Irrigation and Fertilisation of Wheat and Potato crops

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Wheat crop

Host: Manure is food for plants, soil is an incubator, and water is a lifeline without which the land becomes desert.
Wheat is one of the most important strategic crops in Syria and its cultivation is linked to the identity of the Syrian farmer (one of the farmers states that he who does not grow wheat is not a farmer).
Wheat cultivation has declined recently, perhaps partly because of higher fuel prices, production costs, and especially fertilizers. We will talk to you about the importance of irrigation and fertilization of wheat in raising productivity and achieving a meaningful economic return for farmers.
What is fertilizer and why do we use fertilizer for wheat?

Presenter: Manure is a nutrient added to the soil to help plants grow and to produce abundant crops. Manure contains essential nutrients for plant growth with the goal of raising soil fertility, increasing productive capacity, and creating a balance among existing nutrients.
Green plants produce their own food through photosynthesis. The process requires nine basic chemical elements called the macroelements: carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, sulphur, magnesium, and calcium.
You also need other elements in smaller quantities called the smaller elements: boron, copper, iron, manganese, molybdenum, zinc.

Host: Where do the big elements come from?

Presenter: Water and air supply plants with carbon, hydrogen, oxygen and the rest of the major elements coming from the residues of decaying plants and animals in the soil. These elements are sometimes not available in the necessary quantities, and farmers are forced to add the fertilizer containing the necessary elements, often nitrogen, phosphorus and potassium.

Host: There are many fertilizers in the market. What types of fertilizers are used to fertilize wheat?

Presenter: There are chemical, organic and biofertilizers. They are divided into single- and composite-pattern: nitrous fertilizer, phosphoric fertilizer and potassium fertilizer.
Organic fertilizers:

1) Fermented municipal fertilizer from animal and plant waste
2) Green fertilizers, including legume and non-legume plants. These are grown and fluctuated in the soil at the vegetation stage to increase its organic matter content.

Biological fertilizer:
Microorganisms that provide one or more nutrients for plant growth, conveniently loaded with elements in their poorly prepared form, ready to be absorbed by plants.

Dates for fertilization of wheat:

Host: Wheat's need for fertilization vary depending on the stages of vegetable growth. When are the fertilizers added?

Presenter: First, soil analysis is recommended to identify the constituent elements of the underlying material and to add the quantities of fertilizers as analysed for soil content and in time for additive.

Host: When will fertilizer be added to wheat?

Presenter: he need and consumption of wheat for the nutrients of the soil are uneven at each stage of growth and it is therefore necessary to know these needs and the dates of supply of plants aiming at the highest level of productivity. Therefore:
1. Organic fertilizers are added when the land is prepared for seed in small quantities that fluctuate with the soil at deep farming.
2 - Phosphatic fertilizer is added at one time with the last farmer or with the seed. It's responsible for the development and composition of the radical group and the syntheses, with little role on the leg and leaves.

Host: How much phosphate is used?

Presenter: In irrigated land, 141 kilograms per hectare of superphosphate 46%.
In the wetlands, 65 kilograms per hectare of superphosphate 46% is added.
3 - Potassium fertilizer is recommended for use of potassium fertilizer after soil analysis in case of need.

Host: What is the significance of potassium fertilizer?

Presenter: It has an effect on the spinning stage and the filling of cereals and thus plays an important role in increasing the productivity and quality of grains. It helps transport carbohydrates from the stem and leaves to the grain and has a role in strengthening the plant and reducing the incidence of rust.
4 - Nitrous fertilizer: It is added in stages during the planting season.

Host: How important is nitrous fertilizer?

Presenter: The need for nitrous fertilizer increases in the spraying and pollination phase and the need for nitrogen is reduced in the spinning and maturity phase.

Host: What's the time to add nitrous fertilizer?

Presenter: In the wilderness two or more stages are added equal the first with planting the second with the activists up to a leg length stage. In irrigated land, manure is added in three batches equal to the first with agriculture, the second with fish, and the third with the start of acacia.

