

Interception of Peanut Stripe Virus in Groundnut Germplasm Imported from China

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Groundnut germplasm imported into India is subjected to the necessary quarantine processing for seedborne pathogens, in general and seedborne viral and bacterial pathogens, in particular. Peanut stripe virus (PStV), peanut mottle virus (PMV), peanut stunt virus (PSV), and the bacterial wilt pathogen *Pseudomonas solanacearum* are seedborne in groundnut and are of quarantine importance to India.

During 1995, we received 16 groundnut genotypes from Hubei province of China where PStV and bacterial wilt are widely distributed and considered to be economically important (Demski *et al.*, 1993; Mehan *et al.*, 1994). In view of this, the seed material was tested particularly for the presence of these two pathogens.

PStV detection

Irrespective of the number of seeds received, 30 seeds of each accession were used for the test. About 50 mg of cotyledon tissue opposite to embryo was removed using a clean razor blade. Tissue pieces from 10 seeds were pooled and used for the test. The cut seeds were placed in a tray with the same configuration as an ELISA plate and held until the test was completed. The direct antigen coating enzyme linked immunosorbent assay (DAC-ELISA) (Hobbs *et al.*, 1987) procedure was used. If positive reaction was observed in pooled seed lots, individual seeds were again tested to identify the seed containing the virus.

One seed in each of the four genotypes namely Jiankong, Yue You 200, E Hua 5, and 91-081

were positive for PStV. The PStV positive and negative seeds were grown separately in a screen house. Visual observations and ELISA tests conducted on the plants grown from PStV-positive and -negative seeds confirmed that only the plants grown from the four PStV-positive seeds contained PStV. All the PStV-infected plants were destroyed, and the healthy plants released after four weeks for growing in post entry quarantine isolation field located in ICRISAT Asia Center. The remaining seeds were also subjected to ELISA test in order to ascertain the percentage of PStV in the seed lots. (Table 1). PStV was detected in eight genotypes, the percentages of seeds containing PStV ranged from 1% for Yue You 92 to 5.3% for Yue You 200. PMV was not detected in any of the genotypes. Demski *et al.*, (1984) observed that the seed lots of PI 461428, 407462, and 461434 imported into the USA from China contained PStV to the extent of 0.4 to 2.8%.

Pseudomonas solanacearum detection

The Tetrazolium chloride agar (TZCA) method for isolation of *P. Solanacearum* from soil as described by Mehan and McDonald, (1995) was adopted for isolation of *P. Solanacearum* from groundnut seed. The seeds were thoroughly washed in sterile water and dried on sterile blotting paper. Each seed was ground using sterile mortar and pestle in two ml of sterile water. After five minutes a loopful of this suspension was streaked onto TZCA medium in petridishes and incubated at 28-30°C. Observations were taken 48 h and 72 h after

Table 1: Peanut stripe virus observed in the groundnut germplasm imported from China

S.No.	Genotype	No. of Seeds tested	No. of seeds containing PSiV*	Percentage of seed containing PSiV
1.	Guiyou 28	91	--	--
2.	Gouliao Zhong	79	--	--
3.	2 Hao 18	65	--	--
4.	Zhonghua 2	54	--	--
5.	Xiekangqing	68	--	--
6.	Jainkong	67	2	3.0
7.	Taishan Zhengzhu	61	--	--
8.	Lu Hua 3	79	--	--
9.	Yue You 92	94	1	1.0
10.	Yue You 200	75	4	5.3
11.	Kangqing 2	84	2	2.4
12.	Jiangtian Zhong	82	1	1.2
13.	E Hua 5	110	3	2.7
14.	91 - 054	81	1	1.2
15.	91 - 076	84	--	--
16.	91 - 081	87	3	3.4

* PSiV infected seeds were crushed and stored to use as positive control in ELISA.

incubation. Ten seeds were tested individually for each genotype. None of the seeds of the 16 genotypes tested showed any growth of the bacterium on the medium. Further, virus free seeds grown in the screen house followed by growing in post entry quarantine isolation field did not show bacterial wilt symptoms, confirming that the seed did not carry the bacterial wilt pathogen.

ICRISAT Asia center obtained these 16 genotypes from China known to be resistant to bacterial wilt for use in crop improvement program. *P. solanacearum* is transmitted through freshly harvested infected seed of susceptible groundnut

cultivars (Zhang *et al.*, 1993). *P. solanacearum* could not be detected from the seeds of these 16 genotypes, possibly because these lines were confirmed sources of resistance to *P. solanacearum*.

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Received: 29.11.96.