Digital farming gains speed

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Patent data shows a fast-growing tech shift in agriculture

Farming is no longer only about tractors, seasons, or manual work. Across Europe, agriculture is becoming a technology-driven environment. Sensors, automation, artificial intelligence, and digital platforms now shape daily operations. A recent report from the European Patent Office confirms this shift with strong innovation data.

This report also explores a range of topics in greater depth, including artificial cultivation conditions, livestock farming, and supporting technologies.

Read the full report

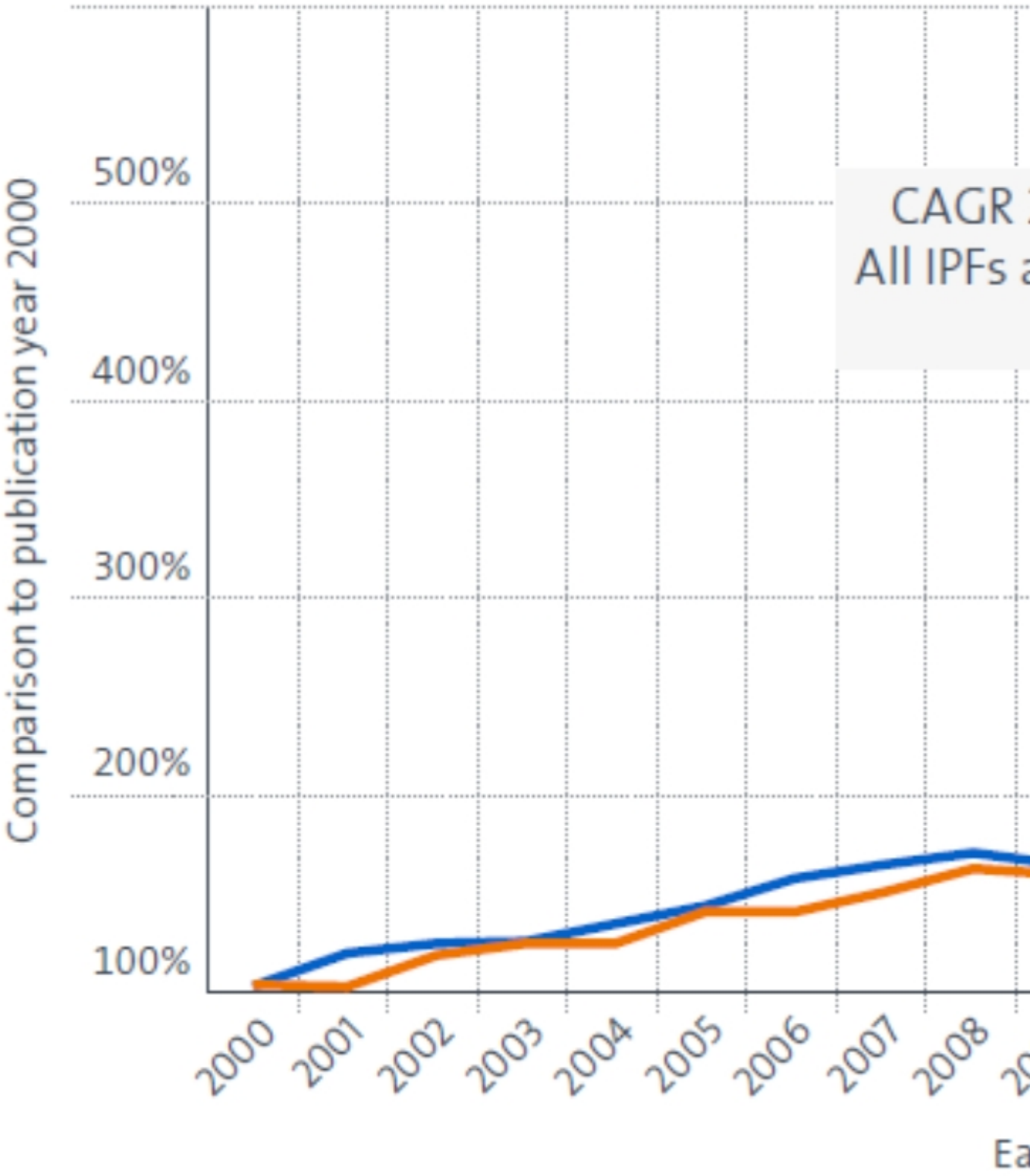
A fast-growing innovation domain

The European Patent Office analysed almost 270,000 patent families and 400,000 patent applications linked to digital agriculture worldwide. The conclusion is clear: digital agriculture is now one of the most dynamic technology growth markets in Europe.

