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Abstract.*Razrabotanы and rekomendovanы tehnycheskye solutions for nedopuschenyyu postuplenyya-flammable lubricants materials in the soil, water and podzemnыe hruntovыe okruzhayuschey environment. Structurally protyvofyltratsyonnыe hruntovыe (hlynystыe) эkranы and эkranы s Using polyethylene films zaklyuchayutsya on preliminary podhotovlennыy pryrodnыy soil snyzhaet class petroleum danger for pryrodnoy environment.*

Keywords:*Oil products, The soil (hlynystыy) screen, screen IZ polyэtylenovoy film, flammable materials, Lubricants, ecology, okruzhayuschaya Wednesday, Danger*

Annotation.*Developed and recommended technical solutions to prevent the flow of fuel and lubricants in the soil, groundwater groundwater and the environment. Structurally antifiltration soil (clay) screens and screens using polyethylene films are placed on pre-prepared natural soil, Reducing the hazard class petroleum products to the environment.*

Key words: *petroleum products, soil (clay) shield,shield of* polyethylene *film, fuel and lubricants, Ecology, environment, danger*

UDC 631.33

APPLICATION volume method for dispensing liquid mineral fertilizers

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Abstract.*The analysis of the current state and trends of controls and maintain standards in mass flow sensor for liquid fertilizers.*

Keywords: liquid fertilizers, dosing, variable application rate

Formulation of the problem. Adding fertilizers in liquid form has certain economic and technological advantages Compared with granular and powder, so attention to liquid fertilizers is growing every year.

Results of research and industrial practice indicate higher economic efficiency of liquid fertilizers.

***Supervisor - member. NAAS DG Voytyuk**

Drugs intended for cultivation with simultaneous application of liquid mineral fertilizers, can combine manufacturing operations and thereby reduce operating costs for the technology. In a mixture of them possibly effective application of micronutrients, herbicides and insecticides, which are injected directly into liquid fertilizer.

However, the effective use of such technology is possible only if the use of modern means of application, providing highly accurate dosing and, not least, the possibility of variable rates of application. Therefore, the question of development dosing device that meets these requirements is important.

Analysis of recent research. Efficiency of fertilizer depends on the dosage accuracy and uniformity of distribution of the cultivated area, ie the support of established norms expenses. The speed of the unit, changing the fluid pressure in the hydraulic sprayer in the process, change the flow characteristics of the spray as a result of wear and viscosity and temperature of the working fluid affect the accuracy of dosing liquid. In sprayers and specialized units for application of liquid fertilizer consumption per unit of time, as shown by measurements in adverse cases because of inaccurate choice of speed and its fluctuations can produce deviations in consumption of ± 30% [1].

There was an analysis of the technological operations dosage of liquid fertilizer and equipment for their application. Existing methods of dispensing liquid, can be divided into three basic: maintain a constant fluid pressure in the pressure line unit; synchronization of working fluid and the speed of the unit; control the actual flow rate [1-3].

The first method is used on non-automatic sprayers and implemented two types of controls: with throttle and check valve; and hydraulic proportional flow division mode of the pump.

The second method can be implemented using devices of control spending of GDP, from the navigation wheel unit and the use of electronic systems. This method applies to regulators without feedback. The third method include regulators with feedback. In the third method, the cost deviation from the set value detected by the flow sensor and the signal according to the actuator changes the flow of the working fluid. When regulation via throttle and check valve, constant pressure provided by means of the control valve 3, Fig. 1. Adjustable valve 3 removes the liquid pumped pump 1, the drain pipe through which fluid is returned to the tank 2, thereby maintaining constant pressure in the system. Fixing the pressure gauge 4, with special tables determine the flow rate per 1

ha using a certain spray and given the speed of the sprayer. When adjusting costs dividing the hydraulic flows in their systems have the hydraulic circuit piping, which removes the liquid in the tank. In the pipes installed throttle device for calibrating channel through which the working fluid returns to the tank at a certain rate of spending. As ballasts, depending on the design, using variable choke washers, valve with adjustable bandwidth or adjustable valves. This method has its drawbacks, ensured the sustainability of working fluid per unit area just by changing the speed of movement and the rotation frequency of GDP within narrow limits, while there are significant changes in pressure.

