

Major Diseases of King Chilli and Their Management

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King chilli (*Capsicum chinensis* Jacquin) is one of the important spice crops grown mainly in Tamenglong District of Manipur. It is also cultivated in Nagaland, Assam and other North Eastern states of India. In Manipur, it is also grown in other districts like Senapati, Ukhrul and Churachandpur. King chilli locally known as Umorok in Manipur, is one of the hottest chilli in the world. It is also known by different names as "Bhut Jalokia" in Assam and "Naga Mirch", "Raja Mirchi", "Naga Jolokia" in Nagaland. It is popular in Manipur and other North Eastern states like Assam for its distinct aroma and pungency. It is used as a spice in making pickles, meat preparation etc. North East people commonly use this chilli for making pickles and for adding hotness to non-vegetarian food stuffs like meat preparation. Besides, King chilli also possess medicinal properties and is used in the treatment of various diseases. It helps in treating diabetes by reducing required insulin to lower blood sugar, treating heart diseases by preventing/delaying oxidation of bad cholesterol, rhinitis and bronchitis through thinning of mucus. King chilli is often attacked by a number of insect pests and diseases but heavy losses are due to leaf curl disease. The leaf curl disease is the most severe disease and common in Manipur that cause significant reduction in yield. In India, Senanayake *et al.* (2006) have reported first time chilli leaf curl virus on chilli crop. Virus diseases like mosaic and leaf curl complex caused heavy losses (Singh *et al.*, 1998). Venkatesh *et al.*, reported (1998) that chilli leaf curl complex was caused by chilli leaf curl Gemini virus transmitted by white fly (*Bemisia tabaci*) and also by thrips (*Scirtothrips dorsalis*) & mites (*Polyphagotarsonemus latus*). Khan *et al.* (2006) observed that natural incidence of mosaic and leaf curl disease on various cultivars of chilli occurred at Banthra Research Station of NBRI, Lucknow. The virus isolates causing mosaic and leaf curl diseases in chilli cultivars were transmitted by aphids and whiteflies, respectively.

Leaf curl disease

Symptoms: Leaf curl disease is a viral disease caused by Tobacco leaf curl virus and it is transmitted by white flies. This vector spread the disease during the month of August to October. The most characteristic symptoms are the curling of leaves and leaves are much reduced in size and are of pale (light yellow) in colour and roll downwards. Internodes become shortened and general dwarfing of the plant occurs which assumes bushy appearance. In severe cases, no fruits are formed & if they are formed, they are small & deformed.



Fig 1. Leaf curl infected king chilli plant



Fig 2. On-farm Trial on Management of leaf curl disease in King chilli in Tamenglong District

Management Practices

- i. Roguing: Uproot the infected plants and burn them.
- ii. Seed treatment: Seed treatment with *Trichoderma viride* @4g/Kg of seeds before sowing
- iii. Mechanical method: Install yellow sticky traps for control of white flies @ 10 traps /ha
- iv. Biological method: Spray Neem Oil @ 5ml/litre of water or Neem based products @ 3ml/l of water to control white fly.

Anthracnose & Fruit rot

It is a fungal disease caused by *Colletotrichum capsici*.



Fig 3. Anthracnose infected King chilli Fruit



Fig 4. Severe Case of Anthracnose infected King chilli Fruit

Symptoms: The characteristic disease symptoms are necrosis or die back of twigs from tip downwards. Sunken spots with black margins appear on fruits.

Management Practices

- i. Seed Treatment: The seeds should be treated with *Trichoderma viride* @4g/kg of seeds or with *Pseudomonas* sp. @ 10 g per kg of seed before sowing.
- ii. Sanitation: Weeding should be done .Field sanitation should be done so as to avoid inoculum build up.
- iii. Use disease resistant varieties.
- iv. For effective disease control, foliar spraying of *Trichoderma viride* or *Trichoderma harzianum* or *Pseudomonas* sp. @ 10 g per litre of water should be done 2 times at 10-15 days interval.

Bacterial wilt and Bacterial leaf spot (*Ralstonia solanacearum*)

Symptoms –Initial symptoms appear as small, circular or irregular, dark brown or black greasy spots on the leaves. As the spots enlarge in size, the centre becomes lighter surrounded by a dark band of tissue. The spots coalesce to form irregular lesions. Severely affected leaves become chlorotic and fall off. Petioles and stems are also affected. On the fruits, round, raised water soaked spots with a pale yellow border are produced.

Management

Cultural: Careful seed selection and adoption of phytosanitary measures will check the diseases. Early removal of affected plants. Roguing and destruction of affected plants. Seed treatment with *Trichoderma viride* and *Psuedomonas* sp. @ 10 g each per kg of seed. Seed treatment with Garlic-clove and Cinnamon extract is also effective. Foliar sprays of 10 gm of *Trichoderma* or *Pseudomonas* sp. per litre of water help in controlling the spread.

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