

**Mineral salts and fertilizers. Directions of use of mineral fertilizers and their classification. Technology of processes of production of potash fertilizers (flotation, halurgical methods).**

**Technology of nitrogen fertilizer production processes. Production of ammonium nitrate (with evaporation and without evaporation of the solution). Carbamide production.**

**Technology of production processes of phosphorus fertilizers. Production of complex and concentrated fertilizers (double superphosphate, ammonium phosphates). Technology of electrothermal processes of production of double superphosphate.**

**Physical and chemical bases of processes and technological schemes.**

Fertilizers are substances that contain elements necessary for plant nutrition or regulation of soil properties.

**Classification of fertilizers:**

*Mineral fertilizers* are inorganic compounds that contain essential elements for plants.

*Organomineral fertilizers* are humic fertilizers, fertilizers consisting of organic matter and related chemical or adsorption-mineral compounds.

*Classification of mineral fertilizers on the composition:*

- nitrogen;
- phosphoric;
- potassium;
- trace elements;
- complex;
- specialized complex chlorine-free.

*Classification of organomineral fertilizers:*

- humic fertilizer;
- liquid humic organo-mineral fertilizers and top dressing;
- bacterial;
- phytohormones;
- growth stimulants;
- reclamation and drainage.

*Classification of fertilizers by agrochemical purpose:*

- *direct* – source of nutrients for plants;
- *indirect* - serve to mobilize soil nutrients by improving its physical, chemical and biological properties.

*Classification of fertilizers by the number of nutrients:*

- *simple* (one-sided) fertilizers - contain one main nutrient: nitrogen, phosphorus or potassium. These are nitrogen, phosphorus and potash fertilizers;

- *complex fertilizers (CF)* - contain two or three main nutrient elements.

They are divided into:

- *double* (such as, for example, nitrogen-phosphorus (NPh), nitrogen-potassium (NP) or phosphorus-potassium (Ph-P)) and
- *triple* (nitrogen-phosphorus-potassium (NPhP)).

*Complex fertilizers (CF)* are divided into:

- *mixed CF*, i.e. mechanical fertilizer mixtures consisting of dissimilar particles;
- *complex CF*, i.e. complex compounds resulting from chemical interaction.

According to the state of aggregation, fertilizers are divided into *solid* and *liquid* (for example, ammonia water, aqueous solutions and suspensions).