

man-made. These amendments are generally contained minerals associated with soil fertility. They include vermiculite, perlite, tire chunks, pea gravel, sand, gypsum, fly ash and SAPs.

Fresh manure can harm plants due to elevated ammonia levels. To avoid this problem, use only aged or composted manure. It can improve the soil structure (aggregation) so that the soil holds more nutrients and water, and therefore becomes more fertile. Animal manure also encourages soil microbial activity which promotes the soil's trace mineral supply, improving plant nutrition. It also contains some nitrogen and other nutrients that assist the growth of plants.

Compost refers to decomposed organic matter. It is not regulated, so there is no standard about the state of decomposition. Compost made solely from plant-based products (such as wood chips and yard wastes) are low in salts. These are preferred over manure based composts which are often higher in salts. However, they are generally more expensive. Compost enriches soil, helping retain moisture and suppress plant diseases and pests, reduces the need for chemical fertilizers and reduces methane emissions from landfills.

Gypsum is commonly used to decrease soil pH by bonding high sodium salts and lime or limestone to decrease the soil pH.

Superabsorbent polymers (SAPs) have the capability of absorbing water and retaining it for a long time. They are made up of lightly cross-linked hydrophilic polymers that can absorb a large amount of water and stored it in a readily available form to plants. They also act as food for microbes and soil conditioner, as well as reducing soil erosion and agricultural runoff and they increase fertilizer use efficiency.

Organic amendments are more sustainable and environmentally friendly, but have low nutrient levels. Inorganic amendments are easy to use, work immediately, but are expensive and the amount of use is limited.

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## WHAT IS AGROENGINEERING?

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The invention of tools by people dates back to the distant past. The first tools that man created were a plow and a hoe, with the help of which the land was cultivated before planting seeds and plants. The modern economy and consumer demands require the improvement of technologies and equipment, in connection with which the profession of an agroengineering appeared.

Agroengineering is a branch of agriculture that deals with the design and improvement of production processes in the agro-industrial sector. The objects of agricultural engineering are:

- machinery used to create and transport agricultural products;
- new technologies and means of the agro-industrial complex, for example: remote control combines, which were developed by agricultural engineers to simplify agricultural work;
- methods of maintenance and diagnostics of agricultural machinery and equipment;

- equipment with the help of which there is electricity, water and gas supply to all agricultural processes;

- complexes for utilization of agricultural waste.

The main disciplines of professional orientation:

- Tractors and cars;

- Agronomy;

- Agricultural machinery and implements for crop production;

- Computer modeling and basics of design in agricultural engineering;

- Automated operation of agricultural machinery;

- Machinery and equipment for animal husbandry;

- Operation and technical service of agricultural machinery;

- Repair of agricultural machinery;

- Organization and technology of mechanized works;

- Technologies and equipment for processing agricultural products;

- Fundamentals of the theory of agricultural machinery;[3]

What do agricultural engineering specialists do?

Many specialists in the field of agricultural engineering are involved in the design and testing of agricultural machinery, equipment and spare parts. Specialists in this field can also design food storage facilities in food processing plants. Someone, for example, can design housing and living conditions for livestock.

Experts interested in environmental issues advise on water quality and water pollution control. They can also plan and supervise farmland reclamation projects. Others may be involved in projects to convert agricultural waste to energy.

The agricultural specialist's work focuses on the study of food and agriculture and how to help modern agricultural methods and products meet global and national food needs.

Agroengineering covers a fairly large range of processes, foundations and objects aimed at the development of agriculture, as well as technical systems, equipment and technologies in agricultural engineering. During their studies, students master automation, hydraulics, descriptive geometry, heat engineering, engineering physics, methods of making sketches and drawings, as well as other disciplines [2].

All this is necessary for further work in the field of creating new technological installations and equipment in the agro-industrial sector.

Specialists trained in the mechanical and technological profile must have the skills:

- high-quality service of the used machinery and equipment;

- installation and maintenance of devices in working order, including those directly working in contact with biological objects. Experts are engaged in the implementation of technologies that will automate various production processes in agriculture.

If we talk about our university, then a graduate majoring in "Agroengineering" in the future, can work on a very wide range of activities, such as: modeling and design of mechanized technological processes of agricultural production, design machines based on graphic tools of computer-aided design, to complete the optimal agricultural units, to perform installation, adjustment, diagnostics, testing and maintenance of agricultural machinery, as well as to organize the work and administrative management of production units of agro-industrial production.

In the distant past, agricultural engineering, although it had a different name, was an integral part of agriculture. Now, this direction of engineering is one of the leading specialties of the future. Scientific and technological progress in any field is associated with formation of new knowledge, technological development of sciences discoveries and inventions, implementation advanced technology - all this is placed on the shoulders of agricultural engineers [1].

Undoubtedly, the progress of agriculture is closely related to agricultural engineering and, to a greater extent, develops thanks to these technologies and, every day, only strengthens its position.

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## UTILIZATION OF WASTE FROM CANNING PRODUCTION OF COMPOTE, MODES OF REFRIGERATION PROCESSING AND STORAGE OF THE READY COMPOTE “ASSORTED №2”

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Fruit seeds have great value for fruit nurseries, where rootstocks are grown. The juice is peeled on the pact press at slightly lower than normal pressure and juice output to prevent seed deformation. Seeds from pomace washed with water.

The resulting seeds are scattered with a thin layer (3-5 cm) on sieves made of metal mesh or on burlap and dried in good weather in the air, in another - in special rooms with warm air or in dryers at temperatures not higher than 35°C. Dried seeds are cleaned on the cleaning machines "Super-Petkus." The seeds are calibrated, packed into bags and sent for storage. Seed humidity should not be greater than 10 - 11%.

Pomace apples immediately after separation of the juice is crushed on a hammer to the size of pieces no more than 5 mm and dried in dryers at a temperature of heating of raw materials not higher than 90-100 °C (at a higher temperature, pectin is destroyed). Often pomace is dried on drum dryers first at the temperature of the drying agent 300 - 350°C, and at the end of drying 85 - 95°C. After drying, the pomace is cooled, sieved through a sieve with holes with a diameter of 10 mm, inspected and packed in kraft bags (paper) with a capacity of up to 30 kg [1].

The extract from the pomace is separated first by gravity, then by pressing on a pact press. Then they filtered using kiselgur. The filtered extract is concentrated in two-hull continuous vacuum evaporators.

From the concentrate, pectin is precipitated with ethyl alcohol, which has a volumetric fraction of ethanol 90 - 95%, on the pact presses, raw pectin (coagulation) is separated from the liquid, which is dried in a drum vacuum dryer. Used alcohol is disrupted and reused. From - 2 tons of dried apple pomace receive 100 kg of dry pectin, the allocation of which requires 75 dm<sup>3</sup> of alcohol (irreversible losses).

Most canned fruits after production require aging for 10-15 days. During this time, the concentration of syrup or pouring is aligned between the fruit and the liquid part of the canned food. In addition, during this period, there is mainly a lack of canned food [2].

Canned goods are stored in the company's warehouse in boxes or without placing them in boxes, with packaging in boxes after quality assessment immediately before sending them to consumers. Boxes are placed on sturdy mobile trays (pallets), the height of which is not less than 0,15 m with the formation of stacks. The height of the stack for boxes with metal cans should not exceed 5 m. the width of the stack in heated warehouses 6 - 10 boxes, in unheated - 3-4. Each stack is formed by the assortment and batches of canned goods. Each stack hangs a tag with the name of canned goods, the number of boxes and cans in the party (stack), the date of manufacture and delivery of canned goods to the warehouse. Between the stacks along the length of the warehouses and