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(A STUDENT STUDY PROJECT)

ON

AWARENESS, PREPARATION AND USES OF ORGANIC PESTICIDES

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TITLE: AWARENESS, PREPARATION AND USES OF ORGANIC PESTICIDES

INTRODUCTION:

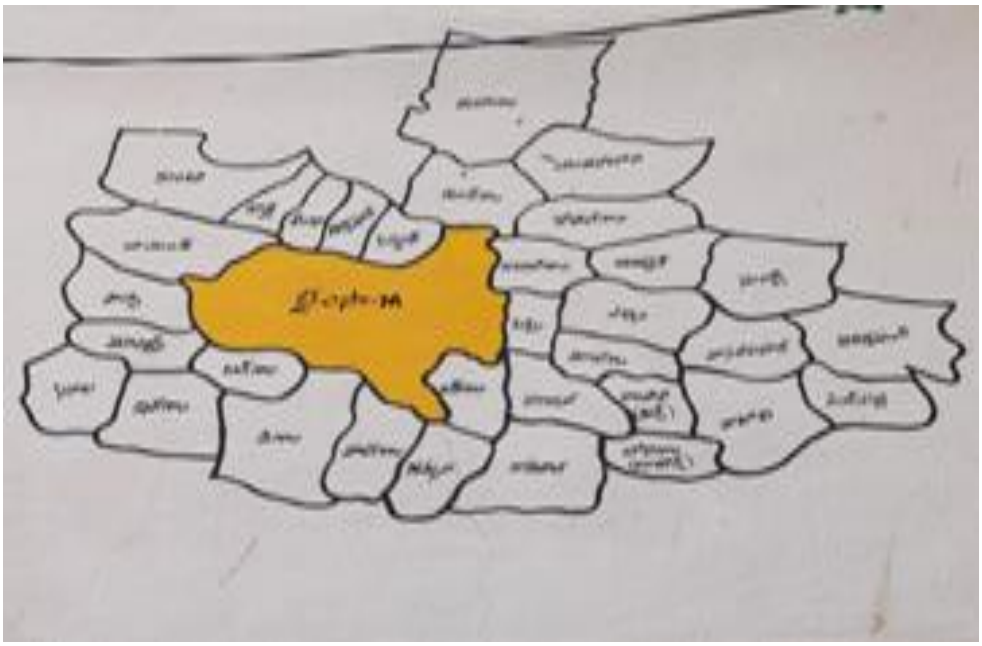
Organic farming can be described as natural, environmentally friendly, biological and green farm. The main purpose of organic farming is to make agriculture a priority with agriculture, especially with the resources available locally, while ignoring the use of harmful chemical pesticides.

Bhainsa is the revenue division in Nirmal District. Farmers in this region mostly grow soya, cotton, rice, maize and vegetable crops. Farmer's illiteracy in this area is also limited. Many farmers in the rural areas around Bhainsa have been affected by chemical pesticides and some have died. Therefore, the project was chosen to educate farmers on the use of organic pesticides to prevent this.

"On 15th, August, 2019, Prime Minister Narendra Modi called on farmers to increase their use of organic fertilizers to reduce the use of chemical pesticides in "Zero Budget Farming". (Enadu Main Edition on 8th, Sept, 2019 & Times of India 15thAug, 2019)

In this regard we have chosen the village of Mahagaon and Watoli in the Bhainsa division to educate the farmers on Organic Forming.

AGRICULTURE STATUS OF BHAINSA DIVISION:



Bhainsa is a Division in Nirmal district of the Indian state of Telangana. It is the mandal headquarters of Bhainsa mandal of Bhainsa revenue division. Major crops include cotton, paddy, maize, vegetables and sugarcane. Bhainsa is located at 19.1000^0N 77.9667^0E It has an average elevation of 363 meters. The cultivated land in Bhainsa Division is 46000 acres, in this 9000 acres of land cultivating Maize crop.

A survey was carried out on farmers' crops, infected worms, used pesticides and diseases in farms around Bhainsa.

THE FACTS KNOWN IN THIS SURVEY ARE:

1. Most farmers' crop is soya, cotton, paddy, maize, sorghum and vegetables.

2. Most commonly used chemical pesticides are Nuvacron, Captan, carosine and Acephate.

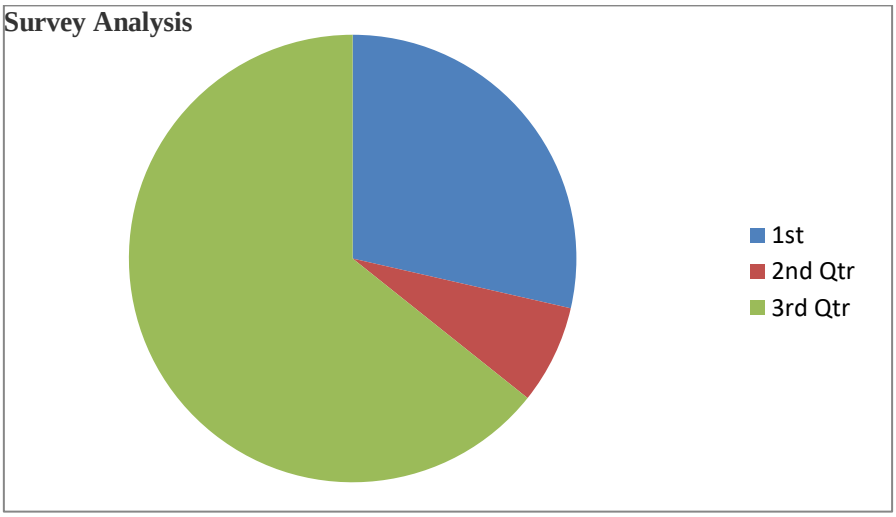
3. Most commonly infected diseases are mosquitoes in rice, **scissors warm (kattera purugu**) in maize, **tobacco caterpillar** cauliflower, cabbage, spinach.

