3.3 OIL SEEDS

India is the home for diversity of oilseeds, which play a very important role in agriculture. It goes without saying that various edible oils form an inevitable component in the preparation of food stuffs and the usefulness of including oils in our dietaries does not warrant any special mention. Seeds like groundnut are directly consumed while in respect of others, oil is extracted and used in food preparations. Oil cakes and plant residues (stalts) have varied uses like cattle feed, soil amendments, pest control and used as manures.

a. Groundnut (Arachis hypogea, L.)

Groundnut is one of the chief sources of vegetable oils extensively used for cooking purposes. It is a delicate edible oil and a delicious nut too. Groundnut seeds are rich in proteins and vitamins A, B etc. The oil content of the seed varies from 44 to 50 per cent depending on the variety. It is a very nutritious food for the growing children, pregnant women.
The oil cake contains 7-8% of N, 1.5% of $\text{P}_2\text{O}_5$ and 1.2% of $\text{K}_2\text{O}$ and is used both as a manure and as a cattle feed. The haulms after drying or silage are fed to cattle. Groundnut shell can be used as a fuel and mulching purpose for the plants. It is termed as a pseudo-legume with root nodules and thus is capable of synthesizing atmospheric nitrogen and thereby improve the soil fertility.

1. Summer ploughing is practiced to expose and destroy the pupae of pests.
2. Sheep penning is practiced for better yields.
3. During nights, burning heaps of straw in several places near the fields along with a bucket full of water or castor cake dissolved in water near the fire helps to attract and kill the insects.
4. Grow cowpea as border crop to attract Red Hairy caterpillar (RHC).
5. Grow castor as a border crop (trap crop) to reduce the attack of tobacco cut worms.
6. Adopt crop rotation to control Red Hairy Catter pillar (RHC) pest.
7. After sowing, tying tapes (reflectors) in criss-cross manner in the groundnut field helps to avoid bird damage.
8. White threads or black cloths are tied around the fields to prevent damage by the birds.
9. Empty iron drums are beaten in groundnut fields to ward off the birds and wild boars.
10. Mix neem oil with irrigation water at second or third irrigation to prevent root rot in groundnut.
11. Spray lime solution to control leaf roller, and spraying water also brings down the leaf roller attack.
12. Neem oil solution 4% or neem kernel extract 6% is sprayed to control rust disease in groundnut.
13. Spray neem oil@ 6 lit/ac to control root rot.
14. To control groundnut ring mosaic, dried sorghum or coconut leaves are powdered and boiled in water to 60°C for one hour, filtered, diluted and sprayed two times at 10 days interval.
15. Grinding well and dissolving 10 kg of the leaves of Aloe vera in water and spraying for an acre to control Red Hairy Caterpillar (RHC) in groundnut.
16. Groundnut kernels stored with their shells have longer storage life i.e. even for one year.
17. Sun drying the groundnut seeds for longer period will reduce its viability
18. Seed kennels are stored viable up to three months only.
19. Groundnut seed treatment: Boil water in a container and place the lantana leaves in the hot water. Cover the container with a lid and put weight on it. Allow the leaves in the container
overnight. Filter the solution and add 100 gm of jaggery. Sprinkle the solution on groundnut seeds and mix it thoroughly. It prevents attack by ants, seed rot and dying of young plants.

b. **Gingelly** (*Sesamum indicum*)

Gingelly is a very important oilseed crop. It is extremely medicinal value in Ayurvedic preparation and used in many cuisines worldwide. The seeds will get nutty flavour enhanced by roasting. We can three varieties of Gingelly. With an oil content varying from 46 to 52 per cent. But in expellers and rotary mills hardly 40-42 per cent oil can be extracted while with village ghanis it varies from 36 to 38 per cent. The fried seeds can be eaten in the form of sweet meats and they are mixed in various preparations to add taste and value to them. Oil is used as a cooking medium in South India. It is also used for anointing the body, preparation of perfumes and medicines. Oil cake is edible and the working class like it and use avidly. It is a highly nutritious food for milching animals.
1. Spray diluted cow urine to control leaf roller.
2. Gingelly seeds are stored in dried outer shells of bottle gourds or small earthen pots.
3. Storing gingelly seeds after mixing them with ash helps preventing store pests.
4. Mix gingelly seeds with activated clay for storage.
5. Addition of palm sugar to gingelly during oil extraction gives higher oil recovery.
6. Storing gingelly oil in mud pots increases its keeping quality for more than a year.
7. Putting a small piece of palm sugar in to gingelly oil increases its keeping quality.

c. **Coconut** (*Cocos nucifera*)

Coconut is a perennial tree grown in a garden as a plantation crop. It is widely used for culinary purposes, although it is primarily employed for extracting oil from copra. Commercial copra contains about 50 to 75 per cent oil, and it is used in making vegetable ghee and
hard soaps. It is also used as a cooking medium in some places and also for anointing the body.

