

Presented By:

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President**

WORLD FEIRA
FEB. 6 - 8 2024

**Vision & perspective of the agricultural
robotics industry**

CLIMMAR Oct. 12



NEEDS FOR A FARMING (ROBOTICS) (R)EVOLUTION



A global context

Challenges to overcome:

- Produce more
- With less!

Farmers need to remain competitive while feeding people and protecting the environment

The number of farmers is decreasing and the agricultural surface per farm is increasing



Key figures

Source: Robagri report -
"Grand défi Robotique
agricole"

10 billion people by 2050

Produce **56%** more food than in 2010

2030, reduce pesticide consumption by **50%** in Europe

Global labor shortage

Agronomic solutions exists, but how to unlock them? At scale!?



01

Skills and knowledge
diffusion

02

Technology Adoption

03

Policy and Regulation

04

Dealing with more
and more
unpredictable
variables & crisis



**AGRICULTURAL ROBOTICS
IS PART OF THE SOLUTION**



- Automation of Agricultural Tasks
- Optimizing Resource Use
- Reducing Environmental Impact
- Improving Crop Quality and Quantity
- New Service Opportunities
- Adapting to climate change
- Precision farming
- Crop diversification
- Growing market
- Investment and research

**Agricultural
Robotics, a
promising
solutions**



Agricultural Robotics, a tool for the industry

Agricultural robots, serving what purpose?

Main uses by sector

Vineyards

- mowing
- vineyard work (disbudding, pruning, leaf stripping etc.)
- spraying
- soil working (weeding etc.)
- load carrying

Livestock

- milking
- feeding
- forage pusher
- bedding
- scraping
- slurry suction
- bedding disinfection and airing
- load carrying
- animal welfare

Field crops

- fertilising
- spraying
- irrigation
- soil working (weeding)

Market gardening/ Orchards

- grass management
- harvesting

... as well as data collection (cameras, sensors etc.) common to all sectors.





AGRICULTURAL ROBOTICS: A REAL ECOSYSTEM



2022 CROP ROBOTICS LANDSCAPE

Overview of the agRobotics Leaders

	AUTONOMOUS MOVEMENT	CROP MANAGEMENT				HARVEST			
ROW CROP	<p>Navigation/Autonomy</p> <p>AgriRobot, COGNITIVE PILOT, Trimble, SABANTO, CHCNAV, FJDynamics, ASI, STEYR, Cerea, GPX Solutions BV, TOPCON, Ag Leader, BLUE WHITE ROBOTICS, agtonomy, GOtrack, BRAUN, Robo Tech, Singular XYZ</p>	<p>Small Tractor/Platform</p> <p>SALIN 247, Kubota, AI.Land, DONKEY, The FarmHand Tractor™, ELATEC, farm-ng, SABI AGRICULTURE, Korechi, FUTURE ACRES, MONARCH, exobotic, AGREENCULTURE, BURRO, VINERGY, XAG, EXACT ROBOTICS, RAUSENDOOR, TWISTE FIELDS, digital workbench</p> <p>Indoor Platform</p> <p>AGROBOTICS, Seasony</p>	<p>Large Tractor</p> <p>NEXXT, JOHN DEERE, COMBINED POWERS, AGXCEED, RAVEN, AGROINTELLI, autoagri, BEAR FLAG, FOX, AMOS, TARA, NEW HOLLAND, SITIA, oxin, SHI SLOPEHELPER, VITIBOT</p>	<p>Scouting</p> <p>EARTHSENSE, EGROBOTS, MEROPY, SOLINFTEC, AR, Small, sentera, CENSYS, AgEagle, quantum, draganFLY, DELAIR, ATMOS, wingtra, BEROBOTS, EVENT 38, microdrones*</p> <p>Indoor Scouting</p> <p>GEARBOX, ecoation, IUNU, CORVUS, HortiKey</p>	<p>Preparation & Planting</p> <p>FENDT, HORSCH, ROWBOT, TERRACLEAR</p>	<p>Drone Application</p> <p>TEAVISION, KRAY, precision.ai, GUARDIAN, THANDS, FORWARD ROBOTICS, 天途, JOYANCE, Niteworks, M-DRÖNE, PYKA*, LAHAKI, DRONE VOLT, Drone4 Agro, MARUT, TITAN, hyllo, Fly Dragon, X-brans, HADJI, LeadingEdge, BROUAV, ASTA, hse, AERO41, Garuda aerospace</p> <p>Indoor Drone Protection</p> <p>pats*</p>	<p>Application</p> <p>CASE IH, Carbon Blue, RESSON, AUGMENTA, DAMMANN, Bilberry, AMAZONE, BLUE RIVER, CLAAS, Plantium, Autonomous Pivot, Greeneye, ecorobotix, VERDANT ROBOTICS, SAGA ROBOTICS, TRIC, XRMACHINES, YANMAR, Kilter, GUSS, edate, jacto, INESCTEC, FREE GREEN NATURE</p> <p>Indoor Application</p> <p>polybee, AIS, hultendijk/klaman, Microthon, FTEK, BERG, HADA, arugga</p>	<p>Weeding & Thinning</p> <p>rootwave, KONGSKILDE, HayBeeSee, Steketee, FARMING REVOLUTION, NUCROP, VISION ROBOTICS, FARMDRÖID, STOUT, CARRE, Dahlia Robotics, addiBot, CARBON ROBOTICS, FARMHAND, naio, FarmWise, KULT, WEEDBOT, garford, EKOBOT, nexUS //, AgriBotX, Uullmanna, FERRARI, PIXELFARMINGROBOTICS</p> <p>Orchard-Vineyard Weeding & Pruning</p> <p>VITIROVER, AIGRO, BEAGLE, LADYBUG ROBOTICS, oigritec</p>	<p>Specialty Field Harvesting</p> <p>MulberryMACHINES, LAPALME AGTECH.COM, HARVEST CROB, KOPPERT MACHINES, advanced.farm, MiFood Robot, AVL, Fieldwork, ABEV AUTOMATION INC.</p> <p>Orchard-Vineyard Harvesting</p> <p>TEVEL, OMC, Ripe Robotics, RoboticsPlus, UBot, FINE FIELD</p> <p>Indoor Harvesting</p> <p>WUBER, TortugaAgTech, FOUR GROWERS, OUTBACK ROBOTICS, DENSO, AGROBOT, certhon, KOMET, neuPeak, Dogtooth, CRUX, ORGANIFARMS, MYCIONICS, ((xihelm)), Lenzeel</p>
SPECIALTY FIELD									
ORCHARD-VINEYARD									
INDOOR									

Robotic solutions placed in other task/product categories on this landscape may have scouting capabilities in addition to their primary function.

Companies appear only once, though some may offer multiple or multi-use robots; they are placed according to primary function. Some segments span multiple crop systems as solutions may be applicable across crops. Logo positions are not necessarily indicative of crop system applicability.

AgRobotics Leaders





AGRICULTURAL ROBOTICS: A REAL MARKET NOW!



