Banipur-Selection.

Chemical control : The results for the chemical control of bacterial leaf spot/fruit rot disease are presented in Table-2. Data revealed that Streptocycline gave maximum disease control at the concentration 500 ppm but with a very little difference with concentration 250 ppm, which was followed by Agrimycin. Statistical analysis of the data revealed that each of the antibiotic statistically was at par at both the concentrations while comparing disease index as well as disease control.

Table 2. Effect of different chemicals on bacterial fruit rot of pomegranate.

Treatments	Spray Concentration (ppm)	Disease* Index (%)	Disease * Control (%)
Blitox-50 (Copper oxychloride)	500	57.6(49.37)	35.5(36.57)
	1000	41.0(39.82)	54.1(47.35)
	2000	32.0(34.45)	64.2(53.25)
Agrimycin	250	13.5(21.56)	84.9(67.13)
	500	12.0(20.27)	85.6(67.70)
Streptocycline	250	11.5(19.82)	87.1(68.95)
	500	9.3(17.76)	89.6(71.19)
Aureofungin	250	27.5(31.63)	69.2(56.19)
	500	25.2(30.13)	71.8(57.92)
Control (water)	—	89.3(70.91)	— —
CD (5%)	—	— 2.63)	— 4.82

Mean of two years

Figures in parentheses are angular transformed values.

However, all the three concentrations of the Blitox-50 significantly differ each other and Blitox 50 at the 2000 ppm concentration was statistically superior to rest of the concentrations. Statistically Agrimycin and Streptocycline were at par for the disease control at both the concentrations. Very little information is available in the literature regarding the control of bacterial leaf spot/fruit rot of pomegranate however, Streptocycline has been reported to control the bacterial diseases effectively on various crops (Chakravarty and Rangarajan, 1966; Dorairaj *et al.*, 1978, Krishna and Nema, 1981). Therefore, from the present investigation, it can be concluded that important varieties such as Gulsared, Russian seedlings, Ganganagar, Shirin Anar and Kandhari Ganganagar were resistant to bacterial leaf spot/fruit rot disease. Streptocycline at the rate of 250 ppm was found effective in controlling the disease. Two sprays should be given at an intervals of 20 days as the disease starts appearing.

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