4. Most of the farmers use chemical pesticides.

5. Very few people know about organic pesticides, they don’t know how to make it cheap.

SURVEY ANALYSIS:

1. Only 40% of the formers now about organic forming.
2. 60% are not aware of organic forming.
3. Only 10% of the formers are using organic pesticide.
4. 90% of the farmers using chemical pesticides
5. 80% of the maize cultivated farmers are suffering with **Fall Army Warm (Kattera Purugu in telugu)**



STATEMENT OF THE PROBLEM:

According to survey analysis 80% of the maize cultivated farmers are suffering with **Fall Army Worm (Kattera Purugu in telugu)**

AIM & OBJECTIVES:

1. To educate farmers on organic pesticides.

2. Explaining the risks of chemical pesticides and reporting the benefits of organic pesticides.

3. Preparation of Organic pesticides is made from naturally available ingredients.

4. Destruction of scissors warm/ Fall Armyworm / Kattera purugu **(Spodoptera frugiperda)** in maize which is a worst enemy of farmers.

.5. Destruction of tobacco caterpillar (Pogaku Ladhe Purugu) in cauliflower, spinach and chillies,

FALL ARMYWORM (SPODOPTERA FRUGIPERDA)

The **Fall Armyworm** (Spodoptera frugiperda), is an insect pest of more than 80 plant species, causing damage to economically important cultivated cereals such as **maize**, rice, sorghum, and also to vegetable crops and cotton. It is the larval stage of the insect which causes large economic damage.

The scissor worm is called as Kattera Purugu in Telugu. This is a dangerous worm as it will ruin the crop right at the flowering stage. If not addressed at the early stage it will cause extensive damage and may give huge losses to the farmers.

Illustration:

The adult moths are 32 to 40 mm wing tip to wing tip, with a brown or gray forewing and a white hind wing.. There is slight sexual dimorphism, with males having more patterns and a distinct white spot on each of their forewings. The first larval instars is light colour with a larger dark head. As they develop through instars, they become browner with white lengthwise lines. They also develop dark spots with spines.

GEOGRAPHIC RANGE:

The fall armyworm is widely distributed in Eastern and Central North America and in South America. It has been invasive in Africa since 2016. It cannot overwinter in below freezing temperatures, so it only survives the winter in the most southern regions of the United States, namely Texas and Florida. Because of this, the fall armyworm is a more

prominent pest in south-eastern states. However, seasonally it will spread across the eastern United States and up to southern Canada. inhabiting areas with suitable food supplies. It was first reported in Africa in 2016, where it is causing significant damage to maize crops and has great potential for further spread and economic damage. It has since spread to 28 countries in Africa. in 2018, it began to spread widely in India.

In January 2019, heavy infestation of fall armyworm was recorded from corn plantations of Sri Lanka.

The armyworm's diet consists mainly of grasses and small-grain crops such as corn, but the species has been noted to consume over 80 different plants. Armyworms earned their common name by eating all plant matter they encounter in their wide dispersals, like a large army.

LIFE CYCLE OF FALL ARMY WORM:

The fall armyworm's life cycle is completed within 30 days during summer, and 60 days during the spring and autumn seasons; during the winter, these caterpillars' life cycle lasts about 80 to 90 days The number of generations a moth will have in a year varies based on climate, but in her life span a female will typically lay about 1,500 eggs. Because larva cannot enter into diapauses they cannot survive cold temperatures.

EGG:

The armyworm's egg is dome-shaped, and measures around 0.4 mm in diameter and 0.3 mm in height. Females prefer to lay eggs on the underside of leaves, but in high populations they will lay them just about anywhere. In warm weather, the eggs will hatch into larvae within a few days.

LARVA:

The larva goes through six different instars each varying slightly in physical appearance and pattern. The larva process lasts from 14 to 30 days, again depending on temperatures. The mature caterpillar is about 1.5–2.0 inches (38–51 mm) in length. This is the most destructive life stage as the larvae have biting mouth parts. The larvae have a distinctive inverted Y suture on the forehead.


PUPA:

The larva then pupates underground for 7 to 37 days in a cocoon they form of soil and silk. Duration and survival of the pupa stage depend on the temperature of the environment.

ADULTS:

Once emerged, the adults live for about 10 days, and sometimes up to 21 days, with the female laying most of her eggs early in life. Adults are nocturnal and fare best during warm and humid nights. An adult female moth can lay up to a thousand eggs in her lifetime. They are also terrific fliers and can travel up to 100 km in a single night.

MIGRATION:

Adults are capable of flying long distances, so even though they are unable to overwinter north of the southern region of the United States, the moths can migrate as far north as Southern Canada in warm months. Their migration rate is remarkably fast, estimated at 300 miles per generation. Some scientists speculate that this fast migration is aided by the movement of air in weather fronts.

INTERACTION WITH THE HUMANS:

PEST OF CROP PLANTS:

Because of their food preferences, fall armyworm larvae can wreak havoc on a wide range of crops. The first historical account of the fall armyworm's destruction was in 1797 in Georgia. Destruction can happen almost over night, because the first stages of a caterpillar's life require very little food, and the later stages require about 50 times more. Because of this rapid change in food consumption, the presence of larva will not be noticed until they have destroyed almost everything in as little as a night. Some examples of targeted crops include cotton, tobacco, sweet corn, rice peanuts and even fruits such as apples, oranges and many more. The list of possible food sources for the worms is extensive, so crop damage is wide-ranging. It is estimated that almost 40 percent of those species that armyworms target are economically important. Because the larva eat so much of the plant, they are very detrimental to crop survival and yield. In corn, larvae will even burrow into the corn ear to eat the kernels.