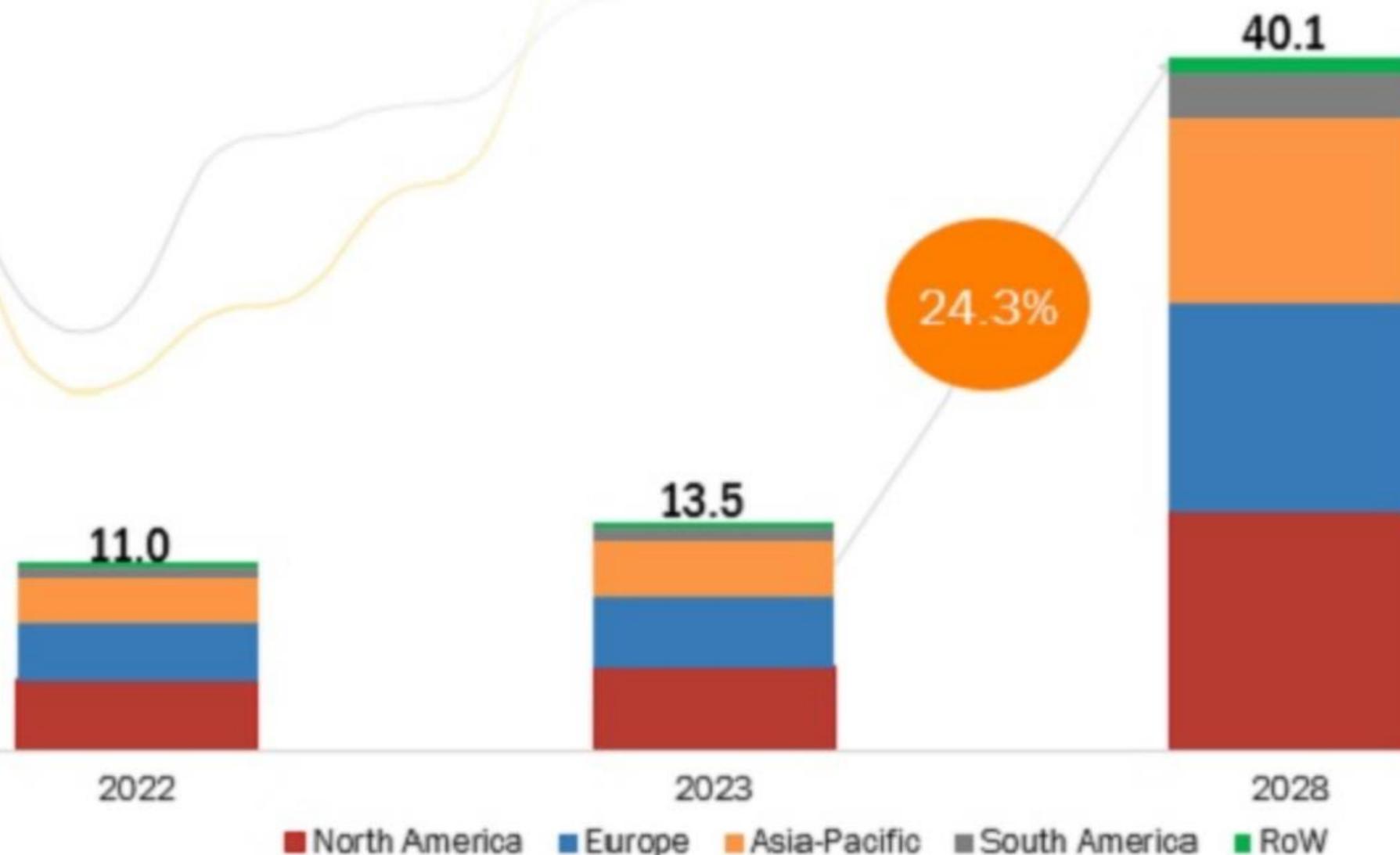
Agricultural Robots Market Trends

AGRICULTURAL ROBOTS MARKET GLOBAL FORECAST TO 2028 (USD BN)

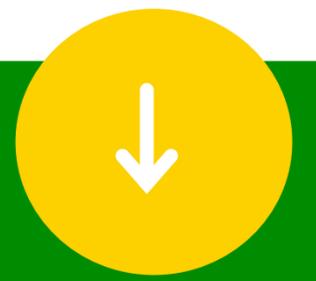


CAGR OF
24.3%

The global agricultural robots market is expected to be worth USD 40.1 billion by 2028, growing at a CAGR of 24.3% during the forecast period.



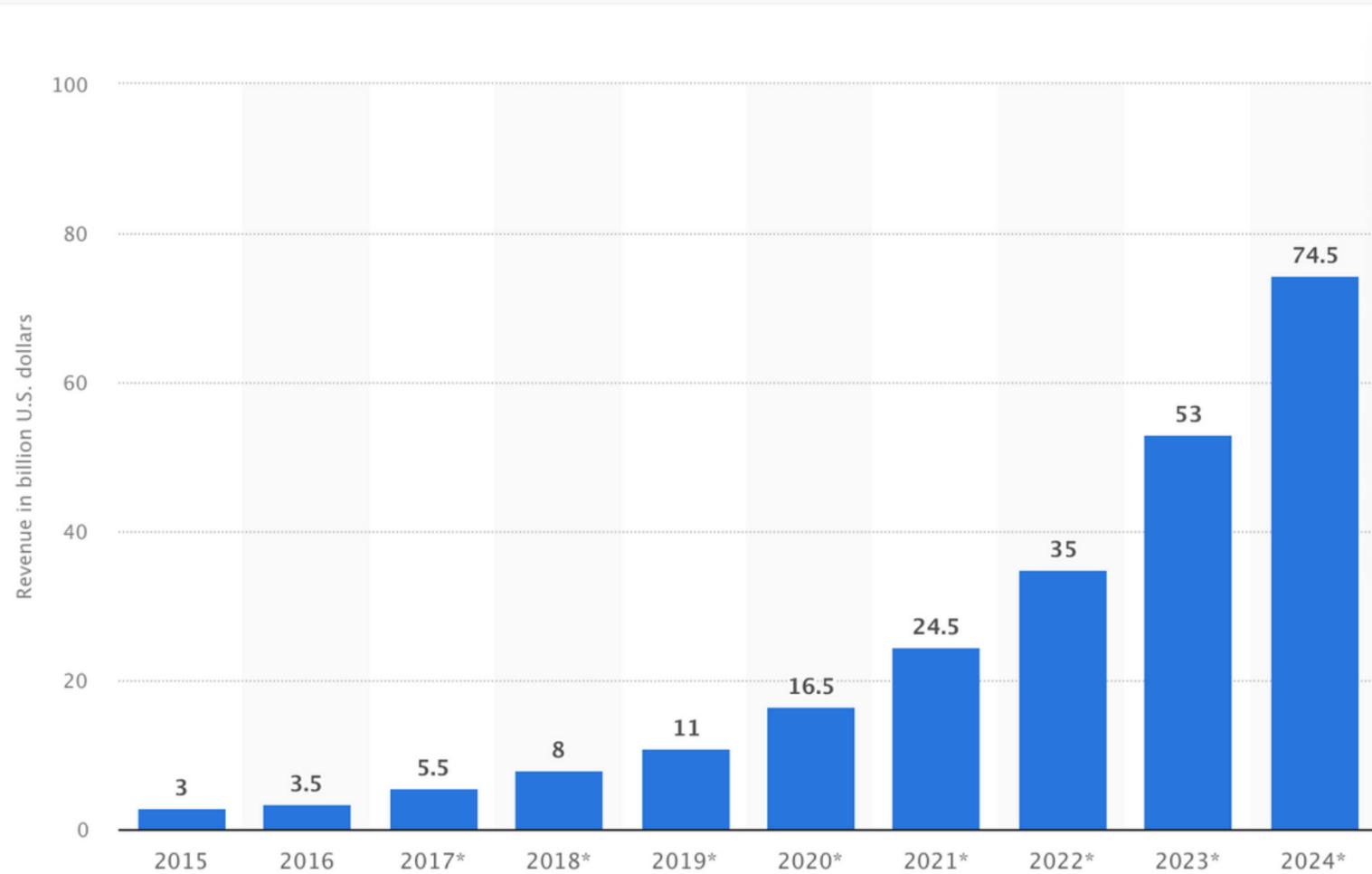
Includes:
UAV/drones,
mailing robots,
driveless
tractors,
Automated
harvesting
systems,
farming
environment
(indoor/outdoor)
, end-use
application



