

T.1.14 AGROTECHNICAL OPERATIONS

What is this?

Agrotechnical operations cover a broad range of activities related to the cultivation of different crops.

Some additional information...

The agricultural operations vary according to the crops, the rainfall and the soil of the tract. These operations consist of the opening of the land by digging or *ploughing*; further *pulverising* the soil; cleaning the fields; spreading the *manure* and mixing it with the soil; *sowing* the seed or planting the sets or seedlings; *interculturing*; *weeding*; *earthing up*; irrigating; applying quick-acting manures as top dressings; spraying or dusting of insecticides; watching to protect the crops from birds, stray cattle and wild animals; *harvesting*; *threshing* and preparing the produce for the market; and storing. In addition to these, the farmers also undertake occasional operations for permanent improvement of the soil, such as bunding, levelling, trenching, draining the excess water from the soil, and reclaiming lands for cultivation.

Ploughing is done almost every year by wooden or iron ploughs to open the land, dig out deep-rooted weeds or stubbles, aerate the soil, and trap and store water for crops.

Pulverisation

Pulverisation of the soil is done by one of three kinds of implements; (1) the beam harrow, (2) the wooden plank, and (3) the blade harrow.

Manuring / Fertilisation

Fertilisation is an agrotechnical operation in which nutrients are introduced into the soil.

These nutrients have the general name of fertilisers and can be of natural or artificial origin. Natural fertilisers include the decomposed products and wastes of plants

and animals. They are called *manure* and are characterised by a wealth of nutrients. Artificial fertilisers are made from various raw materials or chemical compounds developed to meet the nutrient needs of plants.

Sowing



Source:

<https://www.plugandplaytechcenter.com/resources/new-agriculture-technology-modern-farming/>

Sowing is the process in which seeds are scattered on the field after proper preparation of the soil and are covered with a thin layer of soil. The activity can be carried out manually or mechanised. Some crops require plants to be first grown as seedlings in a small space, then transplanted into the actual field. The main prerequisite for achieving good results is to select seeds from varieties with good productive qualities and resistance to the effects of the environment.

Interculturing

Interculturing means culturing, tilling, or stirring the soil between the crop lines. *Interculturing* is done to remove the weeds that take away large quantities of moisture and plant food, to aerate the soil, to prepare a mulch (a loose layer of dry soil as covering), to conserve valuable soil moisture for the crop, to prune the roots to encourage a deep root system and to kill the harmful insects hibernating in the soil.

Weeding

Weeding is an agrotechnical operation, the purpose of which is to free crops from unwanted vegetation. This unwanted vegetation is called weeds. Hence the process of removing it is known as *weeding*. Weed control is carried out in three ways - hand pulling, removal by tillage techniques, and destruction by application of herbicides. Herbicides are specific agrochemicals that kill or inhibit the growth of weeds or other harmful and unwanted plants.

Earthing up

The following essential operation is *earthing up*, i.e., digging the soil from near the plant and heaping it up at the base of the plant. *Earthing up* is done to support the plant, prevent lodging, and keep the tubers and roots under the soil. Ploughs are used to dig and move the soil near the base of the plant for crops sown in rows.

Top-dressing

Top-dressing is applying quick-acting manures on the soil's surface and then mixing it up with the soil.

Irrigation

Irrigation is done from canals or wells. In canal tracts, it is primarily available by gravitational flow, while in the case of wells, rivers, and tanks, the water is lifted by pumps.

Crop Protection

The farmer has to provide for some protective and curative measures as well. He has to take precautionary measures to avoid certain pests and diseases.

IPM - Integrated Pest Management is a modern pest control technique that combines sustainable practices to achieve the desired result with minimal environmental impact. *IPM*

includes applying biological, biotechnological, chemical, physical, agrotechnical, and selection measures with limited application of plant protection preparations to maintain pest populations and losses from them below the threshold of economic harm.

Harvesting

After ploughing and *sowing*, one of the essential agricultural operations is reaping or *harvesting*. The activity starts when the desired degree of maturity of the specific crop is reached. The process is known as *harvesting*. The *harvest* period varies from crop to crop. For the implementation of the activity, modern, highly productive equipment is used.

Threshing and preparing for market

After *harvesting*, manual or mechanical *threshing* separates grains from the plants. Some of the root vegetables are cleaned well and sold in the market. Some crops like ginger and turmeric are dried and specially cured.

Storage

The last agrotechnical operation is related to storing the obtained agricultural produce for later use and sale. Successful *storage* of produce requires proper preparation and implementation of measures to protect the crop from rodents and insect enemies. The warehouses where the product will be stored must be well cleaned, dried, fumigated, etc., before entering production. Implementing basic agrotechnical operations requires time and resources, including material and labour. Modern agriculture has many innovations that greatly facilitate the performance of these activities. A key role here is played by the possibility of automating the processes in agriculture.

As a result of the development of machinery and technology, agricultural activities are subject to significant *automation*. It is a process of implementing the technologies in the operations, ensuring the production cycle in agriculture. *Automation* has become associated with "smart farming" and an increasing number of traditional agricultural companies are introducing it into their operations.



Source:
<https://www.plugandplaytechcenter.com/resources/new-agriculture-technology-modern-farming/>

Modern agriculture has been completely transformed by technological innovations ranging from robotics and drones to computer vision software. The main goal of farm *automation* is to facilitate and refine the execution of routine agrotechnical operations. The most widespread technologies on farms include harvest *automation*, autonomous tractors, automatic watering, seeding, and *weeding* robots, and drones.

Farm *automation* contributes to curbing the most pressing problems of the modern world - a growing global population, labour shortages, changing consumer preferences, and agriculture's environmental footprint.

Links

[https://cultural.maharashtra.gov.in/english/gazetteer/Poona/PART%20IV/Chap%20\(5\)/Agricultural%20Operation.htm](https://cultural.maharashtra.gov.in/english/gazetteer/Poona/PART%20IV/Chap%20(5)/Agricultural%20Operation.htm)

https://en.wikipedia.org/wiki/Agricultural_cycle

<https://cropforlife.com/list-of-agricultural-practices/>

<https://ugc.berkeley.edu/background-content/agricultural-activities/>

<https://www.plugandplaytechcenter.com/resources/new-agriculture-technology-modern-farming/>

Video

https://www.youtube.com/watch?v=8ulpy_GFLDk&t=45s

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