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## **AUTOMATIZATION IMPORTANCE OF DRILLS IN THE SYSTEM OF PRECISION FARMING IN KAZAKHSTAN**

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The question how to increase wheat crop was always been significant in the world. Organic matters and mineral fertilizers are used to enhance crop production. However, as organic matter is limited and is not enough to apply to the yield mineral fertilizers are applied instead. There are two ways of application of mineral fertilizers: to spread fertilizers to the surface of the field and to apply into the soil. As some countries as Kazakhstan have risky farming it is not recommend to apply fertilizers to the surface of the field as some European famers do. It is well known fact that macro-nutrients (fertilizers) are basic elements to increase yield crop. Nevertheless, macro-nutrients availability in the soil is not the same throughout the field and varies from location to location. Due to this fact, we are losing vast amount of production during harvesting. There are two methods of fertilizer application into the soil: traditional method and VRT method.

The traditional method of application of fertilizer is to apply fertilizers uniformly throughout the field, according to average demand of the soil or crop. The constant rate of fertilizer application is inefficient and leads to over-fertilizing certain regions and under-fertilizing others, not meeting the actual nutrient demand. Furthermore, excessive fertilizer application causes land degradation and pollution through leaching and volatilization making the farming risky. That is why VRT method should be used. What is site-specific VRT method?

Variable rate technology is a method for improving input use efficiency by applying near-optimum rates based on soil conditions and crop requirements. The use of site-specific VRT can help to improve input use efficiency as well as decrease the negative effect on environment due to over application of inputs. According to German scientists crop can be increased by 30%, while decreasing outputs for fertilizers by 30%.

According to professor Nukeshev S.O. application of main quantity of mineral fertilizers (450 kg per ha) once for four or five years is the most appropriate operation in case of Kazakhstan due to its enormous territory [1]. This fact makes foreign agricultural machines (cultivator drills) useless as they are not adopted to apply main quantity of fertilizers into the surface once for some years. Moreover, analyzing the price of foreign art technologies the need for designing metering devices and automatization of domestic drills sharply increases. To be precise, fertilizer sowing system in the system of precision farming should be implemented in seeding machines that are utilized in Kazakhstan. Even

though, all the German drills are equipped with sowing system in the system of precision farming Chinese, Brazilian, Indian scientists and others are adopting their own drills in the system of precision farming [2].

There are no foreign technologies to be purchased to apply the main quantity of fertilizers. By adopting variable rate fertilizer sowing system in our domestic drills we can increase crop by 30 % and decrease outputs for fertilizers by 30%.

### **References**

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