Source:
<https://www.marketsandmarkets.com>

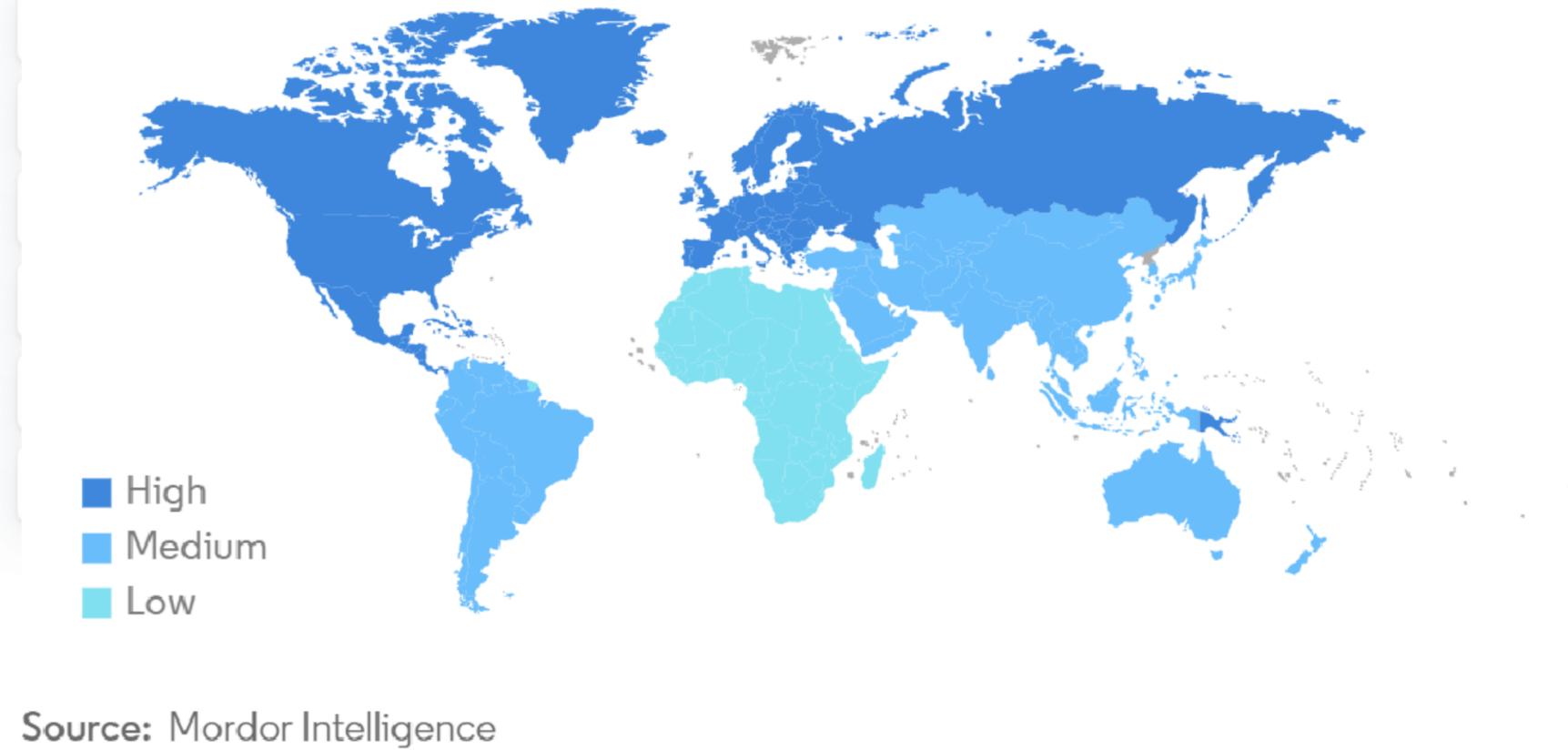
Agricultural Robots Market Trends

Agricultural robot revenue worldwide from 2015 to 2024
(in billion U.S. dollars)



Source: [@ Statista 2023](#)

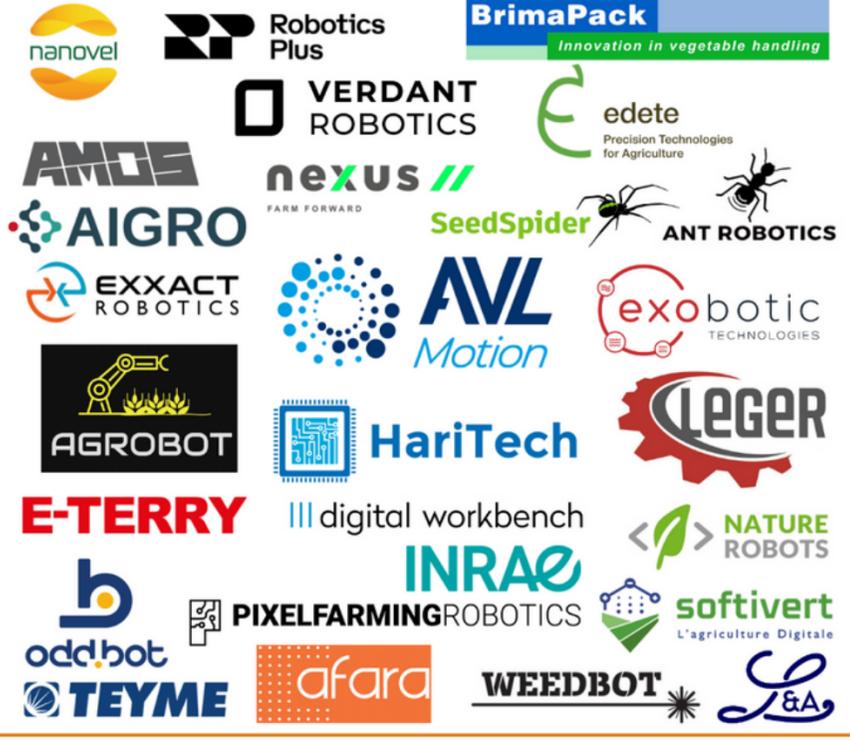
Agricultural Robots Market : Growth Rate, in %, Geography, 2021



Overview of the ag field robots leaders

Start-ups by number of robots in service worldwide.

(approximate)

Number of robots in service (2022-2023)	100-500	
	50-100	
	10-50	
	0-10	
	Non Public	

SOURCES: FIRA USA 2022 & 2023 and World FIRA 2023 official directories and autonomous solutions information sheets.