Since 2012, patent activity has grown at an average rate of 9.4% per year. This is nearly three times faster than growth in other technology fields. This acceleration is strongest where digital tools meet agricultural operations.

Figure E.1

IPFs in digital agriculture vs. all technology



CAGR = compound annual growth rate

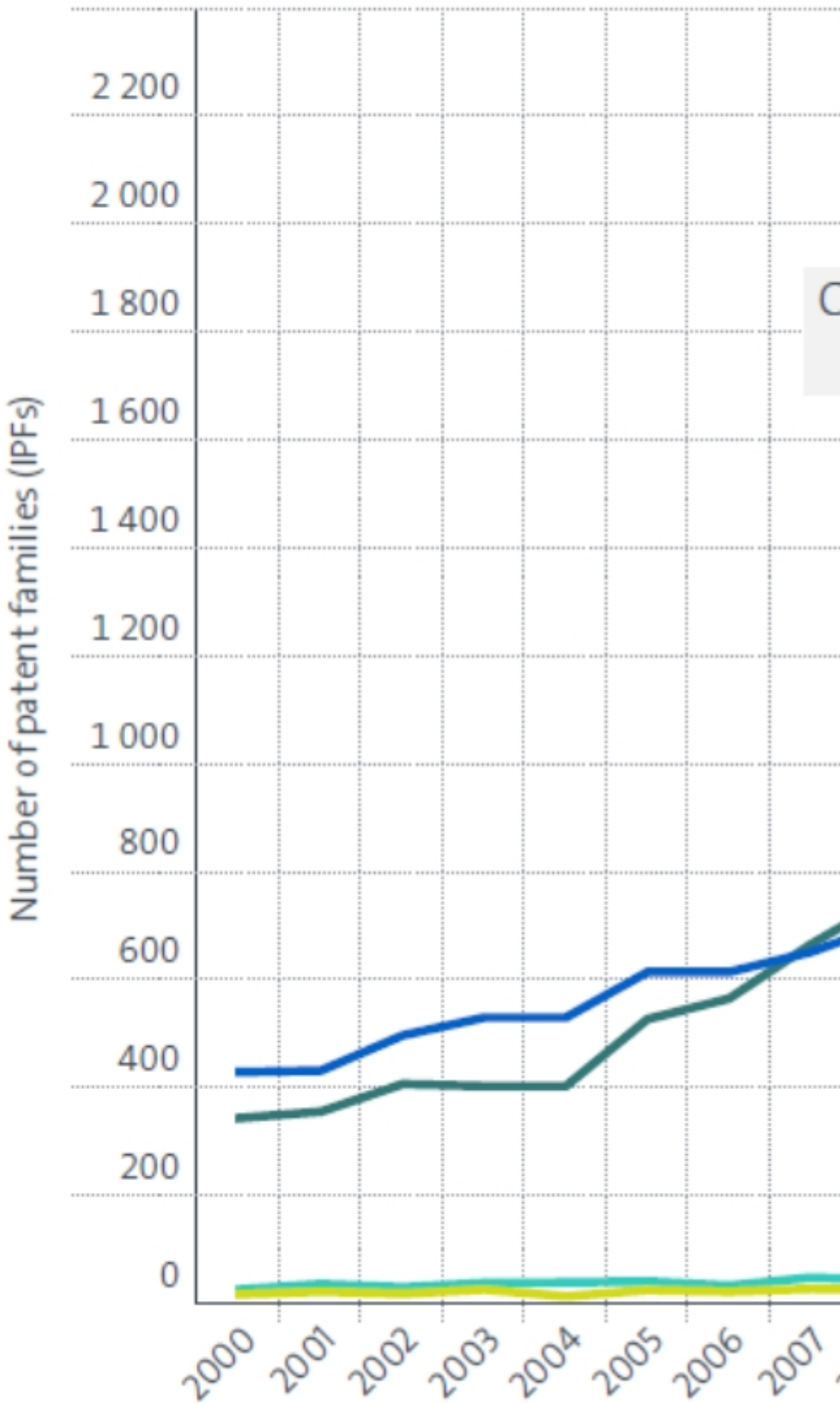
EPO Report, patent growth statistics Figure E.1

Industry drives the momentum

The large growth that started in 2021 in digital agriculture is largely driven by companies. By 2022, companies accounted for 88% of all patent families in this field. This confirms a clear shift towards an industrial technology market led by corporate research and development.

