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### AREAS OF DRONE USE IN AGRICULTURE

#### (ОБЛАСТІ ВИКОРИСТАННЯ ДРОНІВ У СІЛЬСЬКОМУ ГОСПОДАРСТВІ)

*Крицька Я.С. – здобувач вищої освіти групи АМП 1/2*

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*У статті подана інформація про використання дронів в сільському господарстві для швидкого та точного ручного збору та передачі інформації в реальному часі, для швидкого прийняття управлінських рішень, що значно полегшує та максимально мінімізує використання живої людської праці.*

*Ключові слова: агропромисловий комплекс, системи точного землеробства, дрони, аерофотозйомка, безпілотні літальні апарати, моніторинг.*

*The article provides information on the use of drones in agriculture for fast and accurate manual collection and transmission of information in real time, for rapid management decisions, which greatly facilitates and minimizes the use of human labor.*

**Keywords:** *agro-industrial complex, precision farming systems, drones, aerial photography, unmanned aerial vehicles, monitoring.*

In our time of rapid development and electronic technology, drones have become increasingly popular in many areas of human activity. Drones in Ukraine's agriculture are one of the most promising areas for which demand is actively growing. In the interests of precision farming, both devices and software are constantly being created and improved, which allows to collect and process the obtained data in a short period of time.

However, for an effective data management, it is necessary to monitor software updates, not forgetting the tools for processing, storing and analyzing the collected data.

The use of unmanned aerial vehicles for agriculture helps to solve the following tasks:

- assessment of crop quality and detection of damage or death of crops;
- identification of crop defects and problem areas;
- optimization of irrigation and water consumption;
- detection of deviations and violations committed in the process of agro-technical works;
- assessment of germination of agricultural plants;
- creation and updating of maps of arable lands;
- analysis of the effectiveness of measures aimed at plant protection;
- calculation of the amount of fertilizers applied;
- monitoring the compliance of the structure and plans of crop rotation;
- conducting ecological monitoring of lands.

There are four areas of drone use in agriculture that are the most efficient and promising:

1. Area or representative aerial photography and analysis of the obtained data. Aerial photography is a set of works that includes various processes from photographing the earth's surface from an airplane or space to further processing to obtain topographic maps, plans and digital models of the area. This is one of the most effective methods of obtaining spatial data and instant information processing [1,2].

Aerial photography allows to detect crop liquefaction, crop loss after exposure to natural factors and other defects that need to be addressed in a timely manner. Aerial photography from a drone is more detailed than photography from a satellite, due to the low altitude. In addition, unmanned systems allow you to shoot even in gusty winds and clouds.

2. Ground survey. Ground surveying is the most informative and purposeful method, which has great prospects in use, as this method provides the most accurate information about the soil. This survey is especially often carried out when growing very demanding and less common crops in our area, which include essential oils, tobacco, tea and other crops, and mapping the yield.

It is also advisable to use aerial photography in areas where varietal testing, forests and orchards and other experimental areas [3,4].

3. Harvest protection. Drones are a new tool for crop protection in the fields, due to the possibility of equipping them with thermal imagers, they provide protection at night, and due to their versatility, they can be used with optimal load almost around the clock. Drones can also be used to provide real-time monitoring and information on various disturbances and to prevent other undesirable situations that may have a negative impact on the crop.

One of the features of the use of drones is their ability to move quickly and at the same time provide high and clear image quality. With these characteristics, it makes it possible to obtain the desired information in real time [5].

4. Scattering of entomophages and chemical treatment. Drones are indispensable helpers in organic farming. They make it possible to populate the field with entomophagous (eg, trichogramma) in a relatively short time, as this distribution is one of the most effective [6].

The use of drones and unmanned aerial vehicles for the application of plant protection measures is the most cost-effective, as such application of pesticides uses a very low volume of working fluid (up to 25 l / ha).

Thus, the use of unmanned aerial vehicles in agriculture is one of the modern promising areas. The use of drones reduces time and a lot of work and increases the efficiency of certain processes. The use of drones allows farmers to monitor the condition of crops and assess the similarity of crops, detailed control of each site at all stages of agricultural work and even "point" to improve the condition of the soil by applying microfertilizers.

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**PROBLEMS AND PROSPECTS OF FINANCIAL INVESTMENT DEVELOPMENT  
IN UKRAINE  
(ПРОБЛЕМИ І ПЕРСПЕКТИВИ РОЗВИТКУ ФІНАНСОВОГО ІНВЕСТУВАННЯ  
В УКРАЇНІ)**

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*Стаття присвячена проблемам здійснення фінансового інвестування в Україні.  
Подолання наявних проблем та реалізація запропонованих пропозицій створить передумови  
для покращення інвестиційного клімату в країні. Важливо зазначити, що в даних ринкових  
умовах процес інвестування є досить важливим, потрібним та досить актуальним на  
сьогодні. Це підтверджують щорічні статистичні дані про обсяги здійснених фінансових  
вкладень в економіку країни. Загалом фінансові інвестиції є важливим елементом  
функціонування фірм.*

**Ключові слова:** *інвестиції, інвестування; інвестиційна діяльність; залучення  
фінансових ресурсів; інвестиційний клімат.*

*The article is devoted to the problems of financial investment in Ukraine. Overcoming the  
existing problems and implementing proposals will create the preconditions for improving the  
investment climate in the country. It is important to note that in these market conditions, the  
investment process is necessary, and quite relevant today. This is confirmed by annual statistics on  
the volume of financial investments in the state's economy. In general, the financial investment is an  
important element of the functioning of firms.*

**Key words:** *investments, investing; investment activity; attracting financial resources;  
investment climate.*

Financial investments are investments of funds or other assets in securities of economic entities. Investing in free funds in securities has different purposes. The main ones are the receipt of return on investment in the future; conversion of free savings into highly liquid securities, the establishment of official relations or control over the issuing enterprise [1]. Research questions of