Pest management and control INSECTS

Comparison of virulence of isolates of *Xanthomonas campestris* pv. *oryzae* in Southeast Asia and in South China

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Twenty-three isolates of *Xanthomonas campestris* pv. *oryzae* collected from naturally infected rice leaves in Southeast Asia (India, Nepal, Bangladesh, Thailand, and Philippines) and South China (Guangdong Province) were evaluated for virulence on five Chinese differential hosts. Results indicated that these isolates may be distinguished into five race groups based on the interaction of the isolates and varieties measured by means of disease lesion patterns and compared with five Chinese pathogenic groups (see table).

Of the isolates collected from Southeast Asia, 6 (26.1%) correspond to Chinese bacterial group III, 6 (26.1%) to group IV, and 9 (39.5%) to group V. Isolates belonging to group V were strongly virulent on IR26, which corresponds to Chinese race group V. Group V breaks down the resistance of varieties with a dominant gene, *Xa 4*. Analysis of variance also indicated that the interaction between isolates and rice differentials was highly significant.

The resistance of IR26 was overcome by race V. A subsequent outbreak of bacterial blight on IR26 in the southern region of Guangdong Province perhaps was due to the occurrence of race V of pv. *oryzae* comparable to the race in India, Nepal, Bangladesh, and Indonesia that is known to be virulent to IR20, IR26, and IR36. ■

Virulence of 23 bacterial isolates on 5 Chinese rice differential hosts.

Number	Locality	Pathogenic group	Reaction[a]				
			Jing-Gong 30	Bao-Tai-Ai	Tsai-Ye-Ching 8	Nong-Kun 57	IR26
BB 003	Pan-Yu (China)	I	S	R	R	R	R
BB 016-7	Ai-Xian (China)	II	S	S	R	R	R
BB 135	Bihar (India)	III	S	S	S	R	R
BB 113	Ching-Yuan (Thailand)	III	S	S	S	R	R
BB 129	Chinsurah (India)	III	S	S	S	R	R
BB 054-5	Ling-Shui (China)	III	S	S	S	R	R
BB 106	Thai-7821 (Thailand)	III	S	S	S	R	R
BB 068	Chinghua (Vietnam)	III	S	S	S	R	R
BB 127	Faizabad (India)	IV	S	S	S	S	R
BB 111	Ching-Lai (Thailand)	IV	S	S	S	S	R
BB 068-5	Chinghua (Vietnam)	IV	S	S	S	S	R
BB 068-1	Chinghua (Vietnam)	IV	S	S	S	S	R
BB 139	Los Baños (Philippines)	IV	S	S	S	S	R
BB 064-2	Ling-Shui (China)	IV	S	S	S	S	R
BB 131	Parwanipur (Nepal)	V	S	S	S	S	S
BB 141	Orissa (India)	V	S	S	S	S	S
BB 125	Bihar (India)	V	S	S	S	S	S
BB 133	Bara (Nepal)	V	S	S	S	S	S
BB 242	Fu-Gong (China)	V	S	S	S	S	S
BB 172	Gao-Zhou (China)	V	S	S	S	S	S
BB 105	Young-Jiang (China)	V	S	S	S	S	S
BB 137	Dacca (Bangladesh)	V	S	S	S	S	S
BB 234	Tai-Poo (China)	V	S	S	S	S	S

[a]R = resistant, S = susceptible, V x I = 2.3471** $P = 0.01$.

Use of colored lights to attract rice insects

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In 1979, the use of colored lights to attract rice insect pests was studied. Petromax lamps in 5 colors — yellow, blue, green, red, and white — were set 100 m apart in rice fields from 1800 to 2000 hours on alternate days in October, November, and December. The early (planted Aug-Sep) crop was in the reproductive phase, and the late samba (planted in Sep-Oct) crop in the vegetative phase. The lamps were in the centers of iron trays (76 × 46 × 10 cm) containing water mixed with kerosene. The insects attracted by the lights got trapped in the water.

The ordinary white-light trap was the most effective; it attracted and caught the largest number of green leafhoppers (5000), brown planthoppers (1000), and

moths of stem borers (1 70) and leaffolder (210) during the study period. The four other colors — yellow, blue, green, and red — were almost equal in attraction, catching from one-third to two-thirds the number of insects in the white-light trap. ■

Classification of pathogenic groups of *Xanthomonas campestris* pv. *oryzae* and their regional distribution in South China, Guangdong

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During 1978-80, 211 isolates of *Xanthomonas campestris* pv. ***oryzae*** were collected from 9 districts in Guangdong Province. Virulence was evaluated on five Chinese differential varieties: Jinggong 30, Bao-Tai-Ai, Tsai-Ye-Ching 8, Nong-kun 57, and IR26. Flag leaves were inoculated by leaf clipping.