Figure E.3

Trend of applicant sector distribution



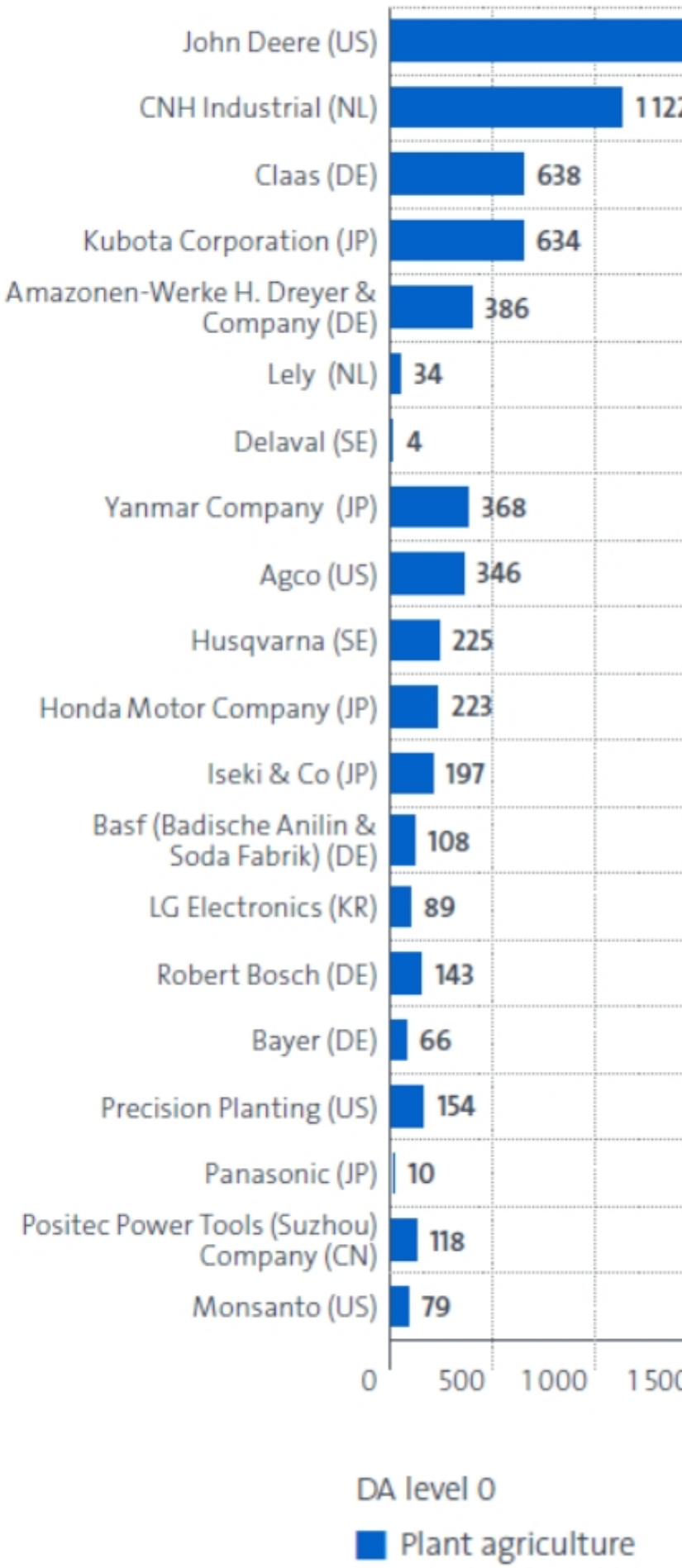
CAGR = compound annual growth rate

EPO Report, patent growth statistics Figure E.3

Leading innovators include agricultural machinery and automation companies such as John Deere, CNH Industrial, Claas, and Kubota. Companies active in livestock farming, such as Lely and DeLaval, also play a key role. Electronics firms like LG and Panasonic contribute through greenhouse and controlled-environment technologies.

Figure E.4

Top applicants by number of IPFs published f



EPO Report, patent growth statistics Figure E.4

Europe holds ground in a global race

Europe remains a strong innovation hub in digital agriculture. Its position is supported by established machinery manufacturers and a broad ecosystem of universities and start-ups.

