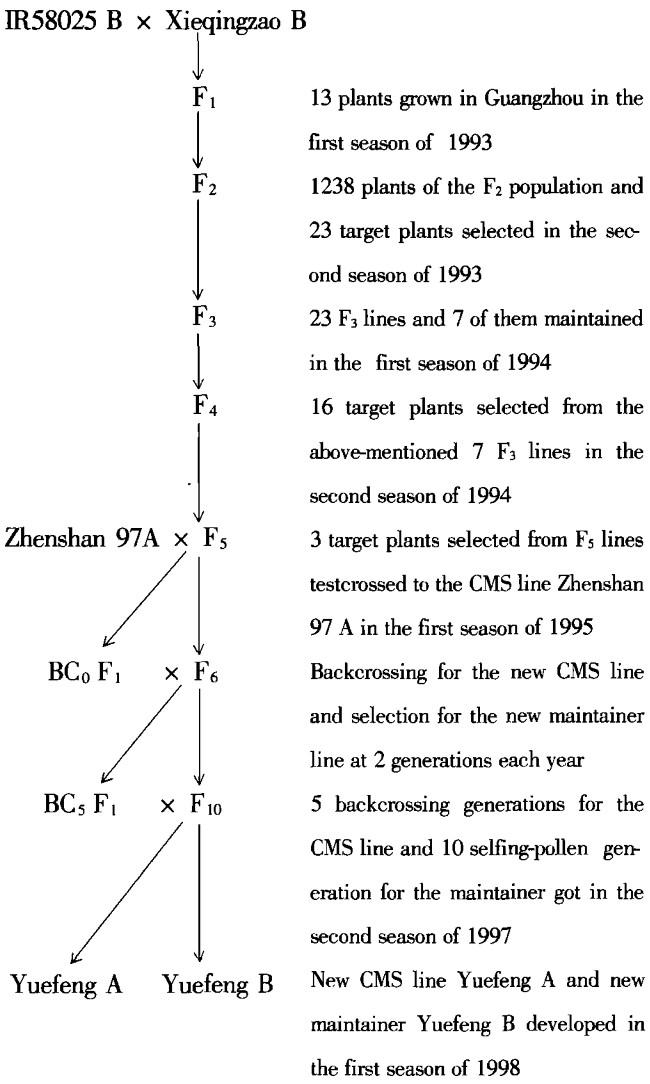

Yuefeng A had light green leaves, high tillering ability, about 87 d to heading in the first season and 72 d in the second season in Guangzhou, 75 cm in plant height, 99.99 % of pollen sterility, more than 80 % of stigma exsertion, and 1.95 t/ha for the CMS seed multiplication in Guangzhou in the second season.

The grain quality characteristics of Yuefeng A were shown in the table. It had low amylose content, soft gel consistency, low gelatinization temperature, slender grain shape, and no chalkiness. □

Comparison of Yuefeng A and Xieqingzao A in grain quality characteristics[a].

Character	Yuefeng A	Xieqingzao A	Difference[b]
Brown rice recovery(%)	80.1	80.7	-0.6
Milled rice recovery(%)	71.2	71.4	-0.2
Head rice rate(%)	28.2	24.6	3.6
Grain length(mm)	6.7	6.5	0.2*
Grain length/grain width	3.7	3.1	0.6**
Chalky grain rate(%)	0.0	100.0	-100.0**
Grain chalkiness(%)	0.0	25.2	-25.2**
Grain translucency (grade)	1.0	3.0	-2.0**
Alkali spreading value (grade)	7.0	5.0	2.0**
Gel consistency(mm)	92.0	58.0	34.0**
Amylose content (%)	14.3	23.4	-9.1**
Protein content (%)	8.7	9.6	-0.9*

[a] Data were from Rice and Product Testing Center of the Ministry of Agriculture, China; [b] * and ** were significant at 0.05 and 0.01 level, respectively.

A taxonomic investigation on egg parasitoid, *Anagrus* of rice planthopper in Zhejiang Province

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Exploitation and utilization of beneficial arthropods viz. insects and spiders to regulate pest populations has a good prospect in China. The role of non-rice habitats in maintaining the population of natural enemies of the brown planthopper, *Nilaparvata lugens* (stål) (Hemiptera: Delphacidae) has been investigated in Zhejiang Province since 1994. The work focused primarily on the egg parasitoids genus *Anagrus* (Hymenoptera: Mymaridae). Plants laden with eggs of the brown planthopper were exposed 2 d every week in the rice fields and grassy areas dominated by *Digitaria* spp. Then, the plants were retrieved and brought back to the laboratory for parasitoid rearing. Newly emerged parasitoids were preserved in alcohol solution for further identification.

