



Food and Agriculture Organization
of the United Nations

WEBINAR:

Data driven efficiency and sustainability in Precision Agriculture

Supporting slides

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Ukraine: Precision Agriculture Technologies (PAT): Survey Results



Are you familiar with PAT and do you use them?

28% use PAT in production

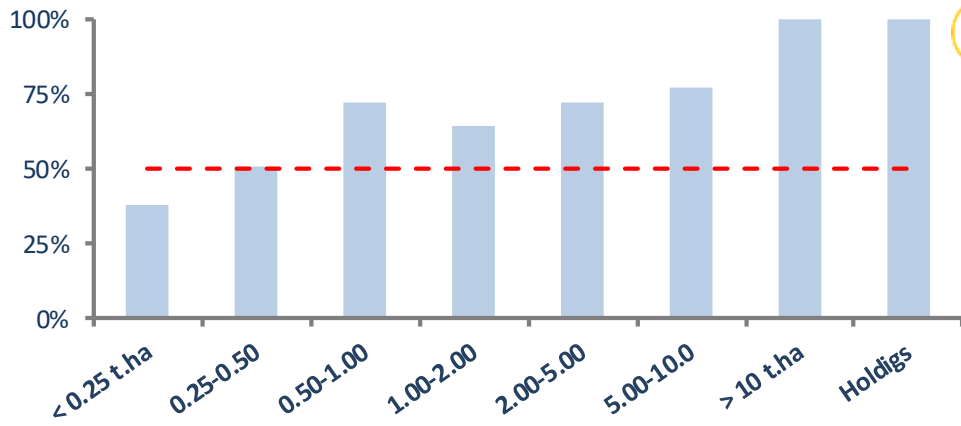
52% interested to use PAT

20% NOT familiar with PAT (**33-26%** in group with less than 500 ha)



PAT may already be used on **8.4 mln ha** or about 45% of farmed area

Do you follow innovative trends in agriculture?



The interest in innovations directly depends on farm size

80% in group over 1000 ha



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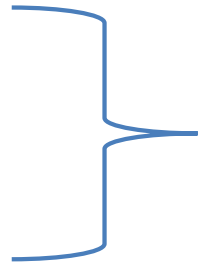


European Bank for Reconstruction and Development

Ukraine: Why farmers invest in precision agriculture?

 *Main drivers for introducing the technology in your case? (5 – max)*

- 3,5** Labor cost reduction
- 3,3** Profitability increase
- 3,3** Input cost reduction
- 3,0** Yield increase
- 2,3** Environmental aspect



The main driver is behind PAT is **economic efficiency...**

... **environmental factors ranked the lowest** 😞



58% of respondents have been using the PAT for less than 5 years



only **10%** respondents use the full range of PAT technology tools



Excessive or **missing** crop density Precision planting **avoids overlaps and overuse**



Opportunity for new investments in technology concentration and sophistication.



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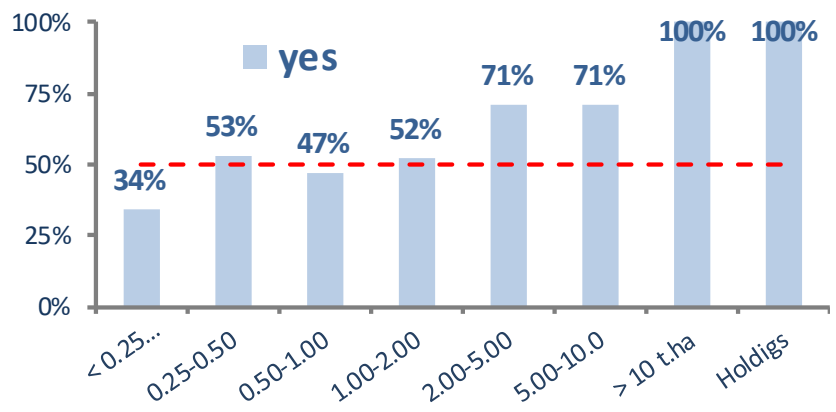
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Ukraine: Precision Agriculture Technology – Future Potential



Do you plan to invest in the development of PAT in your farm in the future?

among those who currently use PAT

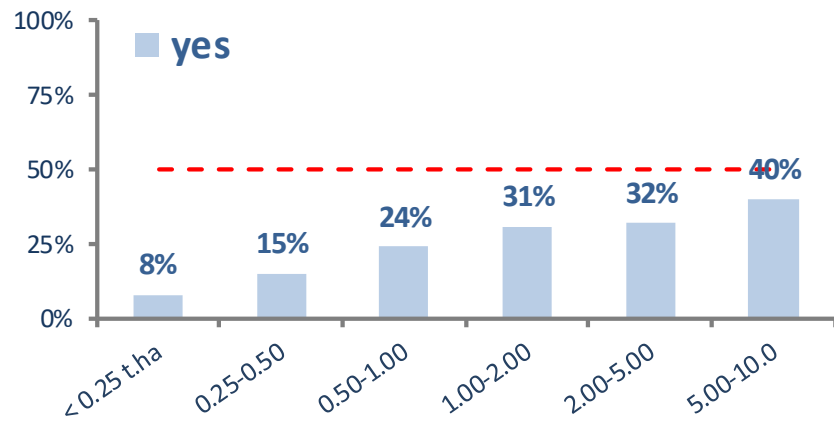


51% plan to invest in the development of technology in the future



6.2 mln ha estimated area for investment in PAT among who currently use PAT

among those who currently DO NOT use PAT



only **18%** showed a potential interest in investing in the technology



3.8 mln ha estimated area for investment in PAT among who currently DO NOT use PAT



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Ukraine: Why farmers hold back in investing in PAT



What is holding you back from investing in PAT? (5 – max)

- 4,0** High initial cost
- 3,4** Uncertainty of revenue generation
- 3,0** Lack of professional staff
- 2,9** Compatibility issues with other tech and equipment
- 2,8** Lack of knowledge about the technology



The larger the respondent's land use area, the more they worry about high initial cost ...



... but bigger farms also better understands the potential of using the technology



Public support to address technology transfer and adoption issues for SME



Precision Agriculture Technology – Environmental aspect

13% the share of agriculture in greenhouse gas emissions in Ukraine
4-time increase in emissions from mineral fertilizers in 20 years

EC JRC: selected PAT with direct GHG reduction potential

Ranking of PATs	PAT type	GHG reduction potential
1	Variable-rate nitrogen application (VRNT)	5
2	Variable-rate irrigation (VRI)	3
3	Controlled traffic farming (CTF)	2
4	Machine guidance (MG)	2
5	Variable-rate pesticide application (VRPA)	2
6	Variable-rate planting/seeding (VRP/VRS)	1
7	Precision physical weeding (PPW)	1

Scale of importance of GHG reduction potential (Likert-type scale identified by the authors): 5, very high potential; 4, high potential; 3, moderate potential; 2, slight potential; 1, low potential.



Precision Agriculture Technology – Environmental aspect

Climate Mitigation Potential in Ukraine

	2014	2017
Synthetic Fertilizers Emission, kt CO ₂ -eq	6 591	8 813
Mineral nitrogen fertilizers applied, thousand tons	1 021	1 365
The range of reduction in the volume of mineral nitrogen fertilizers,%	10-30%	10-30%
Climate mitigation potential range in Ukraine, thousand tons of CO ₂ -eq	659 - 1977	881 - 2644



EU Emissions Trading System CO₂ price in 2019 was **€ 24.8/t**
 Reduced mineral fertilizer application in Ukraine can generate
€24.8-65.6 million in carbon credits