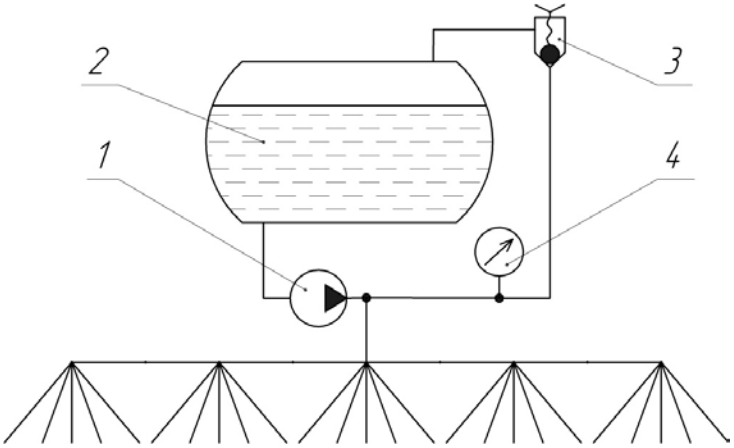

Fig. 1. Diagram of regulation via throttle and check valve.

This system is of interest to compensate for minor changes in fluid flow within ± 10% [2].Automatic adjustment of timing of working fluid and the speed of the sprayer is a great variety [4-9].

The French firm «Caruelle» patented device with hydraulic throttle at highway sprayer overflow from the navigation wheel, which ensures the proportionality of the cost, depending on the speed, Fig. 2. The working fluid is pumped into the body controller 1 through the input channel 2 and on the working bodies. Between the input and output 4 1 regulator valve washer is 3, the opening of which determines the flow rate at a given pressure. The gap between the saddle and adjustable valve rod 5 connected with Hydraulic 6, depending on the forward speed sprayer. The oil pump 16 is connected via bevel gear or CVT 15 of 14 runner wheel sprayer. Oil pumped by this pump passes through the throttle 8 and pressure created before the throttle is a function of cost and hence the speed of rotation of the running wheels 14. Oil pressure in the housing hidromehanizmu 6 7 acting on the membrane and causes a corresponding shift rod 5. consumption (consumption rate per 1 ha) is regulated by changing the resistance of the throttle needle 9 from 8 screw feeder 11 and a pointer 12. Different viscosity compensated scale displacement indicator 12 is mounted on a slider 13 having pointer

setting 10 scale pointer settings can also shift according to the type of applied solutions and thereby compensate for random factors. Also known device Fig. 3 [10], which consists of narrowing the aperture 1, installed in the line supply to the spray job of following regulatory elements 2 and three-chambered pressure regulator 3, in which the camera 4 and 5 are separated by a membrane 6, a camera 7 is limited by rigid walls and membranes 8. Both membrane attached to general rod 9 which lever is connected to the control element 2.

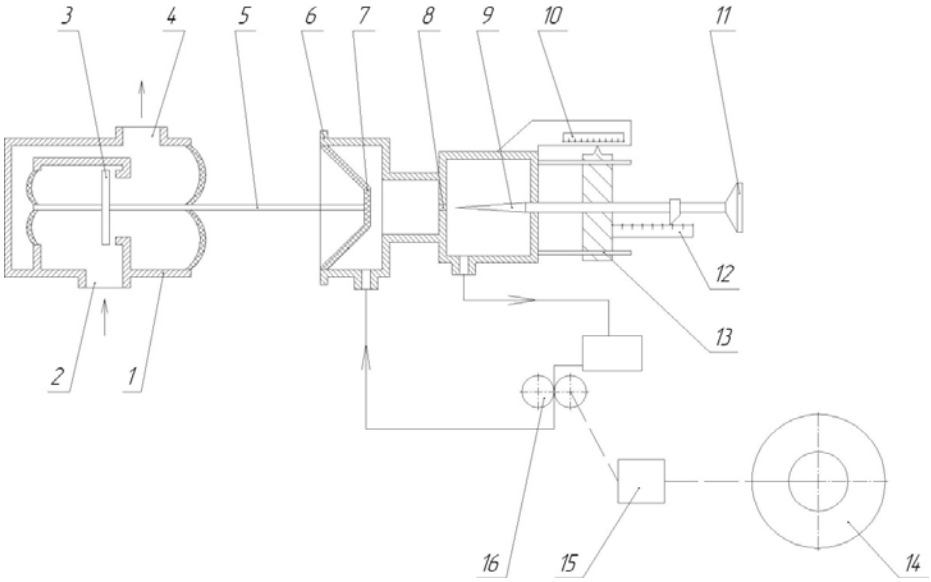

Fig. 2. Diagram Regulation pump driven by the navigation wheel.

