

plants effectively leading to better nodulation and crop yield.

Div. of Microbiology, V. ISWARAN.
Indian Agricultural W. V. B. SUNDARA RAO.
Research Institute, K. S. JAUHRI.
New Delhi-12,
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GENETICS OF VEINAL NECROSIS IN POTATO

PARENTAL lines obtained from Scottish Society for Research in Plant Breeding (through Dr. W. Black) have been under study at the Central Potato Research Institute, Simla, for the last few years. These lines have been observed to show veinal necrosis under glass-house conditions regularly. These symptoms have also been observed and reported from the Netherlands in the Scottish material by Thijn.¹ He has reported the veinal necrosis to be a heritable symptom controlled probably by many genetic factors showing a complex inheritance. The plant population showing veinal necrosis reported here, was tested for the possibility of virus Y and was found to be free of this virus infection.

In order to determine the inheritance of this character, two crosses were made among four of the lines, and one of the selections from an earlier cross between the lines was also selfed. The cross and the self seeds were germinated in petri dishes and the seedlings transplanted in pots with sterilized soil and grown under glass-house conditions. Beginning from the two or three leaf stage upto full maturity,

the plants were observed for veinal necrosis and the segregations for the character recorded. The data along with the χ^2 values for the observed ratios are given in Table I.

TABLE I

Sr. No.	Crosses	Observed frequency		Total no. of plants	Expected ratio	χ^2 values
		Without veinal necrosis	With veinal necrosis			
1	CP 1516 × CP 1530	303	24	327	15 : 1	0.662
2	CP 1633 × CP 1537	427	23	450	15 : 1	0.996
3	Self progeny of a selection F ₁ -187 (from the crosses CP 1503 × CP 1499)	650	210	860	3 : 1	0.155

χ^2 df₁ at 0.05 = 3.841.

The crosses 1 and 2 give a clear indication of the presence of two independent recessive factors, whereas the selfed progeny of a selection (F₁-187) from the cross CP 1503 × CP 1499 showed the segregation for one recessive factor, for the expression of veinal necrosis. To establish whether these factors are common among the parents used, crosses in all the possible combinations using only the fertile lines as the male parents have been attempted and the detailed information will be published later.

The parental lines were derived from crosses between *S. tuberosum* and *demissum* and *phureja*, similar to the Scottish material studied by Thijn.¹ His conclusions that the factors involved might have been derived from either *demissum* or *phureja* parents, may be possible. But this conclusion needs confirmation because no such wild blood seems to be responsible for the symptoms observed in material studied by Scholz *et al.*²

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Central Potato Research
Institute,
Simla, India,
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R. T. SHARDA.
M. D. UPADHYA,
S. K. ANAND.
HARI KISHORE.

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