The liquid-preserved parasitoids were dehydrated in increasing concentrations of alcohol — 70 %, 80 %, 90 %, and 100 % for 3 min intervals. Thereafter the specimens were thoroughly washed in xylene for 1 min. Individual specimen was placed in a glass slide with a droplet of Canada balsam for permanent mounts. Different parts of the parasitoids such as wings and legs were spread out, and three views dorsal, ventral, and lateral were formulated to facilitate better examination of the different characters. Each slice was covered with a cover glass to secure the parasitoids and labeled.

A total of 92 specimens from Hangzhou were mounted on slides. Forty-eight specimens, 24 females and 24 males collected from the grassy areas, and 44 specimens, 26 females and 18 males collected from rice fields were prepared for a comparative taxonomic investigation of the possible *Anagrus* complex. Additional specimens comprising of 28 females and 8 males collected from rice fields during 1980-1982 in Hangzhou were also examined.

Only three species of egg parasitoids were identified from the exposed eggs of the brown planthopper in both the rice fields and *Digitaria*-dominated grassy areas. These were dominated by the mymarid *A. nilaparvatae* (98 %), and the remains were trichogrammatids (2%). The trichogrammatids were mainly *Paracentrobia andoi* (Ishii) and *Oligosita* sp.

Further examination revealed that *A. nilaparvatae* had been collected in 1980-1982 in Hangzhou, long before it was collected and described in 1985 by Prof PANG Xiongfei and WANG Yean at South China Agricultural University, Guangdong Province. Nineteen specimens of *A. nilaparvatae* comprising of 11 females and 8 males were identified in the collections mounted in 1980-1982. Similarly, 17 females of *A. optabilis* (Perkins) from rice field were identified from this specimen.

Based on these collections, it could be inferred that the dominant parasitoid of the brown planthopper eggs was *A. nilaparvatae* > *A. optabilis* (Perkins) > *Paracentrobia andoi* (Ishii) > *Oligosita* sp. in Zhejiang Province. *A. nilaparvatae* was common in the *digitaria*-dominated grassy areas, and perhaps it utilized others eggs of planthoppers as host in the absence of *N. lugens*. □

Negative phototropism of rice root

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It is often believed that the stem of higher plants has characteristics of positive phototropism, and the root shows no phototropism or no sensitivity to light though the root of *Arabdopsis* was reported possessing characteristics of negative phototropism. In this study, a distinct negative phototropism of the root system of rice seedlings was observed.

Material used was a large panicle variety Sanlicun. The seeds were soaked in water for 2 d under room temperature (25-30 ℃), and germinated in damp gauze. Two devices used were as follows:

1. Simple type

Germinating seeds were put on a piece of plastic gauze, fixed at the top of a glass cup or a beaker filled with fresh water by using a rubber band (the root tip was inserted into a hole of the gauze when seed germinated). Then, the gauze was pushed down slightly so that the seeds could reach the water surface. Then, the cup or the beaker was moved to a place where there was an illuminated side and a shaded side.

2. Research type

This device was used to measure the length and to take serial photos of rice roots (Fig. 1). Small metal pilaments, 0.2-0.5 mm in diameter, approximately 3 cm in length, were used. One end of them was tied to a germinating seed and the other was inserted into a foamed plastic mass. When enough tied germinating seeds were inserted into the plastic mass, water or culture solution was dipped into glass tank. The size of the foamed plastic mass was little smaller than that of the tank, so that it could float freely on the water surface of the tank and its growth status was easily observed because of its closeness to the side of the transparent tank. The foamed plastic mass could be taken out from the tank, so that the rice root could be treated or measured.

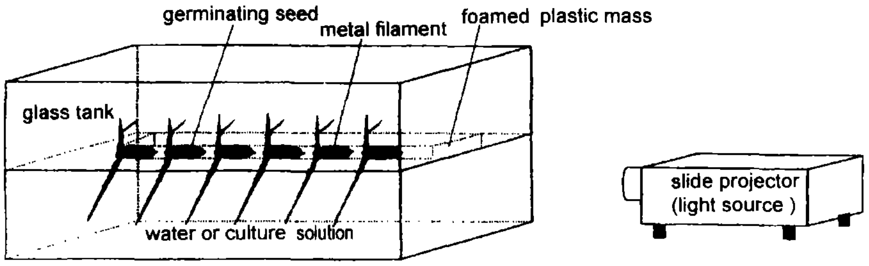

Fig. 1. Device for observation of negative phototropism.

Illumination should be adjusted by changing the distance between rice seeds and the slide projector. The photoperiods and darkperiods were controlled by covering a box over the glass tank. Moreover, partial illumination of the root was carried by affixing black adhesive plaster on different part of the side of the glass tank or by wrapping foil around different part of the root.