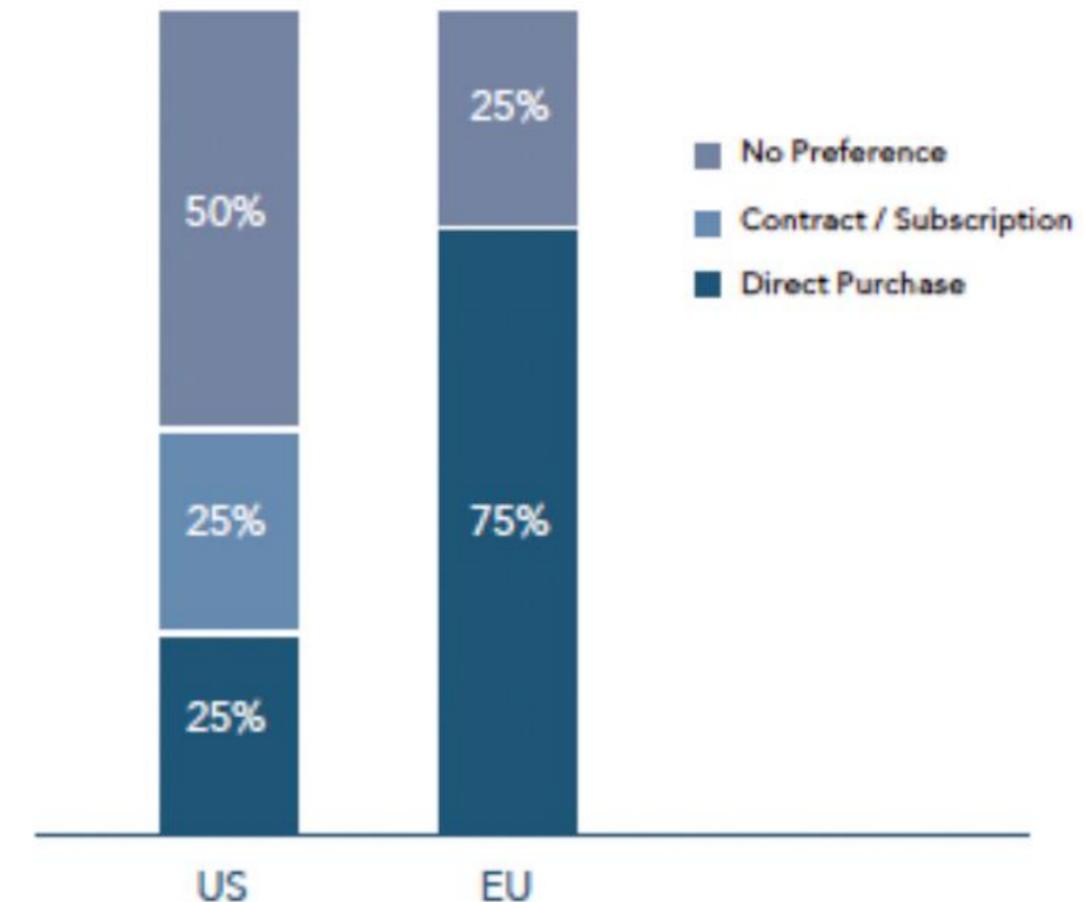
Business Models

LARGER FARMS MAKE THE BIGGEST INVESTMENTS, WHILE EU GROWERS HAVE A PREFERENCE FOR DIRECT PURCHASES

Investments in automation, by farm size
2022 [average]



Preferred method of automation, by region
[% share of respondents]



US vs UE

Investments

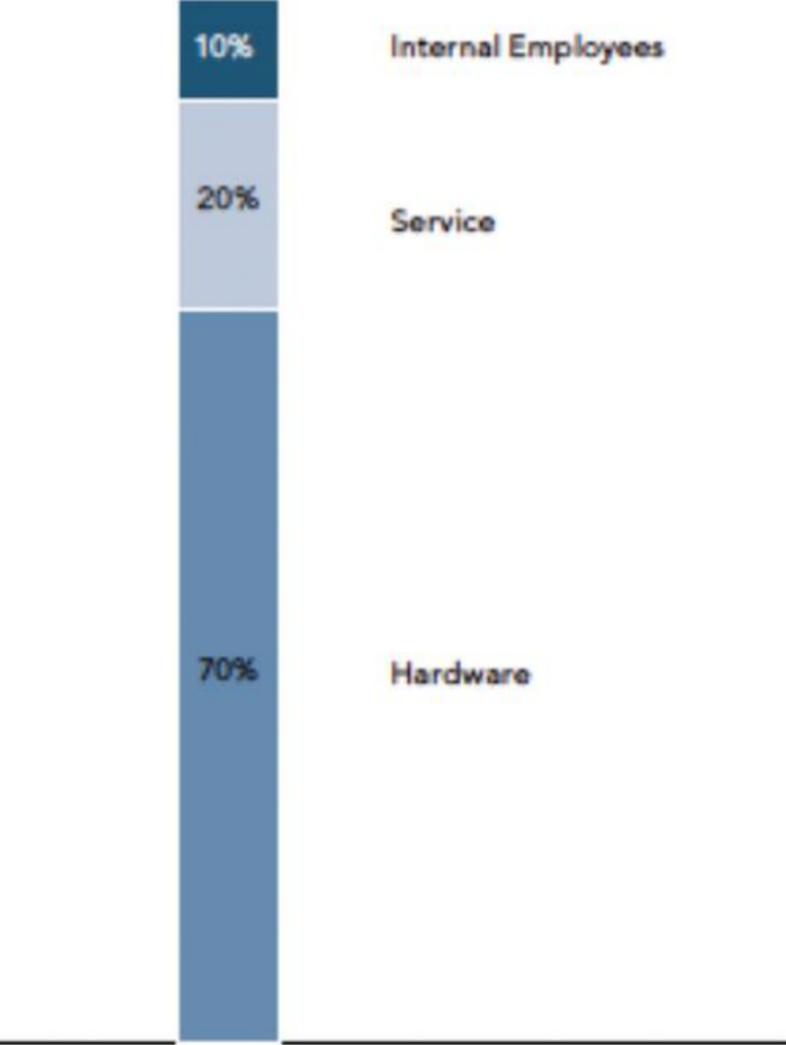
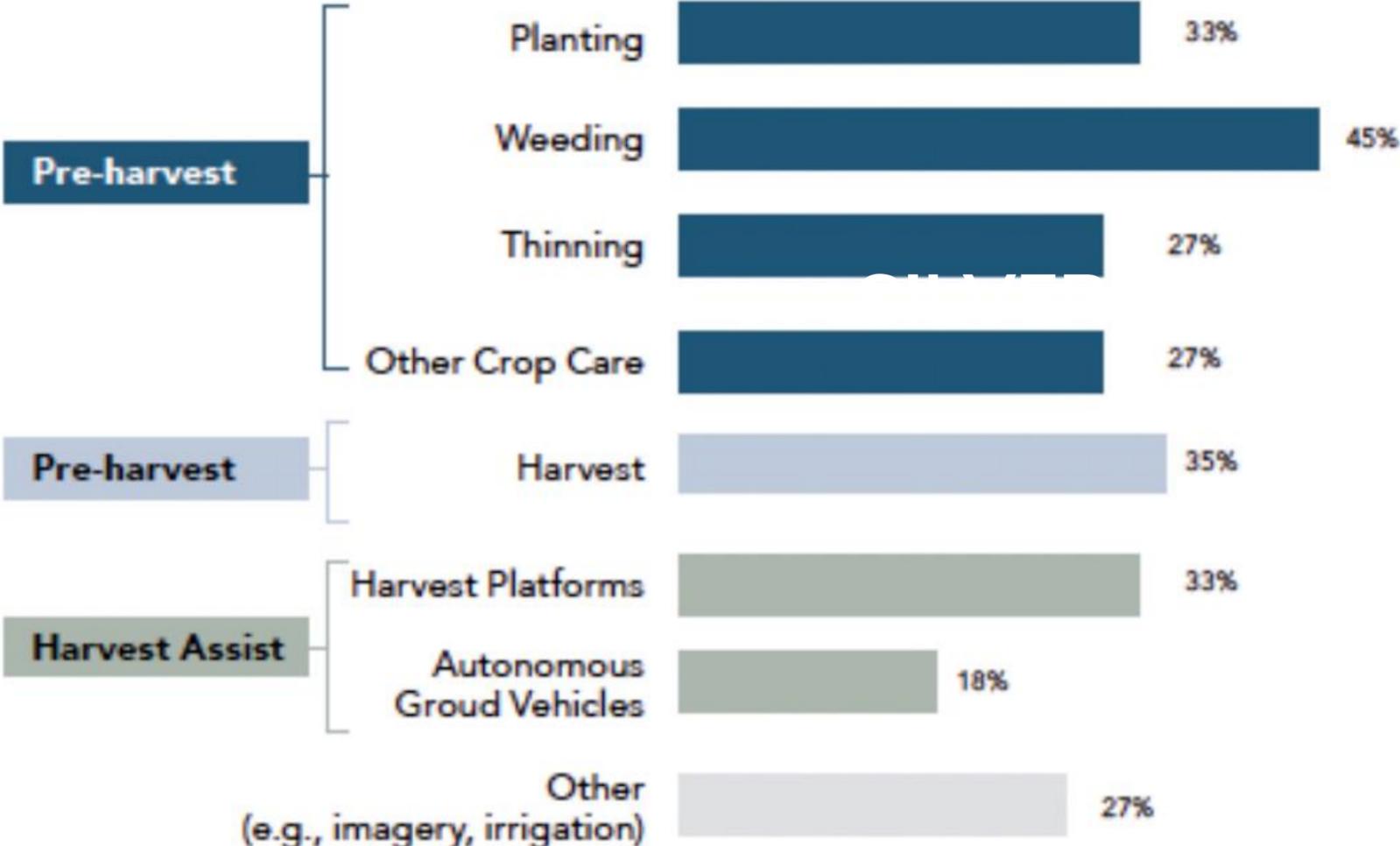
WEEDING IS THE MOST AUTOMATED ACTIVITY ACROSS ALL CROP TYPES, AND HARDWARE THE MOST POPULAR INVESTMENT METHOD

