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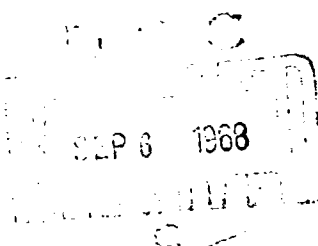
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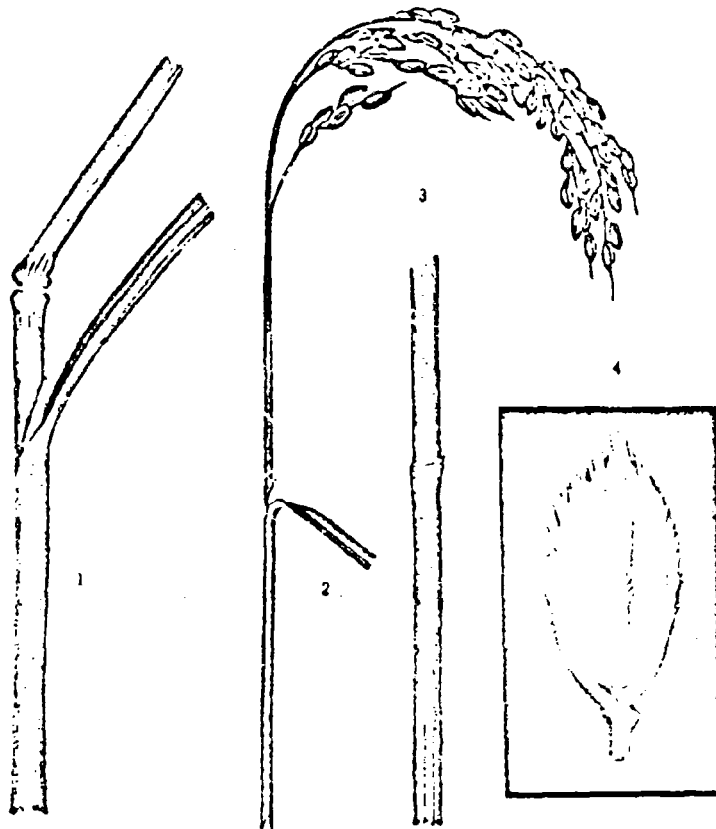
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PIRICULARIA ORYZAE CAVARA

pages 44-46

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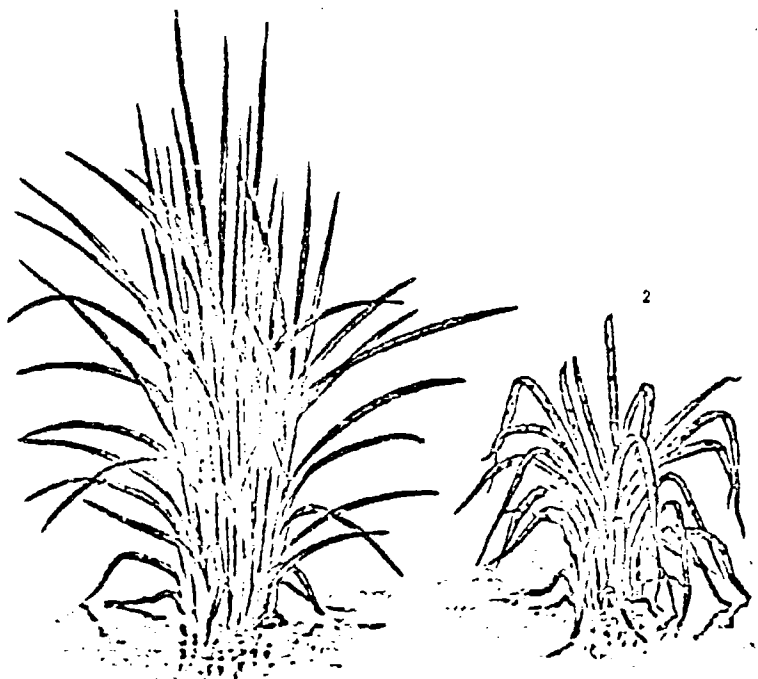


Rice blast (I) node blast, neck blast, palea blast.

Rice blast occurs in the neck, nodes of the stem, branches of the spikes, and in the area soon after the spikes emerge. The so-called white spikes and withered palea can occur. The color of the spots which are formed in the first stage of the disease can be contrasted with the case of the leaves, which is described in the following section. By the time that they are noticed in the fields, the disease has progressed considerably and the spots are light black on the spike neck, completely black on the nodes, and white or grey on the spike branches and the paleas. If attacked soon after they emerge, the spikes which have been

attacked will not bear any fruit, but if they are not attacked immediately, but two weeks later, the progress of the disease is slow and some ripe fruit does occur. Spike and node blast occurs most severely when too much fertilizer has been applied or if they have been immersed in cold water. This is apparently due not only to nutrition factors but also to the fact that the spikes emerge at a period suitable for the occurrence of the blast. Neck and node blasts are very common in the mountains of northern Japan and palea and spike branch blast can be seen throughout the country.