INVASIVE PRESENCE IN AFRICA:

The fall armyworm was identified in Africa in 2016. In early 2017, armyworms infested large swathes of corn crops across southern Africa, devastating the livelihood of many farmers. It is thought they arrived as an invasive species from the Americas as eggs in imported produce. This is causing immense concern among agricultural experts, due to the potentially huge amount of damage this invasive species will do to African food crops if allowed to spread. Many African countries have agreed to take urgent actions against armyworms.

RESPONSES:

Because of the fall armyworms' great destructive power, farmers must go to great lengths to deter the larvae. Insecticide is a widely used form of protection; in southern regions, farmers may have to apply insecticide to corn every day. Another strategy is to plant crops earlier to avoid the increase in armyworm numbers as the summer progresses. In South

Africa, farmers are using pheromone lures with a combination of Dichlorvos blocks to trap and eliminate male armyworms with the intention of disrupting mating cycles.

INVASION OF SRI LANKA:

First reported in India in May 2018, from Tamil Nadu Ministry of Agriculture of Sri Lanka issued a warning notice to farmers in the north-western and north central provinces about possible fall armyworm invasion. At the time of warning, crop destruction had already been reported from the Ampara, Anuradhapura and Polonnaruwa areas. The moth is known among local people as *Sena dalambuwa* (armyworm caterpillar). Not only corn, but also sugarcane plantations were attacked by the caterpillars in Anuradhapura, Ampara, and Monaragala districts.

In December 2018, heavy infestations in corn cultivation were identified. The spreading of the moth leads to attack corn all around the country within weeks . On 6 January 2019, caterpillars spread to Monaragala district and devastated corn crops. At the end of January 2019, the armyworm is present in all districts of Sri Lanka except Nuwara Eliya and Jaffna.

The Department of Agriculture recommended 12 pesticides under three categories, to be used alternatively in every seven days. Organic farming expert, Thilak Kandegama said that the threat can be overcome by sprinkling ashes as a repellent. Agricultural Ministry also decided to use drone technology for the spraying of insecticides to control the spreading of caterpillars.

On 29 December 2018, armyworms were recorded from paddy cultivations in the Sinhapura area of Polonnaruwa. In January 2019, caterpillars were also recorded from paddy cultivation of Nochchiyagama area in Anuradhapura district.

SPREAD TO CHINA:

The pest was first detected in China in the southwest province of Yunnan in January 2019. Through 2019, the pest infested a total of 26 provinces. The armyworm is expected in 2020 to hit China's Northeast wheat belt. A report issued by the Ministry of Agriculture and Rural Affairs rates the situation as "very grave".

IN INDIA:

First reported in India in May 2018, from Tamil Nadu Ministry of Agriculture

- After ravaging cornfields of sub-Saharan Africa, the fall armyworm arrived in India in 2018. The pest infestation has already spread to most parts of the subcontinent and has been reported from maize farms in 20 states.
- A native of America, the fall armyworm has spread through trade routes to Africa and Asia. There is no single solution to get rid of this voracious eater of maize plants, and scientists suggest a multi-pronged approach depending on geographical location and extent of the infestation.
- Maize monoculture and overuse of pesticides that increase resistance have turned the fall armyworm into a serious pest. A shift towards agro-ecological approaches like organic and natural farming, and multiple cropping systems could help in managing the outbreak.

Maize farmers in many parts of Karnataka were taken by surprise in July last year when an unknown caterpillar attacked their crop. It didn't take scientists long to identify the new pest. By the second week of July, researchers from the National Bureau of Agricultural Insect Resources (NBAIR), an institute under the Indian Council for Agricultural Research, said the new pest was the Fall Armyworm (FAW).

Spotted in a maize field in Chikkaballapur, some 60 km from state capital Bangalore, the appearance of FAW in India is a cause for serious concern. Native to tropical and subtropical regions of the Americas, the dreaded caterpillar appeared and spread rapidly in Africa in 2016, and has since then devastated millions of hectares of maize crop in all parts of sub-Saharan Africa. And sure enough, the worm spread very fast through the maize fields of India as well. In a matter of months, more than 14 states in the country reported the infestation last year, seriously compromising the corn harvest. The infestation has since spread even wider this year to 20 states, with the north-eastern parts of the country the worst affected.

The caterpillar stage of a moth, the FAW (*Spodoptera frugiperda*) is a voracious eater of maize plants and has been termed as an invasive species by scientists. It's not a picky eater though. Besides corn, it likes to feed on the leaves and stems of more than 350 plant species, including rice, sorghum, sugarcane and wheat. The pest infestation has been reported from maize farms in 20 states in India.

FAST SPREAD:

The spread of FAW through the Indian subcontinent has been particularly fast. In 2019, the pest has spread as far as Mizoram in the northeast, Uttar Pradesh in the north, Gujarat in the west, Chhattisgarh in central India, and several states in the south. This year, the biggest victims so far have been farmers in the north-eastern states, where a cumulative of 10,772 hectares of maize crop has been affected. The pestilence has been reported from 20 states in India.

Scientists are not surprised at the fast transmission of FAW. “We have already seen in Africa that the infestation spread from one country, Nigeria, to almost half of the continent in a matter of two years (2016-2018),” said Malvika Chaudhry, regional coordinator, Plant wise Asia, Centre for Agriculture and Bioscience International (CABI).

The north-eastern states with their “high humidity and moderately high temperatures” are suitable for the spread of FAW. Its metabolic rate is well supported in these conditions, sometimes even leading to “intensification of infestation,” said Chaudhry. It means that the pest is able to complete its lifecycle in a shorter period of time, resulting in more pests, more quickly.

Farmers and scientists are now fighting to contain the infestation. Maize is India’s third most important cereal crop after rice and wheat. In 2016, 25.9 million metric tons of maize was produced in India. In 2017, that number rose to 28.7 million tons. In 2018, however, production fell by 3.2% to 27.8 million tons. It is expected that the net production will decline further in 2019 due to the pest attack.

