



save
your
WHEAT
from
EARCOCKLE
and
TUNDU

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Earcockle and tundu can ruin one third to two thirds of wheat crop. Even your new dwarf wheats are not spared.

Popularly known as sehan (earcockle) and tanan (tundu), these diseases are caused by small, thread-like worms called nematodes.

Nematodes spread from one crop to another through galls.

The galls in which these worms live are hard, dark brown and round. Such galls are formed in place of grains in the ears of the affected wheat plants.

These galls are harvested alongwith other healthy grains. When sown, these galls absorb the soil moisture and break open releasing live nematodes in the soil.

The nematodes move about in the soil till they find a developing wheat plant. They crawl up to its growing point where they remain active and are carried up with the growth of the plant.

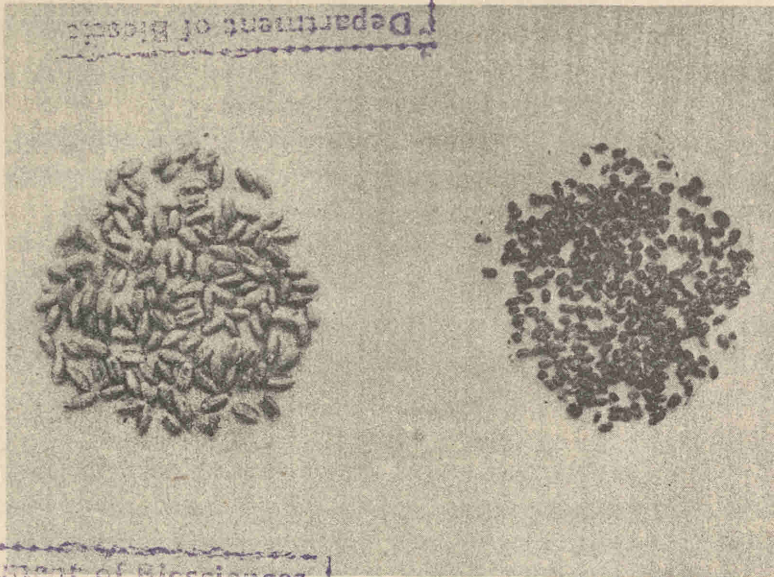
When the flowering time comes, the nematodes move to the floral parts. By this time, they grow into

The wheat ear on the extreme left is healthy; the rest are affected by earcockle



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Student: This is how nematode galls look like (right). Compare them with the healthy grains (left).

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adult worms. The females start laying eggs from which hatches out the next batch of nematode larvae. The flowers in which the worms are active turn hard and produce galls.

In the beginning, the galls are greenish but they ultimately turn black. From a few to all the grains in an earhead may be infected, or there may be more than one gall in place of each grain. Sometimes such galls are found on glumes too. These galled grains if used as seed cause both earcockle and tundu diseases.

Earcockle symptoms:

When nematodes attack a wheat seedling its base or the stem near the ground gets enlarged. This is seen 20 to 25 days after the seed is sown.

Leaves of the affected seedling get twisted and crinkled. In the beginning, the affected plant is dwarfish. It also tends to spread out instead of growing straight. Later on, however, the plant seems to recover and grow normally. Such plants produce more tillers than the healthy ones.

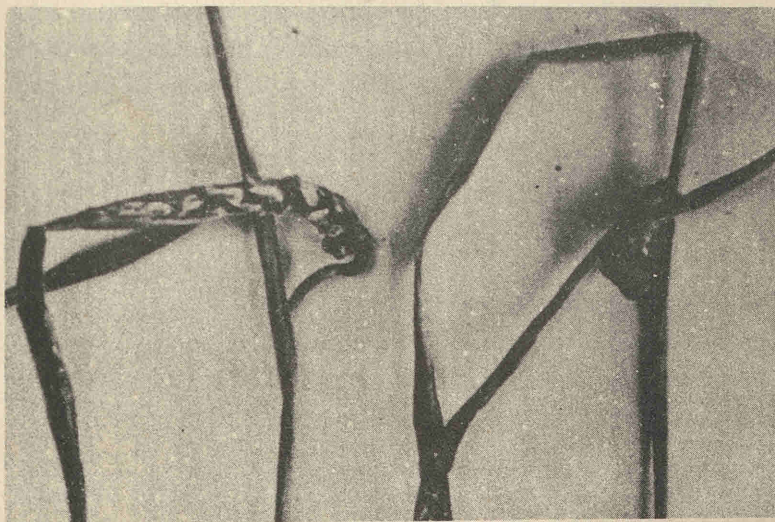
The affected ears are shorter and broader with very short or no awns on their glumes. They are greener than the healthy ones.

If you examine an affected ear, you will see that a number of grains have been replaced by hard dark brown or black galls. They appear slightly smaller and rounder than the normal grains. Each is full of live nematodes.

Tundu symptoms :

A majority of nematode larvae generally remain covered with a bacterium. If the weather is humid

Twisted leaves and sterile head - result of the tundu attack



and cool, the bacteria multiply and produce a slimy yellow fluid.

Nematodes caught in this slimy fluid gradually get killed. The fluid with the bacterial mass, completely covers up the wheat earhead.

In such cases, there is no grain formation and only sterile, twisted yellow fluid-smearred spikes come out. However, in dry years, these symptoms (or 'tundu' as this stage is called) are not seen. The bacterium cannot multiply under such conditions. Nematodes then will produce only earcockle symptoms in the plants.

Are nematode galls poisonous?

There is no evidence to show that these nematode galls are poisonous to either human beings or animals. But they do damage the chapati-making qualities of the flour.

Control

There is, so far, no way of controlling the diseases once they have appeared. The only way is to see that you do not sow the galls with the seed even by mistake.

To ensure this:

Try to get the seed only from a healthy crop. Free the seed-lot of galls, if any. Dip the seed in 20 per cent brine solution — a mixture of sodium chloride and potassium chloride. The galls will float when dipped in brine solution.

You can get rid of a good part of galls or seed even by soaking the seed in water or in one per cent

salt solution for a half to one hour. You can treat a quintal of seed in a 5 by 3 feet size tub.

Remove and burn all the floating seed.

Before sowing, wash the seed treated in brine or salt solution. To remove the smaller galls, pass the dry seed through a coarse mesh sieve.

In the field, whenever you come across wheat plants showing twisted and curled-up leaves, remove and burn them.

Nematodes cannot survive in the soil unless the host plant — wheat — is there. Therefore, to reduce the incidence, follow a one-year rotation with some other crop.

Take these steps and check the spread of earcockle and tundu.

For further particulars, contact

The Division of Nematology
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