The device also includes hydraulic centrifugal regulator of the impeller, which is driven by the running wheels 12 of the machine. Since the movement of fluid through the impeller centrifugal regulator does not occur, this created pressure impeller rotation frequency proportional to the wheel. Accordingly, the controller 11 is the wheel rotational speed meter 12. The case controller 11 is connected to a tank 13 for liquid. Camera 4 3 Pressure regulator channel 14 is connected to the throttle aperture cavity zvuzhuyuchoyisya 1, 5 and the camera is connected to a channel 15 zadroselnoyu cavity of the diaphragm. Camera 7 is connected to the cavity centrifugal regulator 11. Channels 14 and 15 are connected 16.Opysuvanyy adjustable throttle device operates as follows.

When working machine pump 17 delivers fluid from the tank 13 to spray working bodies. The performance of this pump a little higher than normal application. Therefore, the liquid should be given back to the tank 13. Implemented by regulatory element 2. Spray submitted to the working of the working fluid passes through the throttling aperture 1. This creates a pressure difference, which is proportional to the actual flow of fluid. Under the influence of differential pressure on the diaphragm 1 and the pressure generated by the impeller, 1 regulator rod 9 adopts a

certain position, opening with the required size of the control element 2. If the speed of the machine or feeding liquid changes, the pressure equilibrium is disturbed. Rod moves and changes the setting regulatory element 7. Thus, the growth rate of the working level of the opening of the control element increases, which causes an increase in flow rate per unit time. It is necessary to maintain the liquid application rate per unit area of the field.

At full stop the car balance rod 9 is only possible in the absence of differential pressure on the diaphragm throttled 1, meaning complete supply off. To set the required flow rate per unit area field uses an adjustable choke 16. Complete closing it corresponds to the maximum application rate of fluid, full opening - minimum.

These types of controls are simple scheme implementation; but have significant drawbacks: lack of control given the impossibility of operating expenses and its regulation; wear, clogging, corrosion. As a result, over time, there may be significant errors in the controller.

The purpose of research. Improve efficiency of liquid fertilizer technology for variable application rate.

Results. Based on an analysis of recent studies as the most promising would be the use of volumetric dosing method. Application volume provides guidelines linearity performance, ease of remote management, accounting flow amount of liquid. In addition, these systems can be unified, with great reliability are fully sealed without the use of seals, easy to manufacture and operate.