Fall armyworm (Spodoptera frugiperda) larva on maize cob. The larvae, which are marked with a distinct inverted “Y” on the front of the head, feed on a wide variety of plants.

IN TELNGANA:

The fearsome fall armyworm (FAW) continues to give nightmares to officials at the Agriculture Department. The deadly pest (Spodoptera frugiperda) was first reported in Telangana in 2018 in Mahabubnagar district. It had damaged maize crops in as many 12 districts. Low to severe intensity of FAW incidence was noticed in maize-growing districts such as Karimnagar, Siddipet, Sangareddy, Mahbubnagar and Khammam in Kharif-2018 and Rabi 2018-19. Samples of the insect were collected and sent to the National Bureau of Agricultural Insect Resources (NBAIR), Bengaluru for confirmation and DNA barcoding.- THE INDIAN EXPRESS news paper

IN BHAINSA:

Fall Army Worm enters in to Bhainsa division in Aug 2018 Degaon village. In Degaon village the farmer cultivated maize crop in10 acres of land. The total crop is destroyed by the Fall Army Warm. Then the FAW spread to all villages in Bhainsa Division not only maize it destroys the Sorghum, Cabbage, Cauli flower crops also. There is a huge loss for farmers with fall Army warm.

CASCADING EFFECT:

Although corn is not a staple in India, it serves an important role as feed for poultry. The growth in the poultry industry has resulted in a concomitant increase in the area cultivated under maize since the turn of the millennium. The decrease in maize production thus has a cascading effect on the poultry industry.

Earlier in August, poultry farmers in Karnataka and Maharashtra urged Narendra Singh Tomar, India's farm minister, to urgently import maize to meet a shortfall. Due to the deficit, maize prices have shot up, resulting in an increase in production cost for chicken and eggs.

It's not just the feed and starch industries that are feeling the heat. Maize farmer's maize is too facing additional challenges in continuing to grow the crop. They've had to endure crop losses and bear the additional cost of rescuing their crop from FAW and preventing further infestation.

"The input cost of growing maize has gone up," said Bhagirath Choudhary, founder-director of South Asia Biotechnology Centre (SABC), a New Delhi-based scientific

organization. In addition to the usual input cost, farmers have to spend on pheromone traps, safety kits, botanical and biological control methods and more pesticides.

In addition to their price, most of these items attract high taxes to the tune of 18 percent. Only botanical and biological controls are taxed at five to 12 percent. For farmers, especially smallholders, these costs are punitive. “The SABC has submitted a request to the Union Minister of Finance, Nirmala Sitharaman, to either completely exempt GST (Goods and Services Tax), or reduce it to the lowest slab on these items,” said Choudhary.

Worryingly, FAW seems to have spread to crops other than maize as well. For example, scientists noticed FAW infestation on sorghum and bajra (millet) in the fields of an agricultural research station at Ananthapuramu in Andhra Pradesh in October 2018. The researchers noted that the pest was gradually spreading to other millets grown in Ananthapuramu district.

where farmers can ask questions, farmers in 2018 were mostly asking to identify the pest, according to Sairekha Kadirimangalam, who works for Plantix in Hyderabad. However, as FAW starting spreading In another report, researchers from Maharashtra noted FAW’s presence in sugarcane and sorghum. A statement by the Ministry of Agriculture and Farmer Welfare on June 25 confirmed FAW infestation on sorghum and ragi (finger millet). The only consolation of sorts is that the spread in these crops has not been as rapid as as in corn.

STOPPING FAWS MARCH:

In 2018, when the pest attack first started, most farmers were unfamiliar with FAW. On Plantix, an AI-based farmer assistance mobile application in India, the nature of queries changed. Maize farmers are now looking for solutions to stop the pest from damaging the crop, Kadirimangalam said.

There is no silver bullet to stop FAW in its tracks. A good monitoring system and farmer awareness about the pest are the first steps, said Chaudhry. “Sometimes, when confronted with the pest suddenly, farmers tend to panic and spray their fields with an array of chemicals,” she said. “This panic response is not just ineffective but also leads to broad-spectrum resistance in the pest, and should be avoided.”

"The first thing they (farmers) should do is to contact the nearest Krishi Vigyan Kendra (agricultural extension center) or state department's agriculture officials," said A.N. Shylesha, principal scientist, Entomology, NBAIR. Based on geography and extent of infestation, ICAR recommends a variety of solutions, which include mechanical, biological and chemical measures. For example, the infestation is in its early stages can be controlled by using bio-control agents like Trichogramma and Telenomus, and providing good nutrition to the plants. It is only when the infestation is severe that chemicals are recommended.

As FAW continues its march across India and other Asian countries, the need for effective protective measures will only grow stronger. "Increasing monoculture of maize around the year and wrong pest management practices with excessive dependence on chemical pesticides, which increased the resistance in the insect to pesticides, have contributed to FAW becoming a serious pest," said G.V. Ramanjaneyulu, executive director of the Centre for Sustainable Agriculture, which works with smallholder farmers. "Any pest is always a function of practices followed and local weather conditions. Therefore, a shift towards agro-ecological approaches like non-pesticide management, organic or natural farming, and multiple cropping systems are the ways to manage such pest outbreaks.

METHODOLOGY: PREPARATION OF ORGANIC PESTICIDE:

Ingredients required:

1. Neem leaves
2. Garlic
3. Lemon leaves
4. Custard apple leaves
5. Chilli
6. Cow urine
7. Cascabela thevetia leaves
8. Calotropis gigantea leaves
9. Tridox procumbens leaves
10. Turmeric powder

1. **NEEM:**

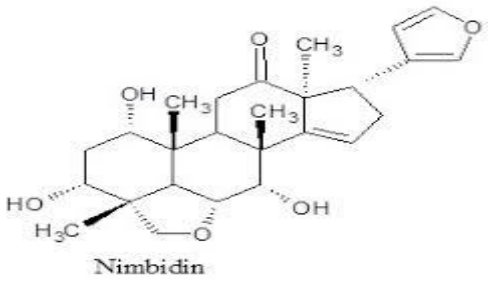
Scientific Name: Azadirachta indica

Common Name: Neem

Family : Meliaceae

Active Ingredient: Nimbidin as the main active antibacterial ingredient, and the highest Component in the Neem oil which is a natural insecticide.