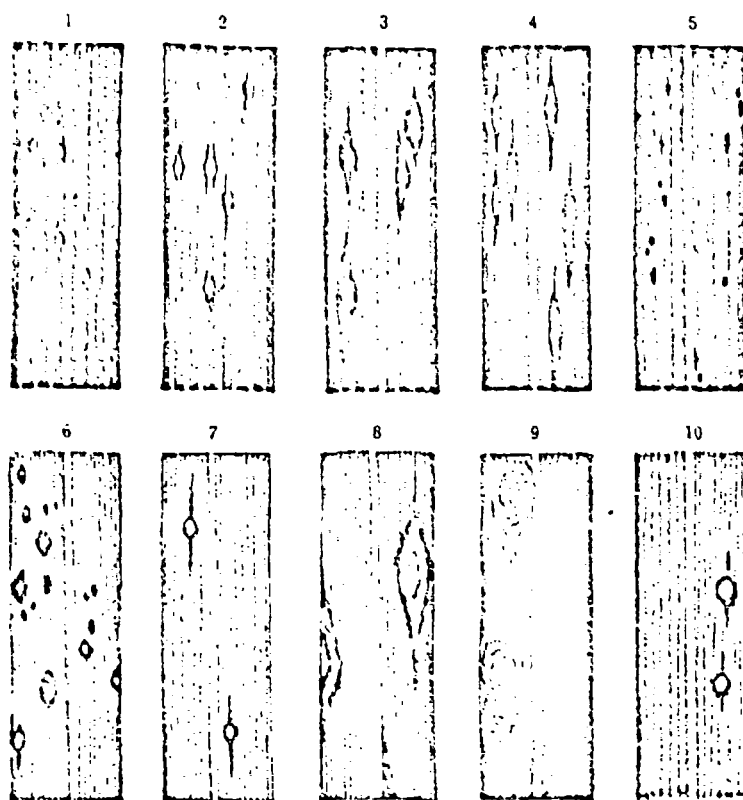
Methods of prevention. Preventive measures are too late if the disease has already begun. Prediction of occurrence is of prime importance, and when necessary four kilograms of mercury compound per tan should be distributed over the area prior to emergence of spikes. Then, after observing the weather, the compound should again be spread once or twice every one or two weeks (1. node blast, 2. neck blast, 3. neck blast magnified, 4. palea (husk) blast. Disease occurs more profusely from the "shoulders" of the palea.)



Rice blast (II)
Leaf blast (Nawaimochi-"nursery blast;" Zurikomiimochi-"slipping blast").

Blue green or dark blue saturated circular spots appear and spread on the new leaf. Soon the circumference of these spots becomes brown and the spots become spindle shaped. A gray mold grows on the spot surfaces. When the disease is severe, the leaf will wilt, extension of new leaves is impaired and if the leaf develops without becoming delineated from the sheath it will be struck by the disease and wither. Thus, the roots will become small and rot and will gradually slip down into the field (Zurikomimochi). Leaf blast occurs profusely under conditions of darkness, dampness and high temperature during the nursing period, when followed by a prolonged rainy season, and is especially severe in heavily fertilized fields. When the humidity is above 90% and the air temperature is 20 to 22° C, often at night the hyphae inside the diseased tissue will shoot forth conidiophores through pores. After six hours, conidiospores will begin to be produced. They are carried away by the wind with the slightest breeze, settle on other rice leaves and begin the disease anew. During the wintering of the causal fungi, infected straws and grains are of major concern. Occurrence of the disease from infected seed husks in field beds also cannot be neglected.

Methods of prevention. (1) Cultivation of disease-resistant seeds. (2) Disinfection of seeds. (3) Early detection of the disease and dissemination of three-four kg of mercury compound per tan. (4) Growing strong rice plants. Paying special attention to fertilizing roots, removing weeds, irrigation, etc. (1. Healthy stock, 2. Severe leaf blast.)



Rice blast (III)
Spotted leaf blast and other types of blast on plants.

The blast spots on leaves have a progressive form when they first appear on new leaves. In form they appear as dark green saturated circles. If the rice plant has low resistance owing to the variety or the conditions of cultivation the disease will progress extremely rapidly and the young leaves will gradually wither and become infected with Zurikomimochi. However, depending upon how resistant the plant is, reddish brown sections will be formed on both sides of the spots and the center will remain an ash color. Then the entire circumference will become reddish brown and finally the terminal form of the spots will occur. At this time among the resistant varieties the spots will become narrow and the reddish brown sections will increase. When resistance is especially strong, the ash colored section will disappear and brownish lines and dots will be seen. Spots from the progressive type of disease produce copious amounts of conidiospores, which are also formed in the terminal type of spots. The production of conidiospores depends on how resistant the plant is, and spores are not produced in strongly resistant terminal types. Blast naturally infects not only rice, but wheat, bailey, and certain types of

woods. Aside from this particular disease, unique blasts occur on other members of the grass family and on wheats, each of which have their own particular names. Piricularia Oryzae is quite similar to these disease fungi, but differs in small details and is classified separately. (1. Progressive form, 2. Progressivo-terminal form, 3. Common terminal form, 4. Resistant-terminal form, 5. Strongly resistant-terminal form, 6. Water oat blast, 7. Millet blast, 8. Millet (kibi) blast, 9. Myoga (zingiber myoga blast), 10. Mehijiwa blast.)