

TECHNIQUE

PEST MANAGEMENT

COUNTRY

India



REGION

Uttarakhand

B

AGRICULTURE

B11

SOIL WORKING AND SOWING TECHNIQUES

Technique:
pest managementBrief description:
plants for pest control in paddy

PRINCIPAL PLACES OF DISTRIBUTION IN THE AREA

Throughout the state up to 1800 M above mean sea level.

DESCRIPTION

Continued reckless use of synthetic chemicals for pest control in the valley and plains has resulted in the widespread environmental damage, which contributed to the emergence of a new breed of chemical-resistant super-pests. A study conducted by FAO reports that around 300 species of agricultural pests have developed resistance to a wide range of potent chemicals. Pesticides also wipe out many useful natural predators and parasites of pests, which help in keeping a check on the growth of the pest population. In such case, traditional ecologically sound methods of pest control and plant based pesticides are of great importance.

Some plants and plant products commonly used in Uttarakhand for pest control in paddy are:

Persian lilac (*Melia azedarach*) : It is also known by names like Dainkan and Bakayan. Leaf extract, kernel extract and its oil is quite commonly used in the valley to control the pest population. It is becoming popular after the Navdanya's intervention in the valley. The targeted pests are: Army worm (*Spodoptera litura*), Leaf folder (*Cnaphalocrocis medinalis*), Brown plant hopper (*Nilaparvata lugens*), Green leaf hopper (*Nephotettix virescens*), Rice gall midge (*Orseolia oryzae*), Rice stem borer (*Sciropopyga incertulus*), White backed plant hopper (*Sogatella furcifera*). The plant is also considered as substitute of Neem.

Neem (*Azadirachta indica*) : The Neem plant is very popular in the plains of India for its different uses. This plant is also used in the plains of the Uttarakhand state against most of the pests of rice including Army worm (*Spodoptera litura*), Leaf folder (*Cnaphalocrocis medinalis*), Brown plant hopper (*Nilaparvata lugens*), Green leaf hopper (*Nephotettix virescens*), Rice gall midge (*Orseolia oryzae*), Rice stem borer (*Sciropopyga incertulus*) and White backed plant hopper (*Sogatella furcifera*). It is also effective against all the diseases of rice caused by fungus and bacteria. These days' farmers are buying the Neem products from market. People in the valleys however use Neem leaves oil and cake quite frequently.

Pongam Tree (*Pongamia pinnata*): Commonly known as Karanj. It is an important tree used in the pest control in Rice. Pongam leaf and kernel extract and its oil are used against the Army worm (*Spodoptera litura*), Brown plant hopper (*Nilaparvata lugens*), Rice case worm (*Nymphula depunctalis*) and Rice weevil (*Sitophilus oryzae*). This is also limited in use in Uttarakhand; however, it is very common in the other states of India. Some organic farmers especially of the Bhabhar and Terai region of the state are also using this plant.

Aloe (*Aloe barbadensis*): The extract of the whole plant, which is also known as Ghritkumari is used against the Fungal and Bacterial diseases of rice. Although it is not very common in use; only few farmers in the valley are using this plant.

Garlic (*Alium cepa*): Lahsun is commonly used by the organic farmers against the Army worm (*Spodoptera litura*), Brown leaf spot of rice (*Helminthosporium oryzae*), Rice blast Fungi (*Pyricularia oryzae*) and Mites. Garlic bulb paste is also used against mites and Armyworm after mixing with the chili in the equal amount.

Basil (*Ocimum sanctum*): A plant is commonly known as Tulsi. Its leaf extract is found quite effective against the Armyworm (*Spodoptera litura*), Mites (*Tetranychus* sp.) and Nematodes (*Meloidogyne javanica* and *M. incognita*). The leaves are also used to control the storage pests.

Vitex (*Vitex nigundo*): The plant is known as Shiwani and Nirgundi. The leaf extract is used against the viral diseases, Rice stem borer and Case worm (*Nymphula depunctalis*). Leaves are also mixed with dung to make medicated compost to prevent the soil borne diseases.

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Tobacco (*Tobaccum* spp.) : Leaf extract of Tambaku is quite effective against Mites, Rice stem borer and Caterpillars. Commonly used by the farmers of Navdanya.

Marigold (*Tagetes* spp.) : Genda is now used commonly by the organic rice farmers in Doon Valley. It works as a pest repellent. It was observed by the farmers that the damage done by the pests was less in the fields where Marigold was grown in the bunds.

Papaya (*Carica papaya*) : This fruit is known as Papeeta in Uttarakhand. Small pieces of unripe local Papaya are used to control the Rodents. About 4-5 fruits are used for one acre of land.

Other than above-mentioned plants, Black nightshade, (*Solanum nigrum*), Chili (*Capsicum annuum*), Coriander (*Coriandrum sativum*), Goat Weed (*Ageratum* sp.), Ginger (*Zingiber officinale*), Dioscora sp., Lantana (*Lantana camara*), Basya (*Eupatorium* sp.) etc. are also used to control the pests and diseases in rice.

Few other things commonly used in the pest and disease management include Buttermilk, Ash, Cow urine and cow dung. Leaves of Vitex, Persian lilac, Neem etc. are soaked in Buttermilk for one week. After filtering the solution with the help of thin cotton cloth it is used to kill the caterpillars. Ash is used against rice stem borer, whereas, Cow urine is quite effective in fungal diseases and caterpillars. Cow dung is commonly used for plastering the storage bins with mud and cow urine. It is also burnt to fumigate the storeroom.

These days physical, mechanical and biological control for pests is gaining popularity in entire India for the pests like stem borer in rice. ICAR has also taken initiative to form an Indian Institute on Organic Farming. The changing world scenario and the depression in yields responses in the farming systems of the green revolution belt has led to change the mandate. Farmers are also making efforts to find out the ecological ways of pest control. This further strengthens the organic movement.

PHOTOGRAPHS, DRAWINGS AND EXPLANATORY MODELS, GRAPHICAL APPRAISALS



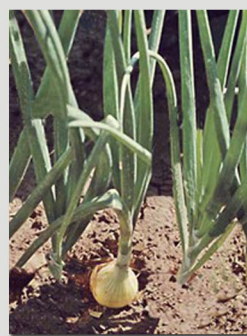
Persian lilac



Pongam Tree



Vitex



Garlic



Marigold



Neem



Aloe



Basil



Tobacco



Papaya