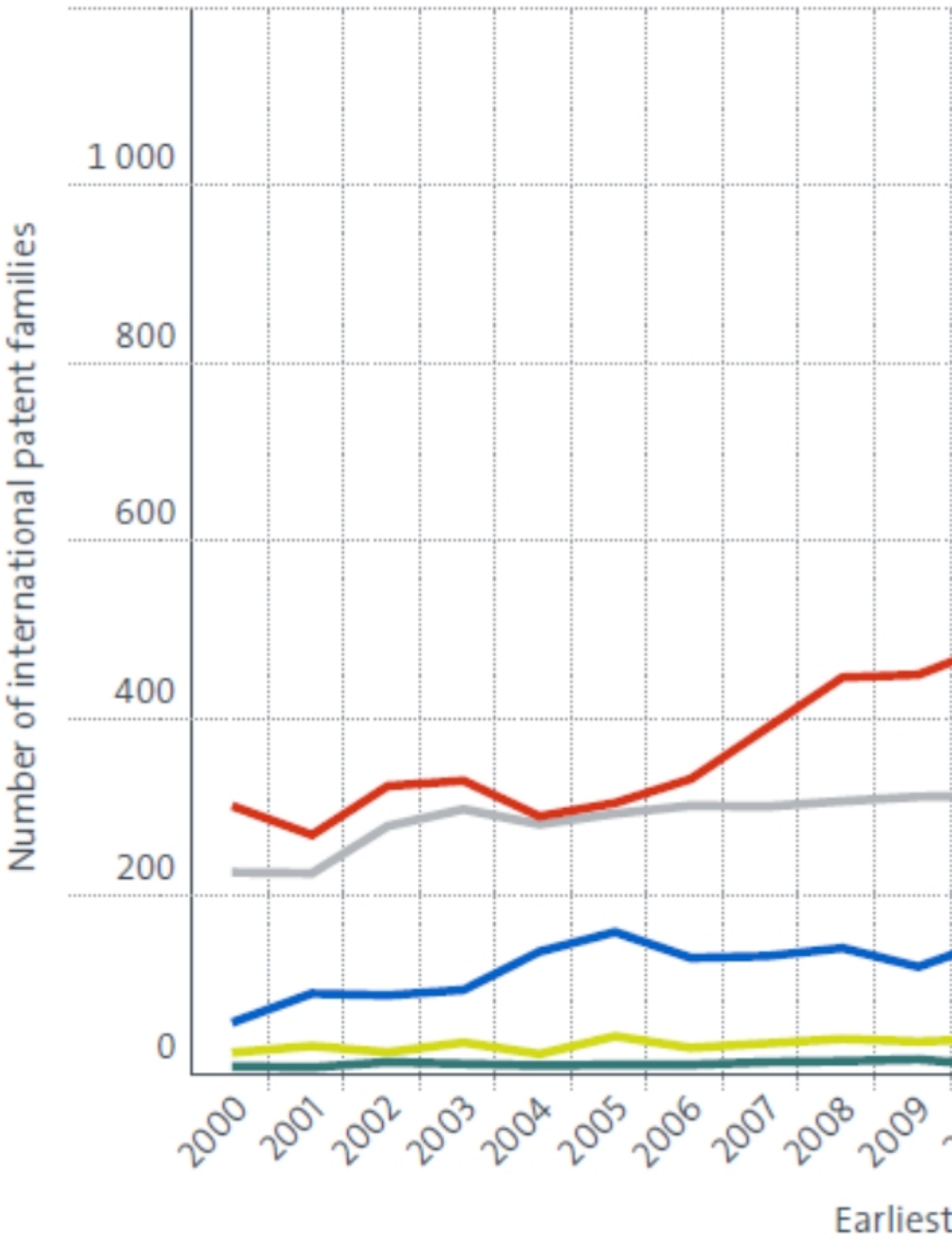
The report identifies:

- 125 European universities active in patenting
- 194 European start-ups contributing to innovation

At the same time, global competition is increasing. Asia shows the fastest growth, with patenting rising by 13.1% per year. Latin America follows with 10.8% annual growth. This confirms that digital agriculture is part of a global technology race.

Figure E.2

Trends in major regions



CAGR = compound annual growth rate

EPO Report, patent growth statistics Figure E.2

Technology areas gaining traction

Open-field plant agriculture is the fastest-growing segment. The number of patent families in this domain has increased sevenfold since 2000. Between 2012 and 2022, growth reached 13% per year.

