

Presentation on Life Science Business

Aug. 29, 2023

【TSE 4401】



1. Overview of Life Science Business ... P 3
2. Growth Strategy for the Life Science Business ... P 6
3. Synergy of A D E K A × N I H O N N O H Y A K U ... P19

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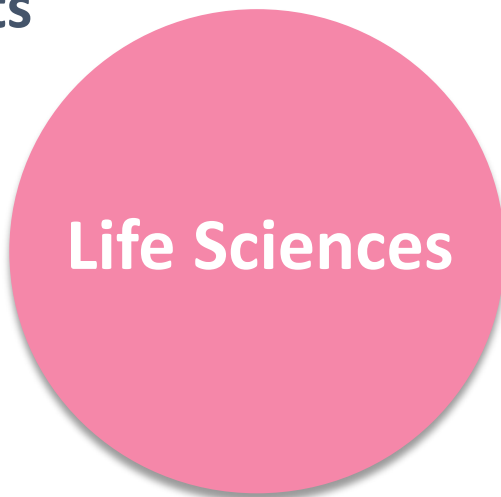
1. Overview of Life Science Business

01 Consolidated Financial Results

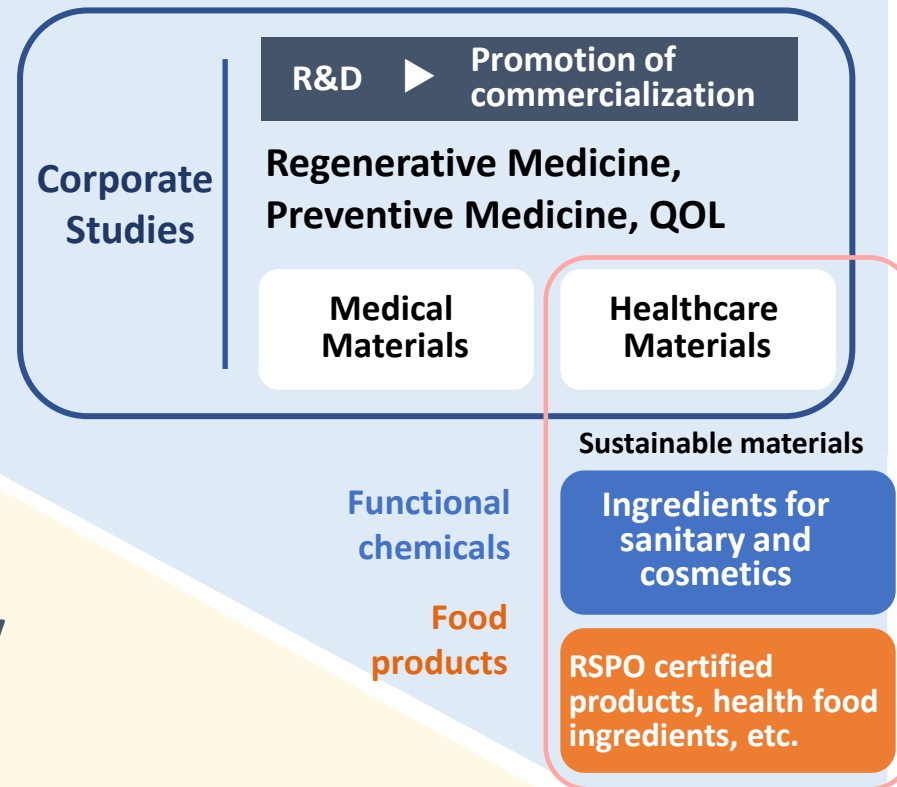
Incorporating N I H O N N O H Y A K U ' s business results

Unit: 100 million yen

	FY2022	YoY
Sales	1,020	+ 27.4 %
Operating Profit	77	+ 62.3 %

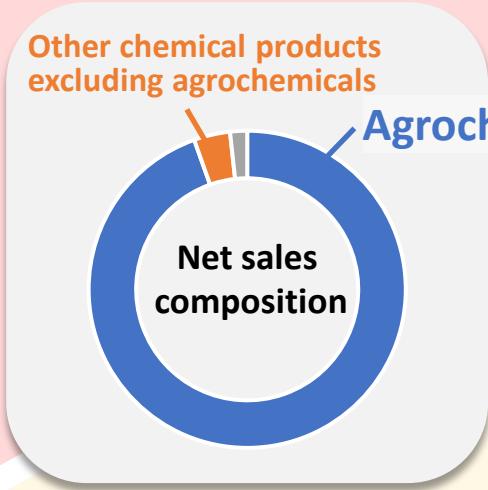


02 A D E K A ' s Life Sciences



03

Efforts to create synergy



NICHINO

1920

FURUKAWA ELECTRIC CO., LTD.

Research and development of agrochemicals started after copper refining by-products became available for use

**ASAHI DENKA K.K.
(A D E K A)**

Commercialization of agrochemicals

1928

**ASAHI DENKA K.K.
(A D E K A)**

Company name change

A D E K A

Merger

Agrochemicals
Dept.

