

5. Chemical Ripening Fruits-Poisoning

Prelims Level: Agriculture, Ignorance, Subsidy, Marketing.

Mains Level: GS-III Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System - objectives, Functioning, Limitations, Revamping; issues of Buffer stocks and Food Security; Technology Missions; Economics of Animal-Rearing

Context:

- Recently, the Delhi High Court has observed that use of chemicals to ripen fruits amounts to poisoning the somebody.

Artificial Ripening of Fruits:

- Ripening is associated with change in composition i.e. conversion of starch to sugar.

Food Safety and Standards (Prohibition and Restriction on sales) regulations, 2011

Prohibits:

- Prohibition of use of carbide gas in ripening of fruits: No person shall sell or offer or expose for sale or have in his premises for the purpose of sale under any description, fruits which have been artificially ripened by use of acetylene gas, commonly known as Carbide Gas.
- Provided that fruits may be Artificially Ripened by use of ethylene gas at a concentration up to 100 ppm (100µl/L) depending upon the crop, variety and maturity.

What are the Health problems caused by Calcium Carbide?

- Calcium Carbide is a colourless chemical or greyish white to black in colour. It is cheap and easily available chemical.
- Acetylene is believed to affect the nervous system by reducing oxygen supply to brain. Calcium carbide, once dissolved in water, produces acetylene which acts as an artificial ripening agent.
- It breaks down the organic composition of vitamins and other Micronutrients.
- Industrial-grade calcium carbide usually contains traces of arsenic and Phosphorus.
- Arsenic and phosphorus are toxic and exposure may cause severe Health Hazards.
- It causes Vomiting, Diarrhoea, Weakness, Burning Sensation in the chest and abdomen, thirst, problem in swallowing, burning of eyes, permanent eye damage, ulcers on the skin, mouth, nose and throat.
- It damages the **mucosal tissue** in the stomach and disrupts the intestinal function. If a person is exposed to the chemicals for a long time, they can cause **Peptic Ulcers**.

Is there any Other Techniques for Ripening of Fruits?

- **There are Several Simple Methods Available Today for Farmers for Proper Ripening.**
 - ✓ A simple techniques practiced in households to trigger ripening is to keep unripened and ripened fruits together inside an air tight container.
 - ✓ Another method is to place the fruits intended for ripening inside an air tight room and induce ripening through smoking inside smoke chambers. Smoke emanates acetylene gas.
 - ✓ Several fruit traders follow this technique to achieve uniform ripening especially in edible fruits like banana and mango. But the major drawback of this method is that the fruits do not attain uniform colour and flavour. In addition, the persistence of smoke odour on the product impairs its quality
 - ✓ Spreading of unripe fruits as layers over paddy husk or wheat straw for a week to ripen is an another alternative.
 - ✓ Another practice is that some farmers dip unripe mature fruits in 0.1 per cent ethrel solution (1 ml of ethrel solution in 1 litre of water) and wipe it dry. The fruits are then spread over a newspaper without touching each other and a thin cotton cloth is covered over this. In this method, the fruits will ripen within two days.
 - ✓ In one of the simple and harmless techniques, 10 ml of ethrel and 2 gm of sodium hydroxide pellets are mixed in five litres of water taken in a wide mouthed vessel. This vessel is placed inside the ripening chamber near the fruits and the room is sealed air tight. About a third of the room is filled with fruits leaving the remaining area for air circulation.
 - ✓ Ripening of fruits takes place in about 12 to 24 hours. In order to reduce the cost of chemical, some ethylene releasing fruits such as papaya and banana can also have kept in the same room.