Activities being automated [% share of respondents]

Method of investing in automation [average]



US vs UE



Source: Grower survey, Western Growers, Roland Berger

European market



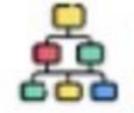
Of the potential of agricultural robots in modernizing the farming sector and promoting sustainable practices by UE governments

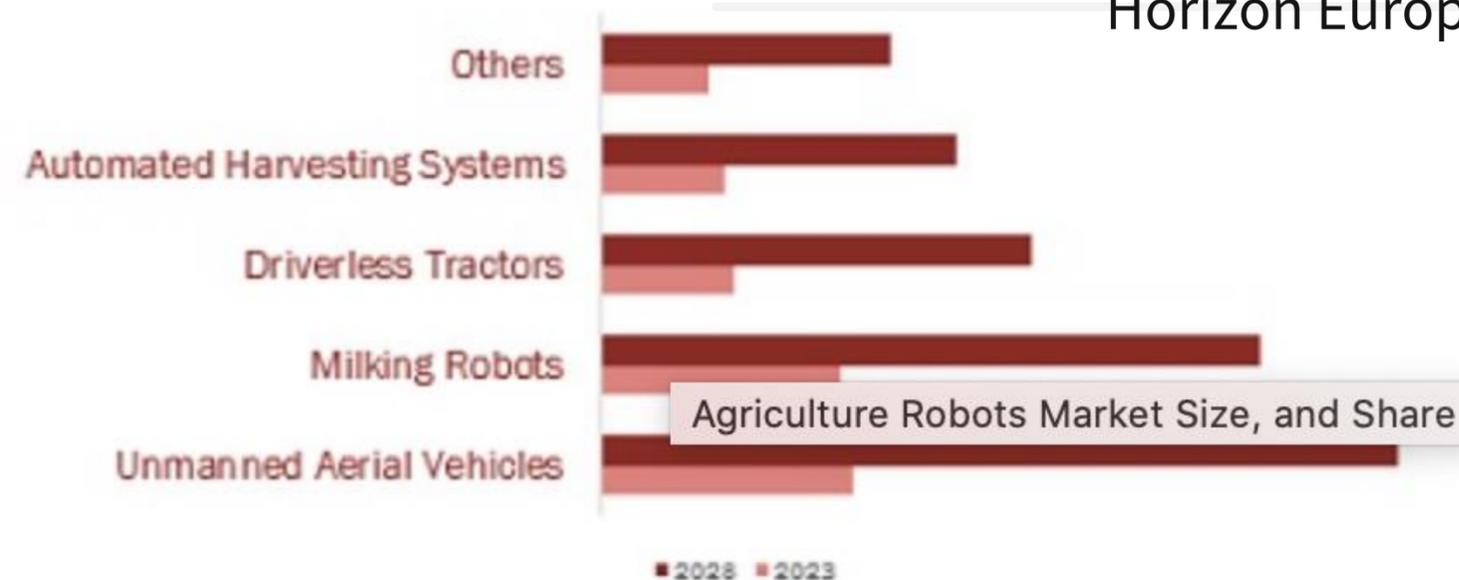
EUROPE




SECOND LARGEST MARKET
In 2022


UK
FASTEST-GROWING MARKET IN THE REGION

 **BY TYPE**
2023 (USD BILLION)



A highly subsidized market

40% of the European Union's budget
Horizon Europe program for 2021-2027

[AgriTech 2030](#)



DRIVING FACTORS FOR GROWTH IN EUROPE

- The increasing adoption of agriculture robots in the region is driven by the availability of advanced hardware components. These components include milking robots, drones, sensors, cameras, and GPS systems, which enable farmers to effectively monitor and manage their crops.
- The demand for services such as drone rental, training, and maintenance is rising in the Europe region. Agriculture robots service providers offer specialized services to assist farmers in utilizing drone technology and livestock monitoring technology effectively and efficiently.