Five bacterial groups could be distinguished. Group I with 16 isolates was virulent only to Jing-gong 30, the susceptible check. Group V with eight isolates was virulent to all five differential varieties. This included IR26, which is known to have the *Xa 4* gene for bacterial blight resistance. Group V bacteria were distributed in the eastern and southern parts of the province.

Group II was composed of 38 (18%) isolates, group III of 49 (23%), and group IV of 100 (47%). Groups III and IV, the predominant groups in the province, were avirulent only to IR26. These two groups appear to be similar to race 1 in the Philippines, based on preliminary evaluation of the IRRI differentials. ■

Widespread outbreaks of immigrating leaffolders and whitebacked planthoppers in southwestern Japan

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Widespread and severe outbreaks of the leaffolder *Cnaphalocrocis medinalis* (Guenée) and the whitebacked planthopper *Sogatella furcifera* (Horvath) occurred in southwestern Japan in 1980. The leaffolder outbreak covered 58,900 ha (34% of the productive paddy area) in Kinki, 112,900 ha (59%) in Chugoku, 61,400 ha (69%) in Shikoku, and 218,000 ha (73%) in Kyushu. Areas affected by the whitebacked planthopper were nearly as large. In Kyushu, the total area of moderate to severe leaffolder infestations was estimated at 125,000 ha (39%).

The two insect pests cannot overwinter in Japan, except the leaffolder on the subtropical Nansei Islands. The outbreaks were attributed to a large number of immigrants in several migrating waves from overseas during the unusually long *bai-u* season (June to early August). During July to mid-September, weather in Japan was abnormal. Temperatures were much lower than normal and precipitation was very high, with few sunshine hours. Severity of the outbreaks increased because rainfall on consecutive days prevented the good timing of insecticide applications.

In contrast, the incidence of the brown planthopper *Nilaparvata lugens* (Stal), another immigrating insect pest, was light. ■

Atomizer for use in insecticide evaluations

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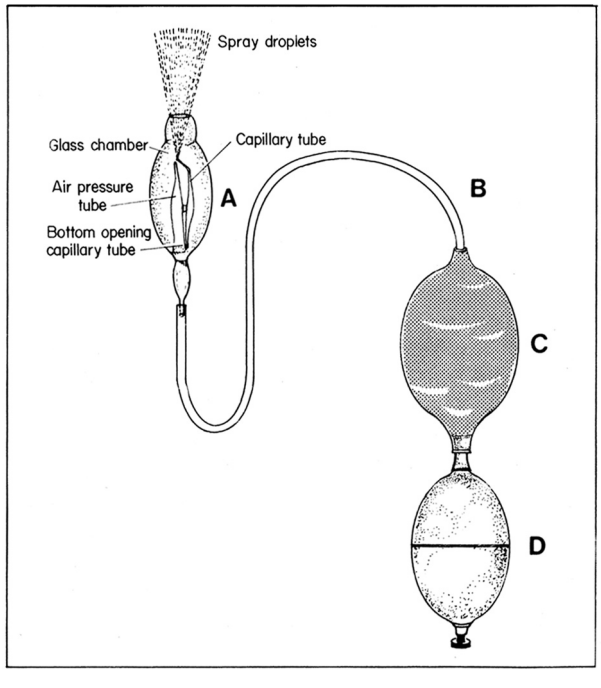
Conventional sprayers cannot handle small quantities of spray fluids for controlled insecticide evaluation in potted rice plants. Therefore, a hand atomizer used by asthma patients was modified to serve the purpose (see figure). It consists of a glass unit (A), a rubber tube (B), a rubber air reservoir (C), and a rubber bulb (D).

The glass unit has an air pressure tube through which air flows at high pressure. A bent capillary tube by the side of the air pressure tube draws the spray fluid from the glass chamber and atomizes it by air pressure. The glass chamber can be filled up to the air vent with 3 ml spray fluid, which is adequate to spray a potted plant.

The atomizer discharges fine spray droplets that are deposited uniformly on the plant surface without runoff. It is useful for spraying small quantities of insecticides and other chemicals in laboratory or glasshouse toxicity evaluation studies. ■



Hand atomizer modified for use in controlled insecticide evaluation in potted rice plants. Coimbatore, India.