STRUCTURE OF THE NIMBIDIN:



Nimbidin

USES:

Neem leaves are dried in India and placed in cupboards to prevent insects eating the clothes, and also in tins where rice is stored. These flowers are also used in many Indian festivals like Ugadi. As an ayurvedic herb, neem is also used in baths.

PEST AND DISEASE CONTROL:

Neem is a key ingredient in non-pesticide management (NPM), providing a natural alternative to synthetic pesticides. Neem seeds are ground into powder that is soaked overnight in water and sprayed onto the crop. To be effective, it must be applied repeatedly, at least every ten days. Neem does not directly kill insects on the crop. It acts as an anti-feedant, repellent, and egg-laying deterrent and thus protect the crop from damage. The insects starve and die within a few days. Neem also suppresses the hatching of pest insects from their eggs. Neem-based fertilizers have been effective against the pest southern armyworm. Neem cake is often sold as a fertilizer. **Neem oil** has been shown to avert termite attack as an ecofriendly and economical agent.

2. GARLIC :

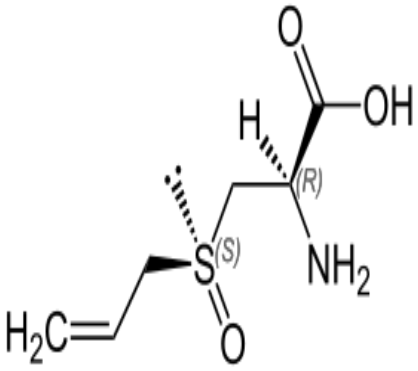
Scientific Name: Allium Sativum

Common Name: Garlic

Family : Amaryllidaceae

Active Ingredient: Alliin, a sulfur-containing compound

STRUCTURE OF ALLIN:



USES:

It is a mosquito repellent. A 2016 meta-analysis of case-control and cohort studies found a moderate inverse association between garlic intake and some cancers of the upper digestive tract. Another meta-analysis found decreased rates of stomach cancer associated with garlic intake.

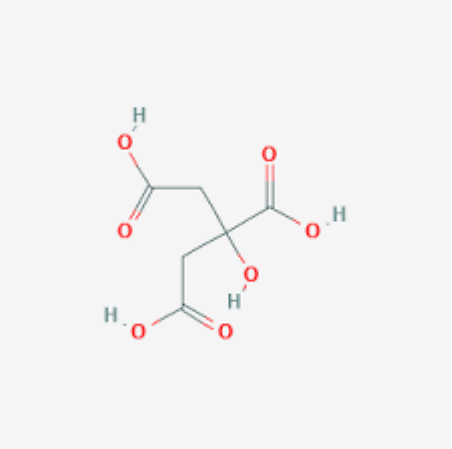
3. LEMON LEAVES:

Scientific Name: Citrus lemon

Common Name: Lemon

Family : Rutaceae

Active Ingredient: Citric Acid



4. CUSTARD APPLE LEAVES

Scientific Name: Annona reticulata

Common Name: Custard Apple

Family : Annonaceae

USES: Antibacterial and Anti-Termite Properties

5. CHILLI

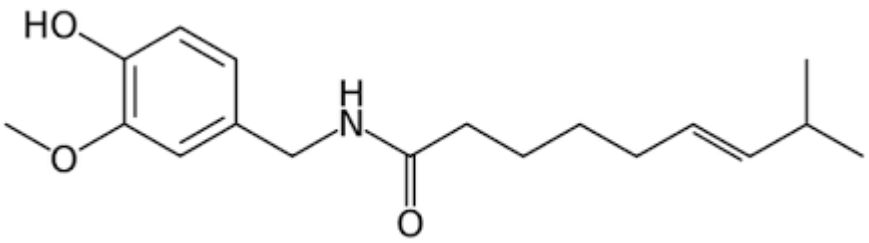
Scientific Name: Capsicum annuum L

Common Name: Chilli

Family : Solanaceae

Active Ingredient: 8-methyl-N-vanillyl-6-nonenamide

STRUCTURE: 8-methyl-N-vanillyl-6-nonenamide



USES:

Due to presence of Capsaicin compounds, chilli pepper is used in **preparation** of ointment; also used in formulation to be used in arthritic pain and sore muscles. The highest concentration of Capsaicin, therefore the majority of the heat, is to be found in the placenta, not the seeds.

6. COW URINE

Cow urine contains nitrogen, sulphur, phosphate, sodium, manganese, iron, silicon, chlorine, magnesium, maleic, citric, tartaric and calcium salts.

USES:

It is used in organic farming. Gomutra is used as manure for production of rice. Jeevamrutha is a fertilizer made from a mixture of cow urine, cow dung, jaggery, pulse flour and rhizosphere soil. A mixture of gomutra, custard apple leaves and neem leaves after boiling is said to serve as a bio pesticide.

7. CASCABELA THEVETIA LEAVES

Scientific Name: Cascabela thevetia

Common Name: Mexican oleander

Family : Apocynaceae

Active Ingredient: Preliminary phytochemical screening of leaf extracts showed the existence of bioactive compounds such as alkaloids, phenols, flavonoids, steroids, tanins, coumarins and reducing sugars in the leaves.

USES:

The plant's toxins have tested in experiments for uses in biological pest control. *T.* Seed oil was used to make a 'paint' with antifungal, antibacterial and anti-termite properties.

