were produced between homologous combinations of virus and antiserum. Two faint bands were produced between heterologous combinations (Fig. 2), indicating that GSV-f and StV are distantly serologically related. Morphological similarity and serological relationship between GSVf and StV indicate that GSV-f may cause GSV.

Changing trends of rice diseases in Manipur

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In Manipur, rice production increased dramatically in 1973 and gained further momentum in 1974 when the introduction of several high-yielding varieties encouraged double-cropping and increased use of fertilizers and pesticides. During field inspections and surveys in major rice belts of the state, changes in the status of some rice diseases and occurrence of a few diseases hitherto unknown in the state were observed.

Rice blast caused by *Pyricularia oryzae* was not a serious disease before high yielding varieties were cultivated. The disease now occurs every year in all rice belts. Varieties IR24, Punshi, and Phouoibi are susceptible; CH988, CH1039, P33, Moirangphou, Phouren, and Kumbi are resistant. Neck rot is more prevalent and damaging than leaf blast because of low temperature at late flowering stage.

Brown spot caused by *Helminthosporium oryzae* is a minor disease of rice although it occurs every year.

Leaf scald caused by *Rhynchosporium oryzae* was first observed in 1973 at Seed Multiplication Farm, Mantripukhri, and later in 1976 at Rice Research Station (RRS), Wangbal. The leading high yielding varieties IR24, Punshi, Jaya, and Phouoibi, improved varieties CH1039 and CH988, and local Moirangphou are highly susceptible. A common weed, *Echinochloa crus-galli,* is an alternate host.

Stack burn caused by *Trichoconis padwickii* was recorded first at RRS Wangbal in 1980 on KD2-6-3 and KD5-3-3 and in farmers' fields on Punshi, Ratna, and Phouoibi. It attacks fields as far east as Ukhrul, where popular local variety Lamyang was infected in June 1982.

Narrow brown leaf spot caused by *Cercospora oryzae* was recorded at Wangbal in 1980 on Punshi, KD5-3-14, and KD5-3-8 and has now infected CH988 and CH1039. It is a minor disease.

Incidence of sheath blight caused by *Corticium sasakii* is increasing. The disease probably occurred in the state before it was first reported in 1979.

Occurrence of bacterial blight and leaf streak caused by *Xanthomonas campestris* pv: *oryzae* and *X. c.* pv. *oryzicola,* respectively, was associated with the introduction of TN1 in Manipur in 1967. Bacterial leaf streak (BLS) was observed on CH988 at Lilong in 1974. In 1975-76 it was reported on local variety Somthum in the hill area of Henglep. BLS occurs most frequently, usually infecting nurseries and ripening CH988 and CH 1039 crops. Crop damage is not severe.

Pest management and control INSECTS

Whitebacked planthopper outbreak in Kathmandu Valley, Nepal

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Whitebacked planthopper *Sogatella furcifera* is considered a minor rice pest in Nepal, but caused hopperbum on 2,709 ha in Kathmandu, Bhaktapur, and Lalitpur during the 1982 wet season.

Sweep net samples taken from highly infested fields at Sundarijal, Kathmandu District, ranged from 1,100 to 1,700 per sweep. Methyl parathion (0.05%) controlled the pest effectively.

Losses to gall midge

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Rice gall midge *Orseolia oryzae* is an important pest of wet season rice on Chhotanagpur Plateau of Bihar. Gall midge attacks cause silvershoots and infestation is believed to stimulate profuse tillering.

To assess the degree of association between silvershoots, profuse tillering, and panicles, 27 randomly selected, gall midge-infested hills of the variety Sita were studied. Observations were recorded after panicle emergence about 1 month after insecticide application.

Total correlation coefficient was determined between silvershoots and tillers, silvershoots and panicles, and tillers and panicles. A partial correlation between silvershoots and panicles was also determined, after eliminating the effect of tillering. Pooled estimates of total and partial correlation coefficients were calculated using a multiple covariance model.

Results indicate that tillering is positively correlated with silvershoots. The pooled correlation coefficient was 0.48 and significant at $p = 0.05$. Tillers were also positively correlated with panicles. Pooled correlation coefficient was 0.55 and significant at $p = 0.01$. There was no correlation between silvershoots and panicles.

Absence of correlation between silvershoots and panicles, and presence of a positive correlation between silvershoots