Host: What is the need for one hectare of nitrous fertilizer for wheat?

Presenter: Irrigated agriculture: 300 kilograms of urea, 46%. Rain-fed agriculture: 150 kg from Yuria, 46%. The water requirement is the amount of water necessary for a plant to grow and mature under definite climatic and soil conditions. The importance of water lies in:
- the main ingredient in the overall composition of the living organism.
- all vital operations are carried out.
- by means of which the nutrients move from the soil into the plants.

Host: Water seems so necessary, what are the benefits of irrigation for wheat crops?

Presenter: Water acts as the solvent agent for foodstuffs in the soil and carries them to the roots of the plants. It aids the activity of bacteria which break down the organic matter present in the soil and which the roots absorb. Ithelps keep soil temperature to fit for plant growth and combines excess salts and plant-harmful substances into the ground or banks, if any.

Host: The water requirements for wheat crop vary according to the amount of rainfall and the area of stability. What is the meaning of supplementary irrigation?

Presenter: Supplementary irrigation is the addition of small amounts of water to rain-fed crops (wheat) during times that do not have enough rainfall to ensure sufficient humidity for normal growth in order to improve yields and achieve high productivity.

Host: How many supplementary irrigation does wheat require?

Presenter: Wheat requires one to three hydrates to be distributed as follows:
1. The first irrigation (vegetation) shall be given on rainfall for a period exceeding 20 days from the date of planting at a rate of 400-500 m 3/ha.
2. The second irrigation is in the process of revitalization at a rate of 700- 800 m 3/ha.
3 - Third Village at Flowers and Beyond.

Host: What are the most stressful periods of growth for wheat?

Presenter: 1. The onset of flowers and the formation of flower petals, the lack of moisture at this stage slows the appearance of flowers and thus reduces the number of synplates.
2 - The process of opening flowers and fertilization, where the lack of moisture at the stage leads to a lack of fertility and the holding of flowers.
3 - The development of grain filling where the lack of moisture leads to a change in the weight and size of the pill due to the low transport of nutrients into the pill.
The slope and sprouting phase (the appearance of acacia) requires the largest amount of water, so wheat yields one or two villages during this phase in the case of precipitation between mid-March and the end of April.
The demand for wheat is estimated during the development stages:
- Erection and the emergence of initiatives 5 - 7%
- The stage of liposuction 15 - 20%

- leg elongation stage, 50 - 60%
- the stage of brown maturity %20 - 30
- The stage of candle maturity 3 - 5%

Host: So the dates for wheat irrigation vary, but what are the best methods of irrigation for wheat?
Presenter: 1 - Surface irrigation or flooding is now rare. It is not advisable as it results in significant waste of water and increases production (fuel) costs.
2 - Sprinkler irrigation (spray irrigation) is the ideal method of irrigation of wheat through a network of pipes and sprinklers prepared for this under water pressure.
defects: High construction costs, disease, especially fungal, salt deposition on the leaves.
Features:
- Don't take up a lot of land.
- Do not need a large number of labor.
- can be used in different lands according to their tendencies.
- Provision of water for the entire crop or good irrigation efficiency.
- Fertilizers and pesticides can be added to irrigation water and thus save on some service costs.

Potato crop

Host: Potato crops are grown in northern Syria in spring and autumn orchards with similar fertilization, irrigation, and service requirements. What fertilizers are added to the potato crop?

Presenter: Before fertilization, soil laboratory samples shall be taken once every three years at an average rate to determine the type, fertility and mineral content of the soil. It is also possible to establish if there are pathogens in the soil, such as fungi, bacteria and nematoda.
1 - Organic fertilizers:
Organic fertilizers are added while preparing the soil for farming and fluctuate 20 cm deep and 2 - 3 m 3 dunums average, these must be well fermented.
2 - Chemical fertilizers:
Added in two batches
First batch: This is while preparing the land for planting where fertilizers are turned inside the soil at a depth of 20 cm before covering the land as follows:
The whole phosphorus fertilizer is added super phosphate triple 46% with all the potassium fertilizer 50% with the first batch of nitrous fertilizer Yuria 46%.
Second installment: It is the second batch of nitrate-ammonium nitrate nitrate nitrate fertilizer at plant completion.