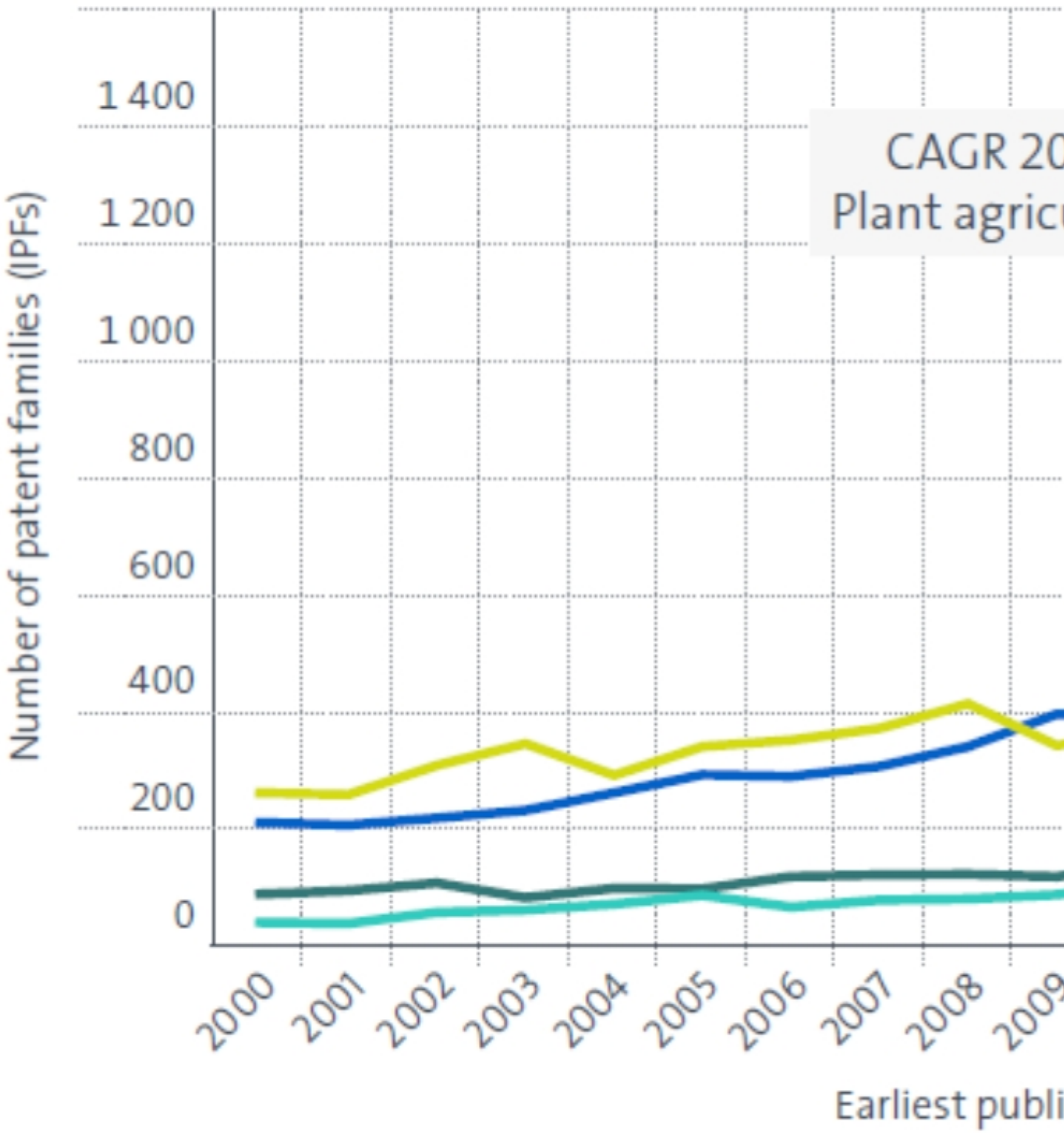
This growth is closely linked to enabling technologies:

- Advanced imaging systems
- Drone-based monitoring
- AI-driven decision tools
- Field robotics

While drones and AI entered the field later, data and AI now show the strongest growth. They have overtaken environmental technologies in international patent filings per year.