This plant is called as "Kalpavriksha", because, Husk is used for making coir, Trunk have timber value, shells and nuts are used as fuel, leaves are used for making mats and roofing huts, tender coconut is consumed as sweet drink and has medicinal value, oil cake is used as cattle feed and every part of tree is useful in one way or the other.

1. Mulching by burying of coconut husks around the tree helps to conserve moisture and to control weeds.
2. Coir waste is applied as mulch around the tree above which a layer of red soil is applied.
3. To retain soil moisture in coconut garden, compost, cow dung and ash are applied in a circular trench around the tree and covered with top soil.
4. Spraying neem oil helps to reduce flower shedding.
5. To prevent button shedding, common salt is applied around the growing tip @ 2 kg /tree during rainy season, which of late is controversial.
6. Apply ash to control button shedding.
7. Kolingi (Tephrosia purpurea) and Calotropis gigantea are applied in circular basin just before flowering to control button shedding.
8. Application of neem cake in the pits before planting coconut avoids the attack of insect pests and ants.
9. Earthen pots are placed in small pits in coconut gardens and ¾ the of the pot is filled with water and ¼ kg of castor cake. After three days due to the smell, Rhinoceros beetles get attracted, fall in to the pot and die.

10. Crowns of coconut trees are examined during every harvest and adult Rhinoceros beetles are hooked out and killed.

11. Pour neem cake extract on the growing tip and adjoining fronds to control Rhinoceros beetle.

12. A wooden plank is placed on a wide basin filled with water and a chimney lamp is kept in the coconut garden to attract and kill the Rhinoceros beetles.

13. To control stem weevil in coconut, the hole bored by it is cleaned and plugged after putting common salt.

14. While planting coconut seedling one leaf of Agave sp. is planted in the pot to retain soil moisture and to control termites.

15. Flood the coconut garden to wash off termites.

16. Lime washing is done for 2-3 feet height at the base of coconut trees to control termite attack.

17. To control termites, 500 gm of common salt is dissolved in 5 litre of water and poured on the trunk.

18. Poultry birds are reared in coconut gardens to feed on termites.

19. To control Thanjavur wilt of coconut, green manures like kolingi (Tehrosea purpurea). Diancha (Sesbania sp.) etc. are rised and ploughed in situ or well-decomposed FYM is applied followed by the application of neem cake.
20. To control stem bleeding, the bleeding mouth on the trunk is cut to certain extent, cleaned and poured with lime solution.

21. Branches of *Selma karuvel* (*Prosopis juliflora*) or barbed wires are tied around the mid trunk to a height of 2-3 feet to prevent climbing of rats and squirrels.

22. During the first five years, intercrops like groundnut, sunflower, blackgram sorghum etc. are cultivated.

23. Add a piece of jaggery (country sugar) in coconut oil to separate the dusts and make the oil more clear.

24. Cow dung slurry and groundnut cake in water is kept in earthen pots in coconut gardens @ 20-25 pots per ha. This minimizes damage by Rhinoceros beetle. Fermenting mixture of cow dung and groundnut cake is known to act as an attractant of this pest.


**d. Mustard** (*Brassica nigra*)

It is a very important in Indian cooking in seasoning. It is an anti-inflammatory, anti-fungicidal, carminative. It is widely used in North India for cooking.

- Mustard is used as an intercrop in vegetable gardens to prevent the pest, and it is also a companion crop with Ragi or *Sorghum*.
• Take raw mustard seeds of 500 gm, make a paste, add 200 gm of turmeric powder, mix it with one litre of cow urine, add 10 ltrs of water and spray for all vegetable crops, to prevent aphids.

e. **Castor (Rocemos communis)**

Castor is grown for its seed having oil content varying from 35 to 58 per cent, the average being 46-47 per cent. Oil is used for medicinal, lubricating and industrial purposes. Cake is a good manure. In sericultural areas, leaves are fed to *Eri* silk worms.

1. Spraying neem oil dissolved in water @ 20 ml per lit. to control sucking pests in caster.
2. Five kg. of neem darnels are powdered, tied in a gunny bag is mixed with soap solution and sprayed to control castor semilooper and soaked in water for 8 hours after which the extract solution
3. Castor is inter cropped with cropped with cotton groundnut etc.

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