Host: What fertilizer levels are required per hectare when growing potatoes?

Presenter: 150 kg fertilizer Azote Urea 46%, 200 kg nitrate fertilizer ammonium 33.5%, 300-500 kg phosphorous fertilizer, Super Phosphate Triple 46%, 400 kg Potassium precursors 50%

Host: Can other fertilizers be added during the growth stages?

Presenter: Other NPK solvents may be used in composting programs later as needed by plants and at the stage of growth, and organic and paper enhancements containing other elements may be used only if necessary.

Host: Do you have recommendations or notes that you want to communicate to the farmer?

Presenter: 1 - The potato plant needs a small amount of nitrous and phosphorus elements in the early stages of vegetable growth and then needs to peak during and decrease from the flowers as the tubers grow and mature, while the potash needs the potash element at the beginning of its growth and declines at the flowers.
2 - The quantity of items to be added shall be determined by the quantity of the crop expected to be produced per dunum or per hectare.
3- Phosphorous and potassium fertilizers are added at one time when preparing the land in autumn or spring with the oil in the form of a compound fertilizer.
4 - Excessive increase in the nitrogen component leads to increased paper growth at the expense of tubers, which delays the process of maturity and causes a lack of dry matter. The crop may also cause some diseases and physiological problems during storage, such as the hollow heart.
5 - The magnesium element facilitates the process of making and concentrating sugar in leaves in tubers. Potatoes are considered to be a magnesium-sensitive plant, where it is caused by yellowing, sweating and drying leaves.
crop irrigation
Potato is grown in autumn and spring veins. Potato is a sensitive crop to terrestrial moisture, where dehydration, high moisture, or irregularity can cause significant plant damage. Potatoes are a salty-sensitive crop in soils and irrigation water.

Host: How much water is needed to irrigate the potato crop?

Presenter: The amount of water needed ranges from 500 m 3 dunams for the spring season to 700 m 3 dunams for the autumn season. Soil moisture level becomes critical when the percentage of water available in the soil drops to less than 60%.

Host: When does potato water need increase?

Presenter: Potato needs are high in the period of tuber formation as water shortage leads to new tuberculosis, change in the shape of tubers and a decrease in production. Potato sensitivity to water shortages is gradually decreasing during the tuber inflation phase.
The determination of irrigation quantities and periods is influenced by soil composition and by climatic factors, such as rain, heat and light. However, it is preferable to use irrigation intervals with moderate amounts of water. The number of irrigations varies by soil type and we suggest the following:
13 to 14 villages a season in heavy soil at a rate of 6 - 7 days between villages.
The average soils are 17-18 villages per season, with a rate of 5 - 6 days between villages.
In the light lands there are 24-25 villages per season, with an average of 3 - 4 days between villages with giving moderate amounts of water by soil type.

Irrigation management should be so as to ensure the continuity of water moisture and content in the soil that the moisture level is not below 60 - 65%.
Irrigation operations at the end of the vegetation stage should not be prolonged because they lead to delays in the process of maturation of tubers a decrease in dry matter and generally difficulty in taking off preferably by the adoption of contiguous irrigation periods with moderate amounts of water

Host: What are the ways of watering potatoes?

Presenter: Surface irrigation is currently very rare and is not commonly used by farmers. Drip irrigation is impractical because of mechanical harvesting and it exists on a small scale. Sprinkler irrigation (spray) which is currently used in potato cultivation and is more water-efficient and can be used in fields of unevenly spaced surface. Controlled water for irrigation can be controlled for plants. Melted fertilizers, pesticides, organic improvements can be added in paper and can be contained to other nutrients.
Note: The best soil for potato cultivation is deep soil 60 - 70 cm with good, fertile drainage, medium strength and good physical and chemical qualities.