8. **CALOTROPIS GIGANTEA LEAVES**

Scientific Name: Calotropis gigantea leaves

Common Name: Jilledu (**Crown** Flower)

Family : Apocynaceae

Active Ingredient: uscharin, calotoxin ($C_{29}H_{40}O_{10}$),) calactin, and calotropin

USES:

Gigantea is reported to exhibit mosquito controlling properties against Culex gelidus and Culex tritaeniorhynchus mosquitoes which serve as vectors for Japanese encephalitis. The aqueous extract of the *C.* Gigantea leaves demonstrated significant larvicidal, repellent and ovicidal activity.

9. `TRIDOX PROCUMBENS LEAVES

Scientific Name: Tridax procumbens

Common Name: Coatbuttons or tridax daisy

Family :

Active Ingredients: The flavonoid procumbenetin has been isolated from the aerial parts of Tridax procumbent. Other chemical compounds isolated from the plant include alkyl esters sterols pentacyclic triterpenes, fatty acids, and polysaccharides.

Tridox Procumbens has been in use in India for anticoagulant, antifungal, and insect repellent.

10. TURMERIC POWDER

Scientific Name: Curcuma longa

Common Name: Turmeric

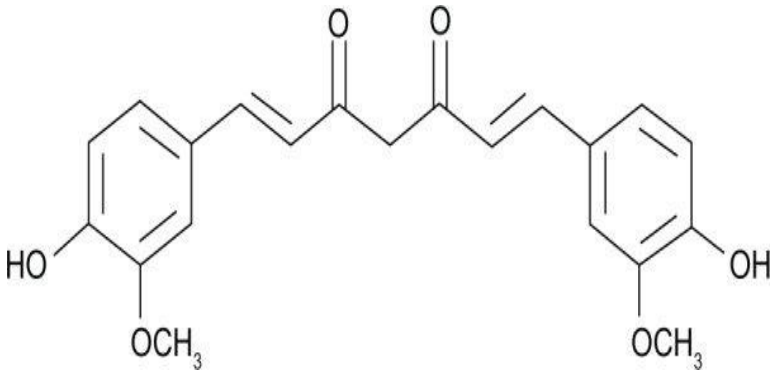
Family : Zingiberaceae

Active Ingredients: Curcumin

Turmeric contains 3-6% polyphenolic compounds, collectively known as curcuminoids, which is a mixture of are major components responsible for various biological actions.

STRUCTURE OF CURCUMIN:

$C_{21}H_{20}O_6$



(1E,6E)-1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione

USES:

Turmeric has so many medicinal qualities. For centuries, many different cultures have used the versatile herb originally from Asia to treat a myriad of diseases and ailments. But it's taken a Druze researcher from northern Israel to discover a new purpose for turmeric – a natural pesticide, which could replace harmful chemicals which permeate our fruits and vegetables.

PROCEDURE:

STEP: 1

First wash the Neem, Lemon, Custard Apple, Cascabela Thevetia, Calotropis Gigantia and Tridox Procumbens leaves with clean water. The Neem Leaves Should be soaked in water for 24 hours and wash the garlic and chilli ingredients

STEP: 2

Grind Garlic and Chilli ingredients in to a smooth paste. The Neem leaves Should be soaked in water for 24 hours.

STEP: 3

Take a large container of 20 kg and put it on the stove and light the stove. Add five litres of cow urine in to it then add soaked Neem leaves with water, Lemon leaves Custard apple leaves, Cascabela thevetia leaves, Calotropis gigantea leaves, Tridox procumbens leaves. All the ingredients should be boil for few hours with low flame until the green leaves turn in to colourless. Finally add garlic paste and chilli paste to it and mix well. Then boil for few minutes.

STEP: 4

Put the flame off and let the solution cool, then filter the solution with filter funnel**.**

STEP: 5

Spray the organic pesticide solution on infected crop. The scissor worms will die within two hours.

Ingredients for Organic pesticide preparation

STEP-3

Organic Pesticide preparation by the students

Prepared 10 L of Organic Pesticide

Benefits of organic pesticides:

1 It destroyed the Fall Army Worm pest in Maize Crop with in 10 minutes of time.

2. It destroyed the Tobacco Caterpillar worm in the vegetable poly house.

3. It Increases crop yields and crop quality.

4. Organic pesticide is not toxic. So there is nothing sick or life threatening for the farmers.

5. Cost of making of this pesticide is very low. All the ingredients used to make organic

Pesticides are natural and available to farmers. So there is no financial burden.

CASE: I EFFECT OF ORGANIC PESTICIDE ON FALL ARMY WORM IN MAIZE

Fall Army Warm infected Maize Crop, village: Watoli, Bhainsa Mdl, Dist: Nirmal

Organic Pesticide Spray to the Fall Army Worm (FAW) infected Maize Crop




Fall Army Worm before the Organic Pesticide Spray


Fall Army Worm After the Organic Pesticide Spray

CASE: II EFFECT OF ORGANIC PESTICIDE ON TOBACCO CATERPILLER IN VEGETABLE CROP POLY HOUSE

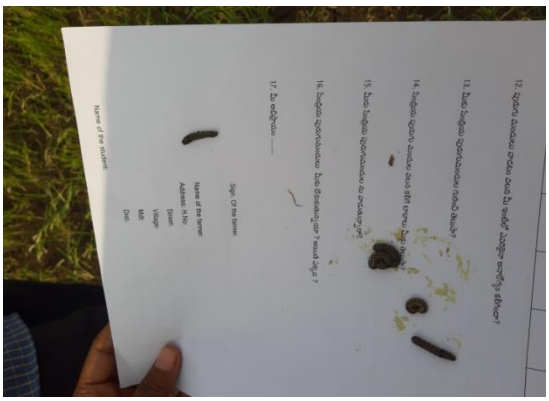
Poly House in Vegetable Crops Destroyed By the **tobacco caterpillar**, at Gundegam village, Bhainsa Mdl, Dist: Nirrmal

Tobacco Caterpillar In Cauliflower Crop

Tobacco Caterpillar In Spinach Crop

Tobacco Caterpillar destroyed the Spinach; Tobacco Caterpillar damaged the Chilli Crop in poly house Gundegam village, Bhainsa Mdl, Dist: Nirrma

Tomato crop destroyed by the Tobacco caterpillar at Gundegam village, Bhainsa Mdl, Dist: Nirrmal



Brought the Tobacco caterpillar worms to the chemistry Lab, before the spray of Organic Pesticide

Tobacco caterpillar worm after the spray of Organic Pesticide in the chemistry lab, Govt. Degree College, Bhainsa, Dist: Nirmal.