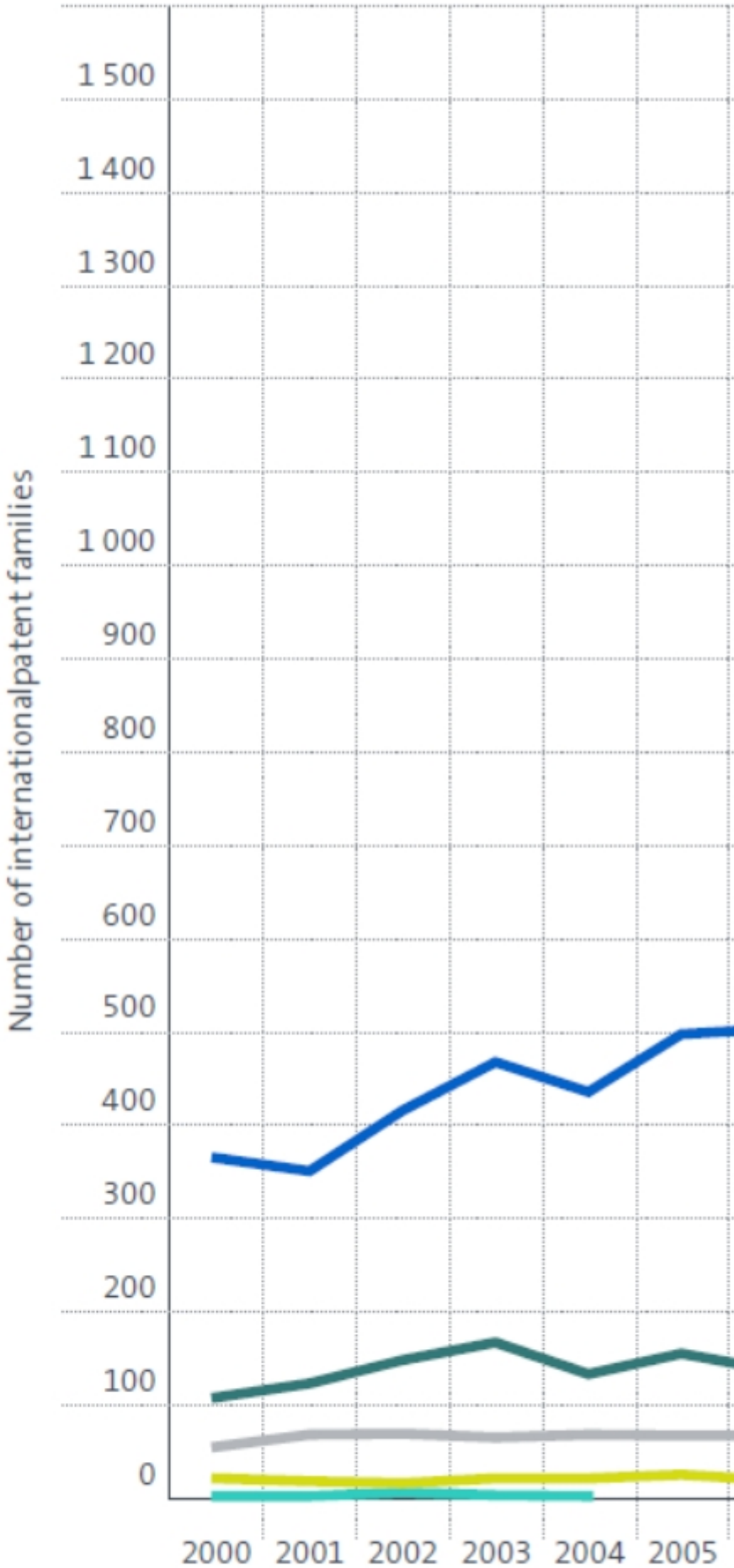
Figure 21

Overview of IPF filings per area cluster



CAGR = compound annual growth rate

EPO Report, patent growth statistics Figure 21


Number of international patent families
1 500
1 400
1 300
1 200
1 100
1 000
900
800
700
600
500
400
300
200
100
0
2000
2001
2002
2003
2004
2005
-1 Imaging and sensing
-2 Data and AI

EPO Report, patent growth statistics Figure 22

Discover the full report

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Summary

Digital agriculture has evolved into a fast-growing industrial technology field. Patent activity has increased sharply since 2012 and is mainly driven by companies. Europe remains strong, but global competition is rising. Growth is strongest in open-field agriculture, supported by AI, data, and automation technologies.

Internal and external links

- Sirris innovation support (to be added)

Do you want to explore how your organisation can innovate in digital agriculture?

Sirris experts and the Patent Cell support you with insights, technology expertise, and guidance tailored to your needs.

Contact us

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