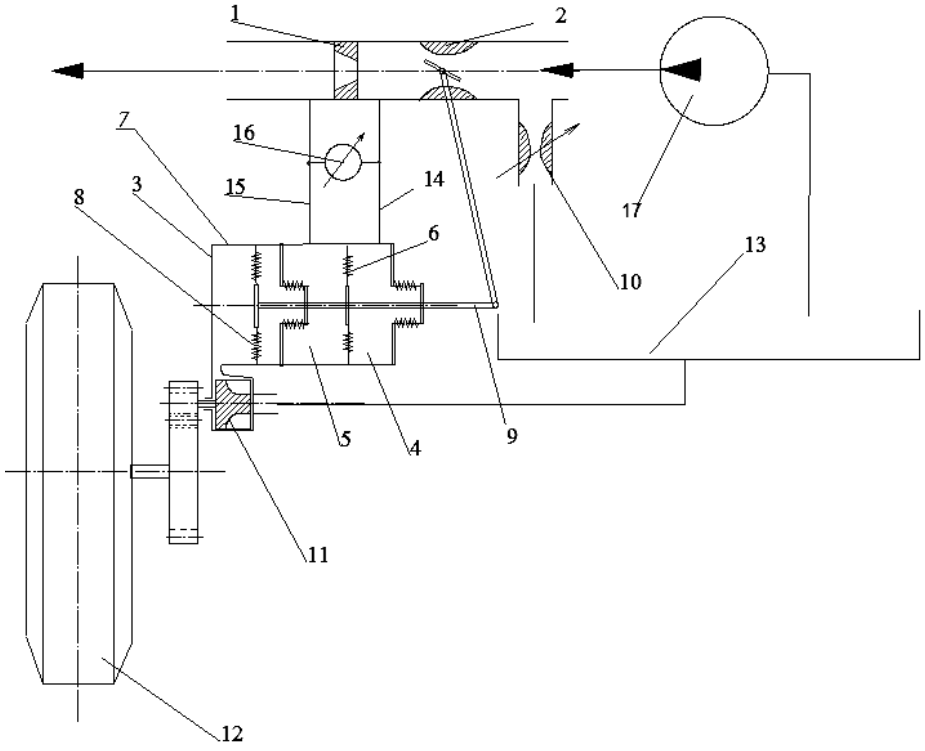

Fig. 3. The hydraulic circuit dosing device.

Based on the above, as the most promising were chosen principle of volumetric dosing and dispensing a system displacement shown in Fig. 4.

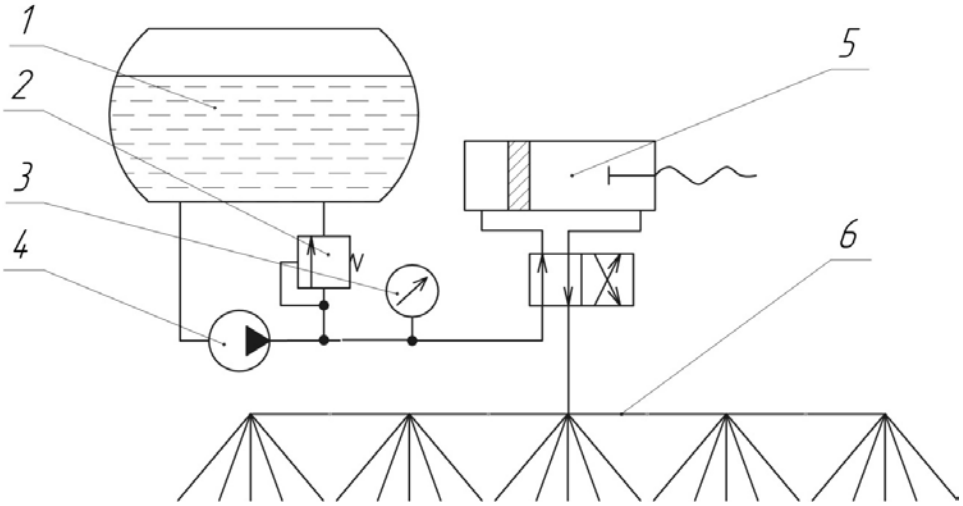

Fig. 4. Functional scheme of the dosing system.

Metering system consists of a tank for process liquids 7 working fluid pressure created by the pump 4. Pump is selected based on the desired maximum application rate, which should provide dosing system. When working on the metering system modes than the maximum application rate, part of the process fluid is given back to the tank return valve 2. Monitoring the operating pressure in the system is made pressure gauge 3. Dosage of fluid flow to the central highway 6 dispensers, dispenser made 5 displacement principle dispensers of the type described in detail in [11, 12].

Conclusion. The analysis of manufacturing operations dispensing liquids and means for their introduction showed that the widely used current method of dosing maintaining constant fluid pressure in the pressure line unit almost exhausted all possibilities to improve the accuracy of dosing in the future will not be in able to meet the increasingly growing demands on the accuracy of dosing . Based on the above, as the most promising were chosen principle of volumetric dosing dispenser and created extensive operation.

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Abstract.*STATUS sovremennoho conducted analysis and trends of development funds and control rules podderzhanyya rashoda fluid in funds for vnesenyya zhydkyh myneralnыh fertilizers.*

Keywords: zhydkye Mineralniye udobrenyya, dozyrovka, smennыe norms vnesenyya

Annotation.*The analysis of the current state and trends of controls and maintaining standards in the mass flow rate for liquid fertilizer.*

Key words: liquid fertilizers, dosing, variable application rate

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DEFINITIONS thermal coefficient in heat equation SOLUTIONS FOR IDENTIFICATION OF THERMAL PROCESSES ZERNOMATERIALIV