RESULT:

1. 10 litres of organic pesticides is sufficient for one acre of crop..

2. It avoids the moth in cotton.

3. It avoids pests in the vegetable crop.

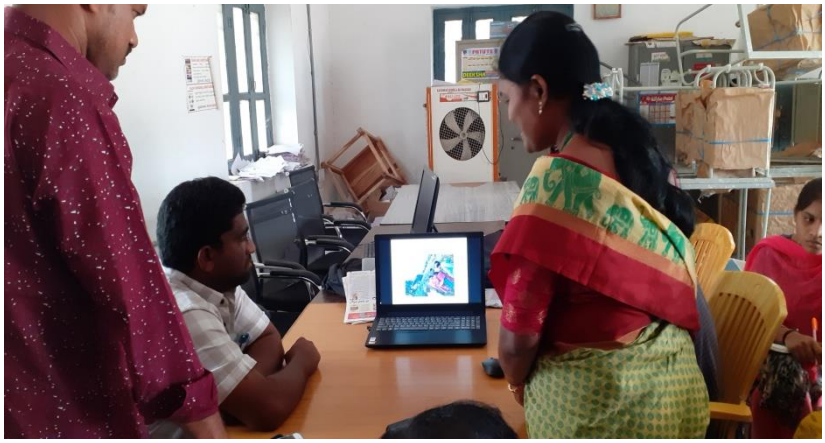
4. Specially it destroys the **Scissors Warm (FAW)** in maize crop and **Tobacco Caterpillar** in vegetable crop.

5. This organic pesticide is very powerful than the Agni Asthra which is one of the organic pesticide for Fall Army Worm

MOU WITH THE AGRICULTURE DEPARTMENT BHAINSA:

Department of chemistry with Jignasa students visited Agriculture Office in Bhainsa Town and explained about the result of organic pesticide to the Agriculture Officer Sri.Ramesh Chandher Nayak, and Y.Ashok AEO of Bhainsa.

Explaining the Results of Organic Pesticide to the Agriculture Officer, Bhainsa which is prepared in the chemistry Lab



CONCLUSION AND SUGGESTIONS:

- Organic farming continues to be successful in six states. Farmers of Karnataka, Himachal Pradesh, Kerala, Uttarakhand, Chhattisgarh and Andhra Pradesh are using organic farming methods to get the most cost effective.
- There is a need for widespread of organic farming practices in our Telangana state. Farmers need to remove the misconceptions on organic farming.
- Should give the Awareness on Importance of Organic Food to the farmers.

PM MODI APPEALS FARMERS TO CUT DOWN USE OF CHEMICAL FERTILIZERS AND PESTICIDES

TNN | Aug 15, 2019, 08.29 PM IST

NEW DELHI: A month after his government pitched for 'zero budget farming', Prime Minister Narendra Modi on Thursday gave a call to farmers to gradually reduce use of chemical fertilizers and pesticides and said it would be a "great step in saving our mother Earth".

“The way we are using chemical fertilizers and pesticides, it is damaging health of its soil. As a farmer, as a child of this soil, I have no right to damage its health. I have no right to make my mother India sad nor do have the right to make her sick," said Modi while addressing the nation from the ramparts of the Red Fort on Independence Day.

Underlining the importance of cutting down use of chemical fertilizers, the Prime Minister even appealed the farmers to do it in a campaign mode. "Revered Bapu (Mahatma Gandhi) showed us the way. Should we not cut down the use of chemical fertilizer in our fields by 10 or 20 or 25 per cent and if possible should we not launch a 'Muktikar Abhiyan' (campaign)? This would be a great service to the nation," said Modi.

Though distribution of 'soil health cards' among farmers helped them cut use of fertilizers to an extent, they, currently, still use about 55 million tonnes of urea and P&K (phosphatic and potassic) fertilizers every year for higher yields. Besides, there is also a rampant use of pesticides and herbicides to tackle crop damages.