Sources:
www.marketsandmarkets.com

**What does
it mean?**

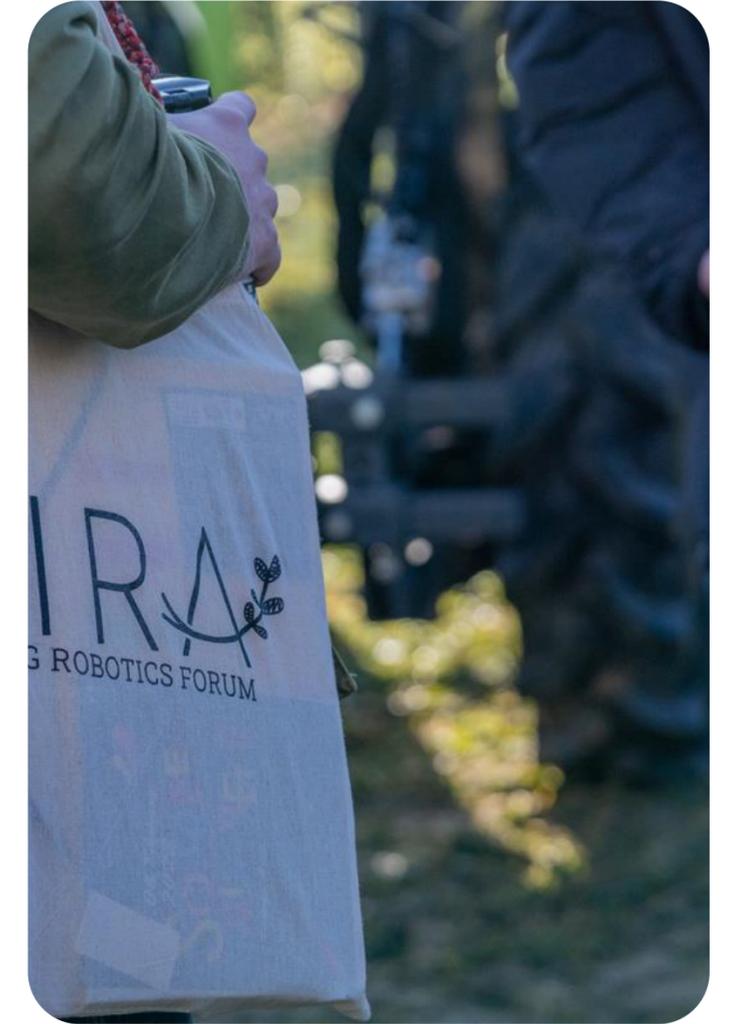


**Market is already
opening**

**Market is deep
enough**



**The bottleneck is:
how (fast) to
address the market?**





DEALERS NETWORK: A KEY PARTNER TO ADDRESS THE MARKET



Market consolidation is coming

Good luck to pick up the good one! But you do not want to be the last one



(Too) Many startups



**All the key players
working on it**

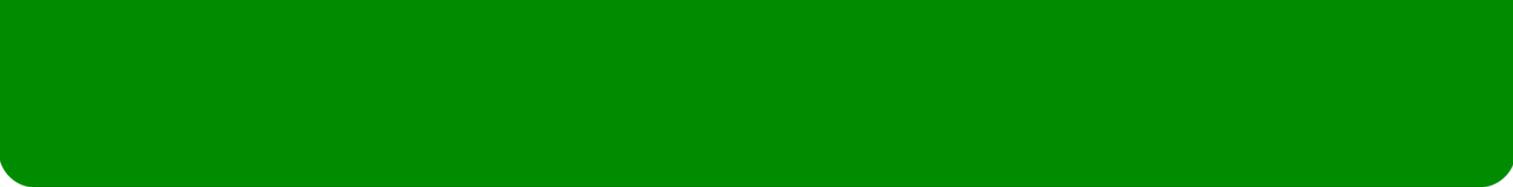
John Deere - CNH - Claas - Amazone -
Kuhn - Horsch - Kubota...



**Collaboration
/acquisition starting**

Vitibot / SDF
Guss / John Deere
Agxeed / Claas / Amazone

...



Dealer's role is evolving



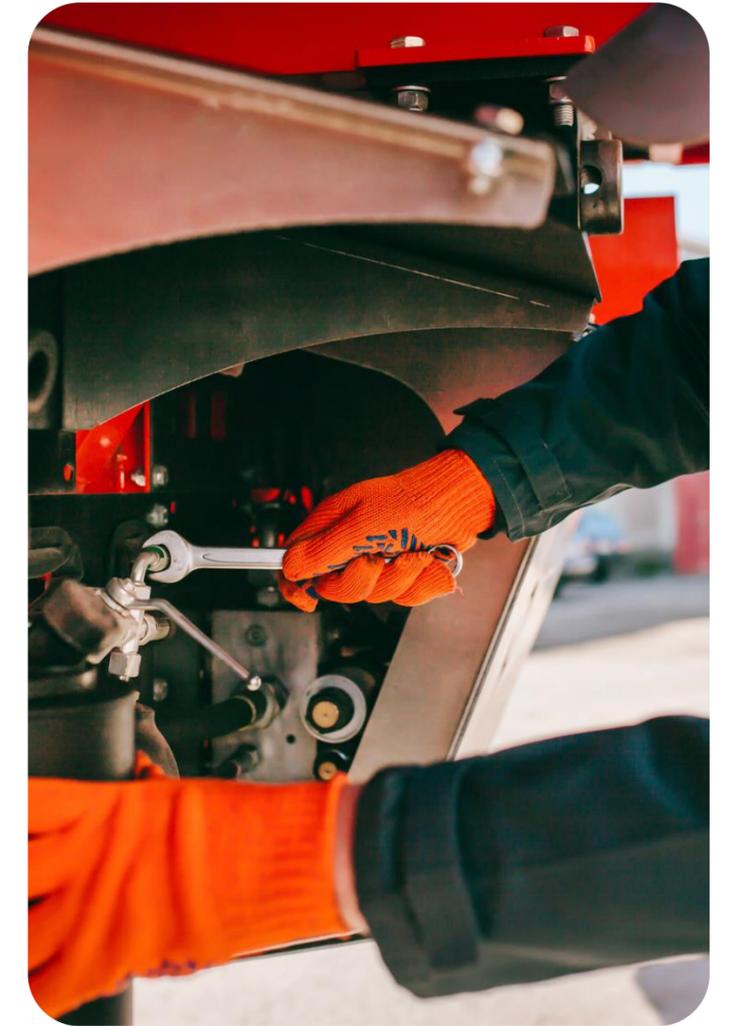
- Consolidation of the market
 - Connected machine = direct link between the farmer & the manufacturer
 - Impact of digital marketing (& sales) increase
- => Dealer or retailer ?
- Your local presence is mandatory
- => you have the access to the market
- Complexity of the material increase
 - Farmers want (need ?) demo & support
 - What else?

Dealers risks?



