In severe cases all leaves were completely wilted (Fig. 1, B and C).

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THRIPS—A NEW RECORD AS A PEST OF CITRUS BLOSSOMS IN HIMACHAL PRADESH

IN March–April, 1979, thrips were observed, for the first time, causing damage to citrus blossoms at Regional Research Station, H.P. Krishi Vishva Vidyalaya, Dhaulakuan. These thrips were collected from the citrus flowers at full bloom and got identified as *Thrips hawiiensis* Morgan (Thripidae : Thysanoptera) from Dr. T. N. Ananthakrishnan, through the Entomologist (Research), Punjab Agricultural University, Ludhiana. Sharma and Bhalla[2] reported this thrip on wheat, Thakur *et al.*[3] and Bhalla and Thakur[1] on the flowers of *Bennincasa hispida* (Thunb), tori, bitter gourd, turnip, rose and apple in Solan area. The present studies were initiated to ascertain its status as pest by recording the population of thrips per flower as well as by observing the nature of damage to the flowers.

The population studies revealed that 6 to 13 nymphs were present on the newly opened flower bud whereas this population ranged from 7 to 25 with an average of 19 thrips per flower at full bloom.

It was further observed that the thrips started feeding activity as soon as flower buds opened. They sucked the sap of petals and other vital parts of the flowers and within a few days the whole flower became disfigured, dull and sickly and lost its attractiveness. On examination, the badly affected flowers showed brownish lesions on stamens and styles. Heavily infested flowers did not set fruit. Further studies are in progress.

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A NEW DISEASE OF CHILLIES CAUSED BY *DRECHSLERA*

DURING Kharif seasons of 1976 and 1977, a new disease causing leaf blight and fruit rot of chillies cultivar NP–46 A was observed at the farm of Indian Institute of Horticultural Research, Hessaraghatta, Bangalore. Symptoms become descernible in the initial stages on the leaves as small, circular to irregular spots, light brown in colour and measure 0·2–2·5 mm in diameter. Spots are more towards the margins of leaf lamina which afterwards coalesce and occupy larger areas giving blighted appearance to the infected leaves. In advanced stages severe defoliation was also observed. The severity of the disease increases during the months of August and September. Spots on stems and branches were dark straw-coloured and oval to elongate in shape. Symptoms on fruits consist of water-soaked irregular areas which become dark brown to black with fruit maturity. Fruits attacked at early stages of development were small, shrivelled and light yellow in colour. Seeds from infected fruits show very poor germination and carry the pathogen internally upto 3%.

The causal organism was isolated in pure culture on potato dextrose agar (PDA) medium. The pathogen on PDA produced dark brown colonies with abundant sporulation in 8–13 days. Conidiophores were erect or slightly bent, simple and septate. Conidia were borne singly and acrogenously. Conidia were long-elliptical, 6–12 septate having peripheral wall thick and measure 40–170 × 12–25 μm. The fungus was identified as *Drechslera* state of *Setospheria rostrata* Leonard by CMI, Kew, Surrey, England, and deposited under IMI No. 206063.

Spore suspension was sprayed on two month old seedlings of cv. NP–46 A for testing pathogenicity. The seedlings were covered with polythene bags for 24 hrs. Typical symptoms were observed 12 days after inoculation. The pathogen was reisolated on PDA and found identical with the original culture.

D. rostrata (*H. rostratum* Drechsler) has been reported to cause leaf spots in cowpea[4], betelvine[11], grapes[10], rice[2], bajra[8], maize[1], wheat[6] and muskmelon[9]. *Helminthosporium* sp. has been reported on chilli seeds[3] and leaves[5]. *Drechslera* state of *Cochliobolus specifer* has been reported to cause die-back in chillies[13] but *Drechslera* state of *Setospheria rostrata* is a new record on this host.

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SOME OBSERVATIONS ON SPECIES HYBRIDS OF *SOLANUM NIGRUM* L. COMPLEX

THE present note deals with certain interesting observations recorded in species hybrids of *S. nigrum* complex. *Solanum nodiflorum* Jacq. subsp. *nodiflorum* and *S. douglasii* Dunn. are the species of *Solanum nigrum* complex used in present study. Both the species are erect, annual, herbaceous weeds with ovate-elliptic leaves. In the latter the fruits are purple whereas in the former they are purplish black and small in size.

Several reciprocal cross pollinations were made between the two species, but the crosses were successful only when *S. nodiflorum* subsp. *nodiflorum* was used as female parent. Fifty flowers were pollinated with pollen of *S. douglasii*. The fruit-set was 8% and the mean number of seeds per fruit was 33. One hundred seeds were sown, but only 11 germinated.

All the hybrids were abnormal in appearance. The growth of the plants was stunted and did not produce flowers. The leaves were small, thick, twisted and crumpled, and looked like 'virus infected'[1], but on examination they were found to be free from virus. The hybrids, after some time, produced normal healthy shoots which bore several flowers and fruits with a few viable seeds. Meiosis was studied from flower buds of the normal shoots.

The parents displayed normal course of meiosis with 12 bivalents at diakinesis and metaphase I. The mean frequency of chiasmata in *S. nodiflorum* subsp. *nodiflorum* was 1·25 while in *S. douglasii* it was 1·19. In hybrids no meiotic aberrations were observed. All the hybrids had a predominance of 12 bivalents at diakinesis and metaphase I and the mean association of chromosomes, per cell, was $11\cdot80_{II} + 0\cdot40$. The mean frequency of chiasmata, per bivalent, was 1·23. In almost all the cells anaphase I was found to be normal with 12 chromosomes at each pole.

In the hybrids, the occurrence of mostly regular meiotic pairing of chromosomes with normal fertility indicates that the parental species *S. nodiflorum* subsp. *nodiflorum* and *S. douglasii* are closely related to each other without any fundamental structural differences between their chromosomes and the differences in some of their morphological features seem to be due to differences in certain genetic factors[2] which may be due to mutations[3] because generally the significant morphological variations are likely due to structural changes in chromosomes which in turn will lead to reduction in fertility of the hybrids[4]. Since the two species seem to differ in certain genetic factors, they can maintain their identity only by isolation.

The failure of crosses when *S. douglasii* was used as pistillate parent appears to be due to interaction between chromosomes from the male gamete and the cytoplasm in the egg, but the cytoplasmic inhibitory effect is not very effective as interspecific isolating mechanism since gene exchange can take place *via the reciprocal hybrids*[5]. The cytoplasmic inhibitory effect does not get progressively greater as the species are more distantly related. The nuclear determined sterility factors may have a greater general significance as reproductive isolating mechanism than the abnormalities determined by cytoplasm.

The virus infected like symptoms of some of the hybrids which later on produced several fertile shoots of normal appearance is likely due to incipient disharmonious interaction between the genotype or certain genetic factors of *S. nodiflorum* subsp. *nodiflorum* with the cytoplasm of *S. douglasii*.

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