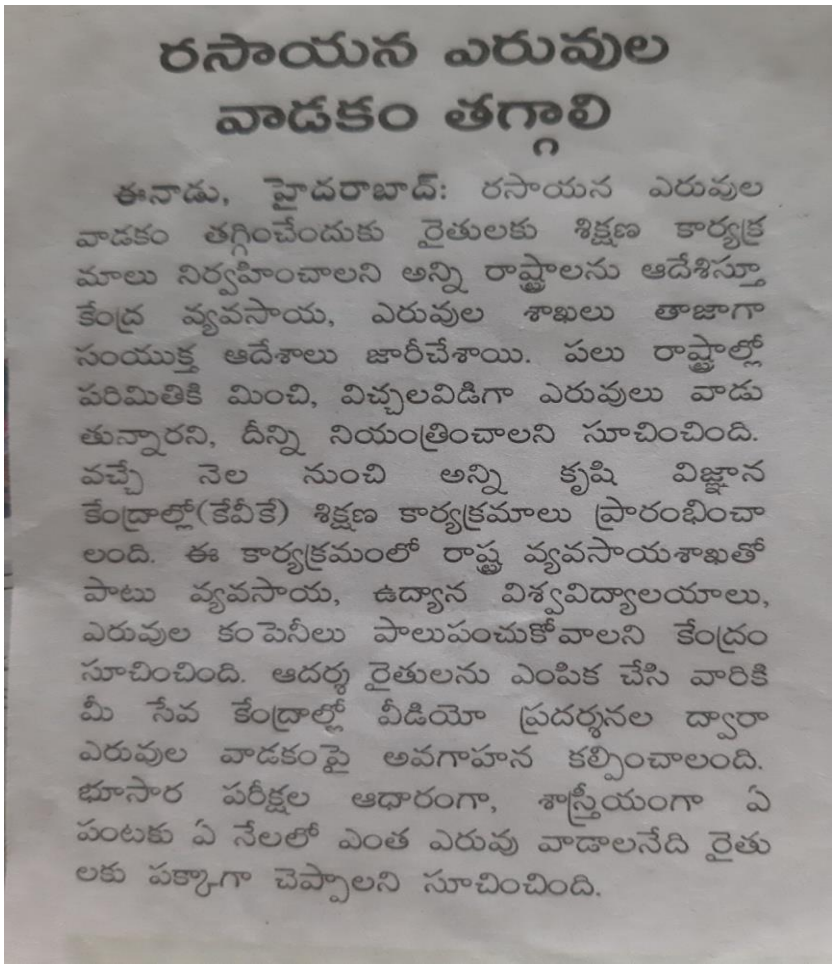
During its budget for 2019-20, the government had on July 5 proposed to focus on resource efficient and eco-friendly 'zero budget farming' and pitched it as an important step in doubling farmers' income by 2022.

The 'zero budget farming' is one of the methods of organic farming which consume less water while adhering to better agronomic practices that eliminates use of chemical pesticides and fertilizers, reducing cost.

"We shall go back to basics on one count: Zero Budget Farming. We need to replicate this innovative model through which in a few states farmers are already being trained in this practice. Steps such as this can help in doubling our farmers' income in time for our 75th year of Independence," finance minister Nirmala Sitharaman had said while presenting her budget.

Six states - Karnataka, Himacha Pradesh, Kerala, Uttarakhand, Chhattisharg and Andhra Pradesh - have already adopted this technique which leads to decline in input costs and increase in yields.

PAPER CLIPPINGS



రసాయన ఎరువుల వాడకం తగ్గాలి

ఈనాడు, హైదరాబాద్: రసాయన ఎరువుల వాడకం తగ్గించేందుకు రైతులకు శిక్షణ కార్యక్రమాలు నిర్వహించాలని అన్ని రాష్ట్రాలను ఆదేశిస్తూ కేంద్ర వ్యవసాయ, ఎరువుల శాఖలు తాజాగా సంయుక్త ఆదేశాలు జారీచేశాయి. పలు రాష్ట్రాల్లో పరిమితికి మించి, విచ్చలవిడిగా ఎరువులు వాడుతున్నారని, దీన్ని నియంత్రించాలని సూచించింది. వచ్చే నెల నుంచి అన్ని కృషి విజ్ఞాన కేంద్రాల్లో(కేవీకే) శిక్షణ కార్యక్రమాలు ప్రారంభించాలంది. ఈ కార్యక్రమంలో రాష్ట్ర వ్యవసాయశాఖతో పాటు వ్యవసాయ, ఉద్యాన విశ్వవిద్యాలయాలు, ఎరువుల కంపెనీలు పాలుపంచుకోవాలని కేంద్రం సూచించింది. ఆదర్శ రైతులను ఎంపిక చేసి వారికి మీ సేవ కేంద్రాల్లో వీడియో ప్రదర్శనల ద్వారా ఎరువుల వాడకంపై అవగాహన కల్పించాలంది. భూసార పరీక్షల ఆధారంగా, శాస్త్రీయంగా ఏ పంటకు ఏ నేలలో ఎంత ఎరువు వాడాలనేది రైతులకు పక్కాగా చెప్పాలని సూచించింది.

Enadu Main Edition on 8th sept, 2019, About Organic Farming

District edition of Enadu, Nirmal District

జాఫ్రాపూర్ గ్రామంలో మొక్కజొన్న పంటలో కత్తెర పురుగు నివారణపై అవగాహన కల్పిస్తున్న ఏఓ ప్రవీణ్ కుమార్

ఆకర్షణ బుట్టలు ఏర్పాటుపై అవగాహన

జాఫ్రాపూర్(సోన్), న్యూస్‌టుడే: మొక్కజొన్న పంటలో కత్తెర పురుగు నివారణకు రైతులు ఆకర్షణ బుట్టలు ఏర్పాటు చేసుకోవాలని ఏఓ ప్రవీణ్ కుమార్ అన్నారు. మండలంలోని జాఫ్రాపూర్ గ్రామంలో శుక్రవారం కత్తెర పురుగు నివారణపై అవగాహన కల్పించారు. ఇందులో సర్పంచి సునిత, ఆత్మ ఛైర్మన్ నర్సారెడ్డి, నాయకులు ప్రకాష్ రెడ్డి, సాయారెడ్డి, ఏఈవోలు రజిని, ప్రియ, అంబాజీ తదితరులు పాల్గొన్నారు.

Enadu Nirmal district Edition

SURVEY PHOTOS IN VARIOUS CROPS &IN VARIOUS VILLAGES:

In vegetable crop poly house , Gundegam, Bhainsa In Red Gram field, Mahagam vil, Bns

In Paddy Field, and Cotton Field at Gundegam village., Bhainsa Mdl


DISEASES/PEST OBSERVED IN THE VARIOUS CROPS


Tobacco caterpillar in cauliflower and spinach


Fall Army Worm in Maize Crop and Mildue in Cotton Crop

Blast disease in paddy

Laxmi, Ashwini, Lingavva, Srikanth, Raveena, Akshay