High Initial Costs

Limited Product Selection



Maintenance

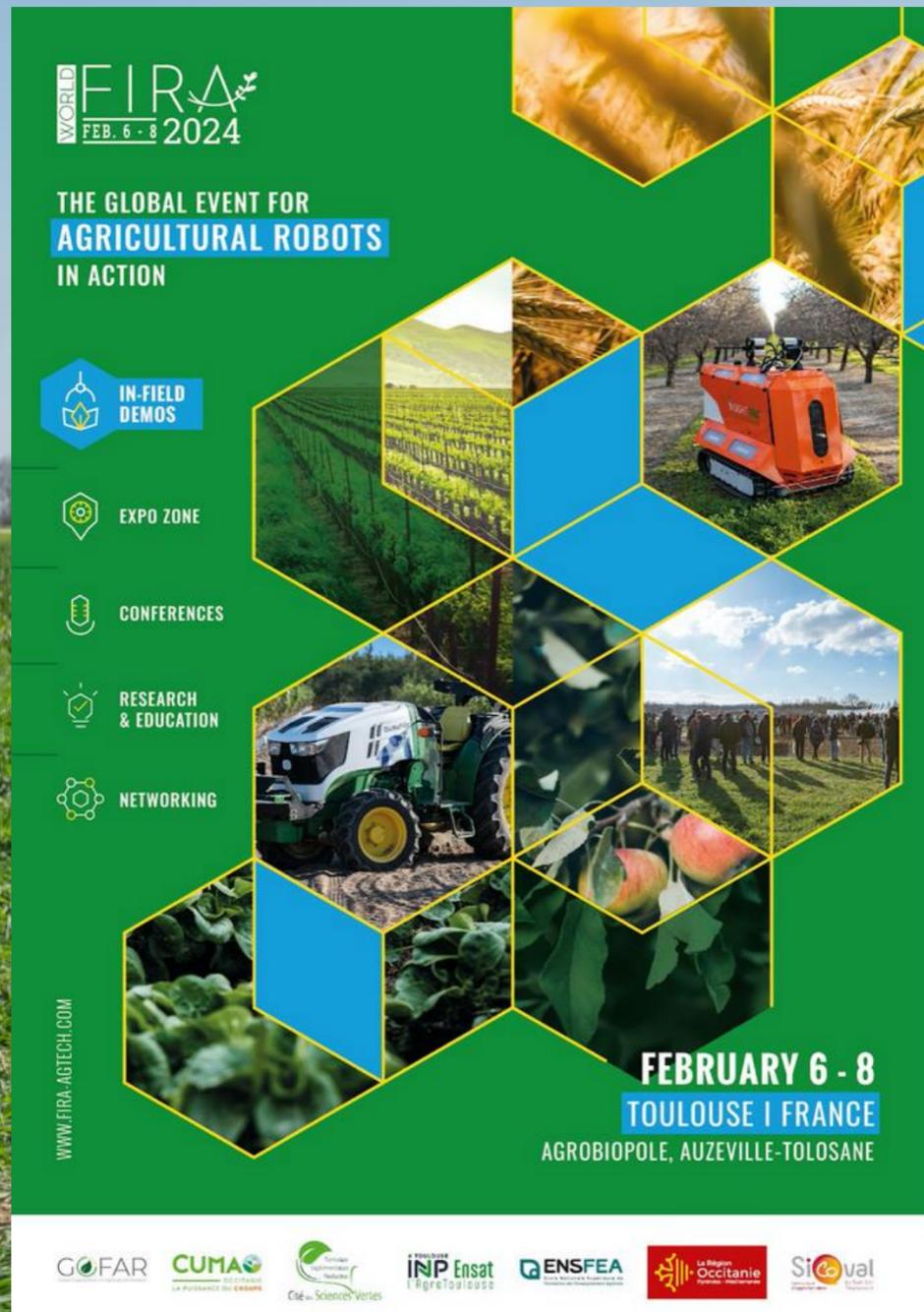
Technical complexity

Rapid Technological Advancements



Integration Challenges

Service and Support

The poster for FIRA 2024 is a vibrant green and blue design. At the top left, it features the 'WORLD FIRA' logo with 'FEB. 6 - 8 2024' below it. The main title reads 'THE GLOBAL EVENT FOR AGRICULTURAL ROBOTS IN ACTION'. A central graphic consists of several overlapping hexagons containing images of agricultural robots, tractors, and crops. On the left side, there is a vertical list of event activities: 'IN-FIELD DEMOS', 'EXPO ZONE', 'CONFERENCES', 'RESEARCH & EDUCATION', and 'NETWORKING', each accompanied by a small icon. At the bottom right of the poster, the dates 'FEBRUARY 6 - 8' and location 'TOULOUSE | FRANCE' are prominently displayed, with 'AGROBIOPOLE, AUZEVILLE-TOLOSANE' below. The website 'WWW.FIRA-AGTECH.COM' is listed on the left. The bottom of the poster features a row of logos for partner organizations: GOFAR, CUMA, Cte Sciences Vertes, INP Ensatis, ENSFEA, La Région Occitanie, and SiCoval.

WORLD FIRA
FEB. 6 - 8 2024

THE GLOBAL EVENT FOR
AGRICULTURAL ROBOTS
IN ACTION

IN-FIELD DEMOS

EXPO ZONE

CONFERENCES

RESEARCH & EDUCATION

NETWORKING

WWW.FIRA-AGTECH.COM

FEBRUARY 6 - 8
TOULOUSE | FRANCE
AGROBIOPOLE, AUZEVILLE-TOLOSANE

GOFAR CUMA Cte Sciences Vertes INP Ensatis ENSFEA La Région Occitanie SiCoval

DEALERS NETWORK:
WANT TO KNOW MORE ?
TO PREPARE YOURSELF
AND YOUR TEAM ?

=> JOIN THE NEXT FIRA





Global Organization For Agricultural Robotics



Aims to promote and to develop the agricultural robotics industry worldwide

GOFAR meets the increasing need for visibility and networking of the agricultural robotics sector.

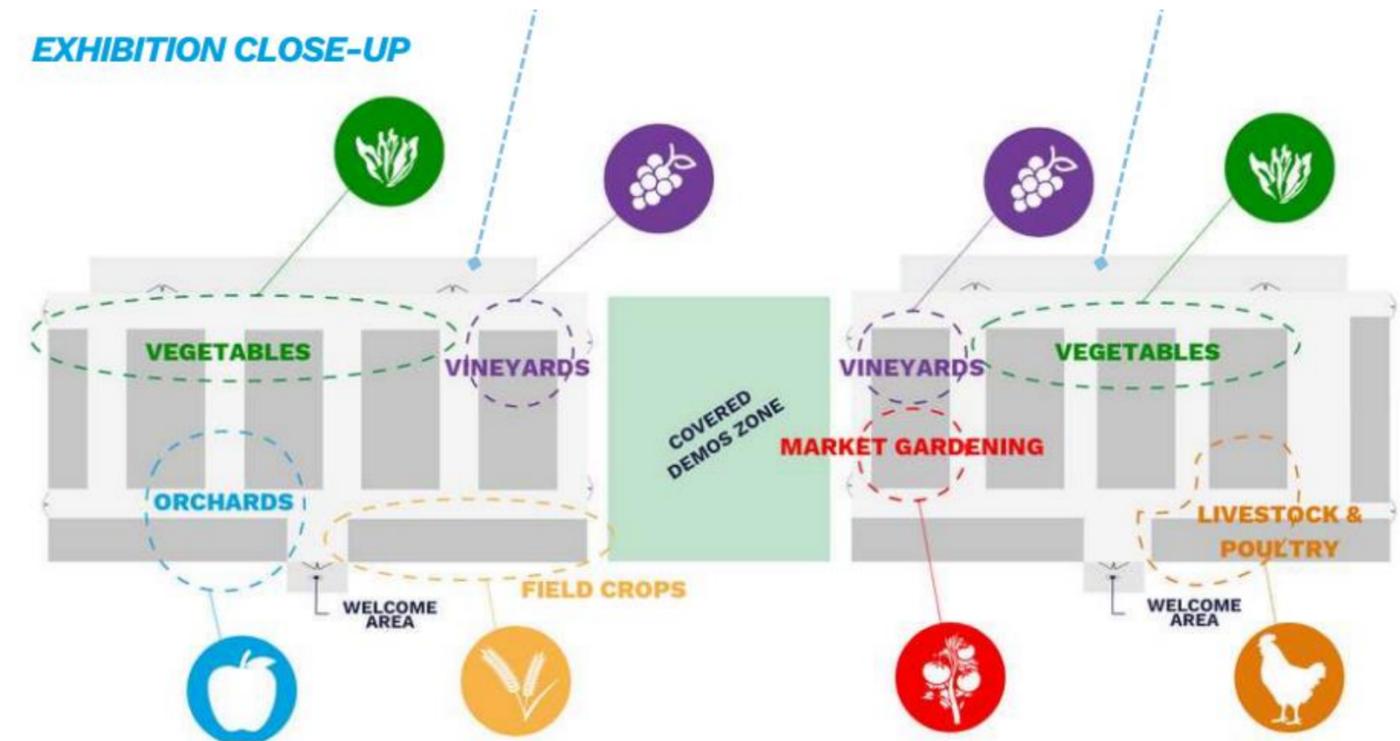
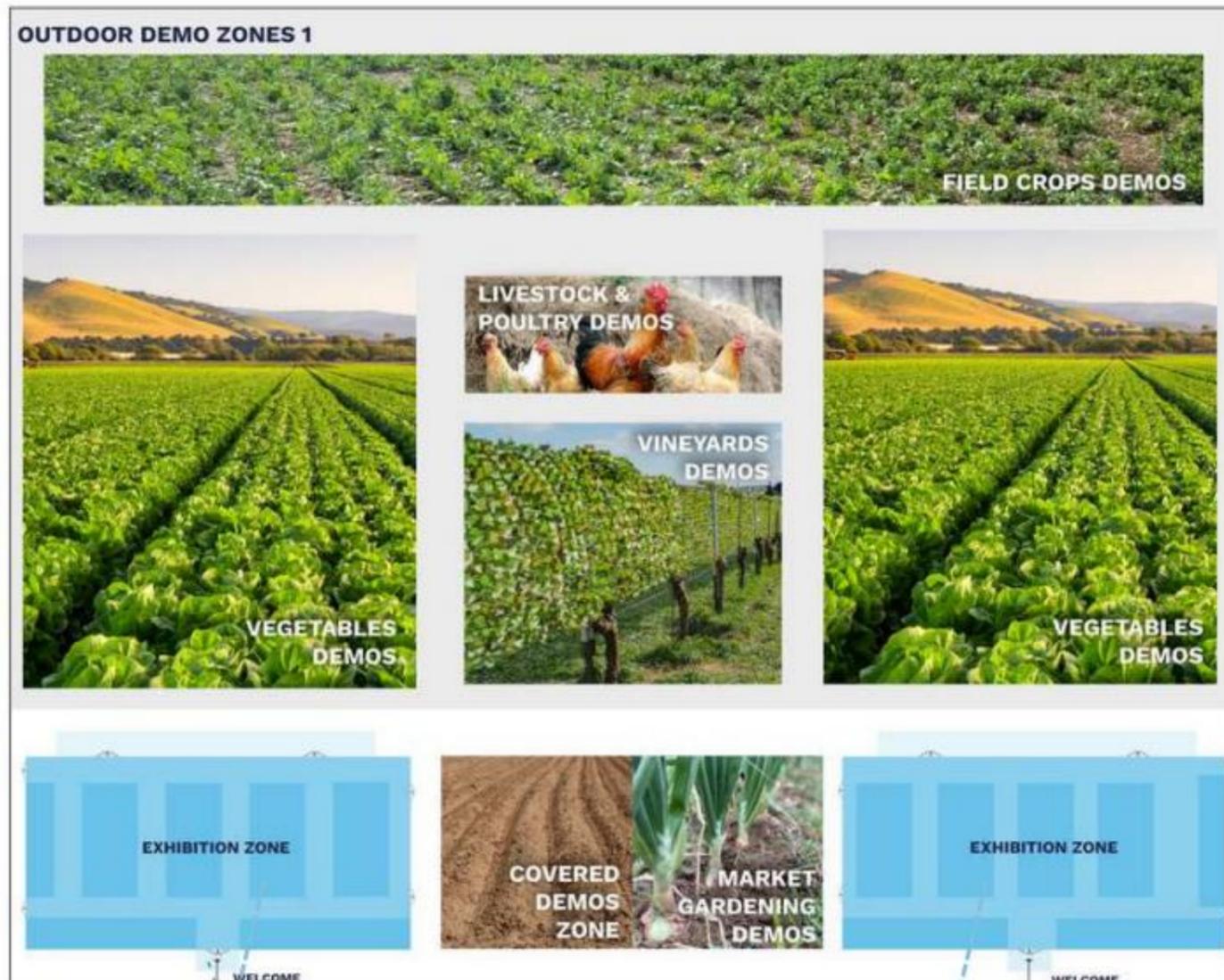
French non-profit launched in 2019

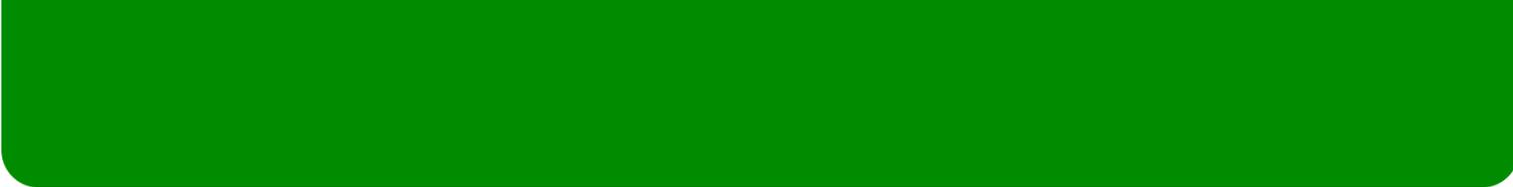
4 main work streams:

- Organizing annually the International Forum of Agricultural Robotics ([FIRA](#))
- Setting up international collaborations
- Development of an information platform around the Agricultural Robotics sector – www.agricultural-robotics.com
- Creation and animation of a network of leading international experts in agricultural robotics.

WORLD FIRA EXHIBITION AND DEMO ZONE - GLOBAL LAYOUT

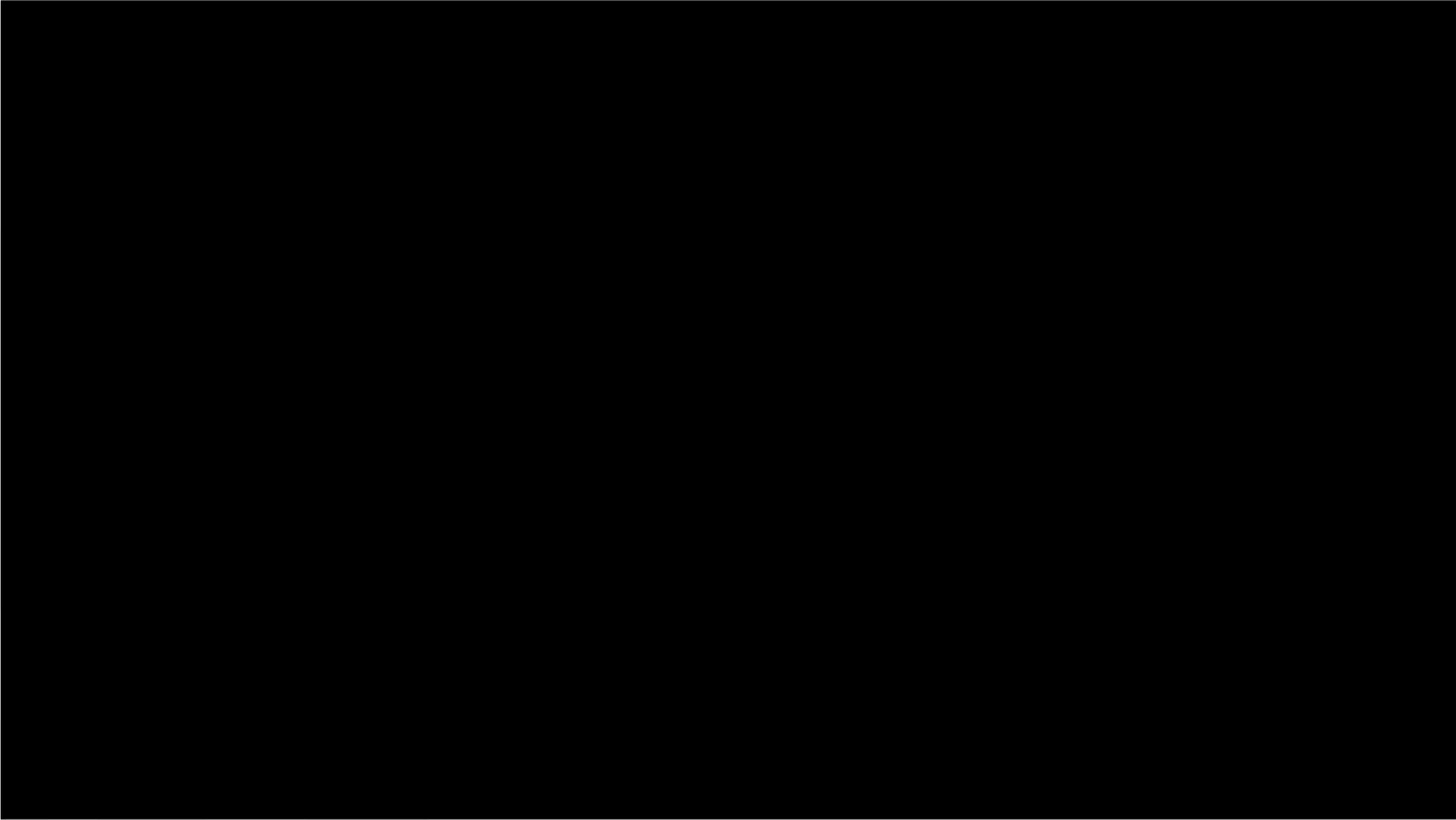
DISCOVER THE EXHIBITION AND DEMO AREAS, A NEW FIRA EXPERIENCE WITH DEDICATED AREAS





World FIRA 2024

6th to 9th of February in Toulouse (France)



01

Understand the technology and its uses

02

Lastest updates of the market developement

03

find out the best partners

04

Get farmers to come and sign first deals

Get Connected With Us

Contact Information



Socials



contact@fira-agtech.com



world-fira.com



www.agricultural-robotics.com



12/10/2023

THANKS