Fujii Seiyaku

90 years
later

◆ **NIHON NOHYAKU as a consolidated subsidiary (TOB+TPA)**

◆ **Enter into a capital and business alliance agreement between the two companies to maximize synergies**

Synergies
for ADEKA

- Acquisition of a range of expertise in the area of life science
- Expansion of sales and profit

Synergies
for NIHON NOHYAKU

- Acquisition of funds and stability of management due to TPA
- Expansion of the agrochemical business, development in emerging countries and consideration of M&A

First manufacturer specializing in agrochemicals in Japan

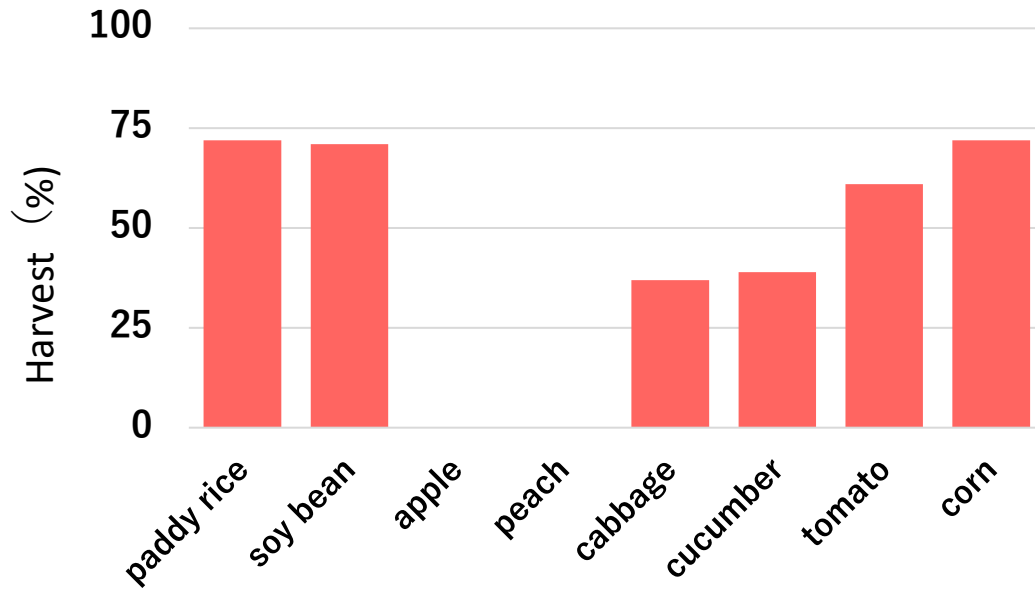
NIHON NOHYAKU CO.,LTD.

Personnel exchange, enhancement of mutually complementary power in the R&D domain, mutual utilization of production technologies and process chemistry, and mutual exchange of organic synthesis technologies with **“chemicals”** as the platform

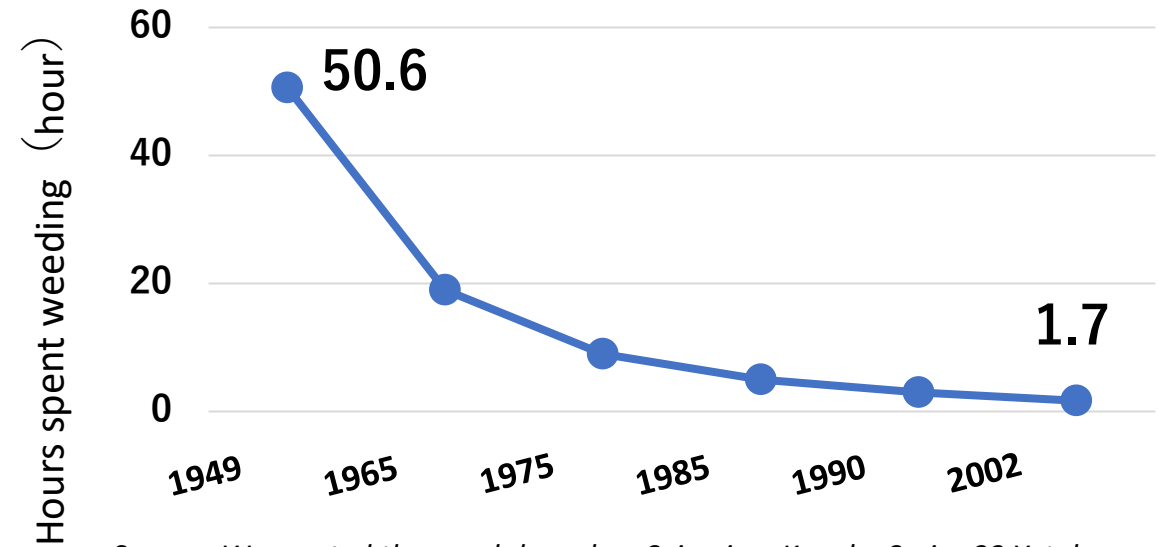
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2. Growth Strategy for the Life Science Business

Harvest without the use of agrochemicals



Time required for weeding in rice fields



Source: We created the graph based on Seimei no Kagaku Series 33 Yutakana Shokuseikatsu (Rich Dietary Life)

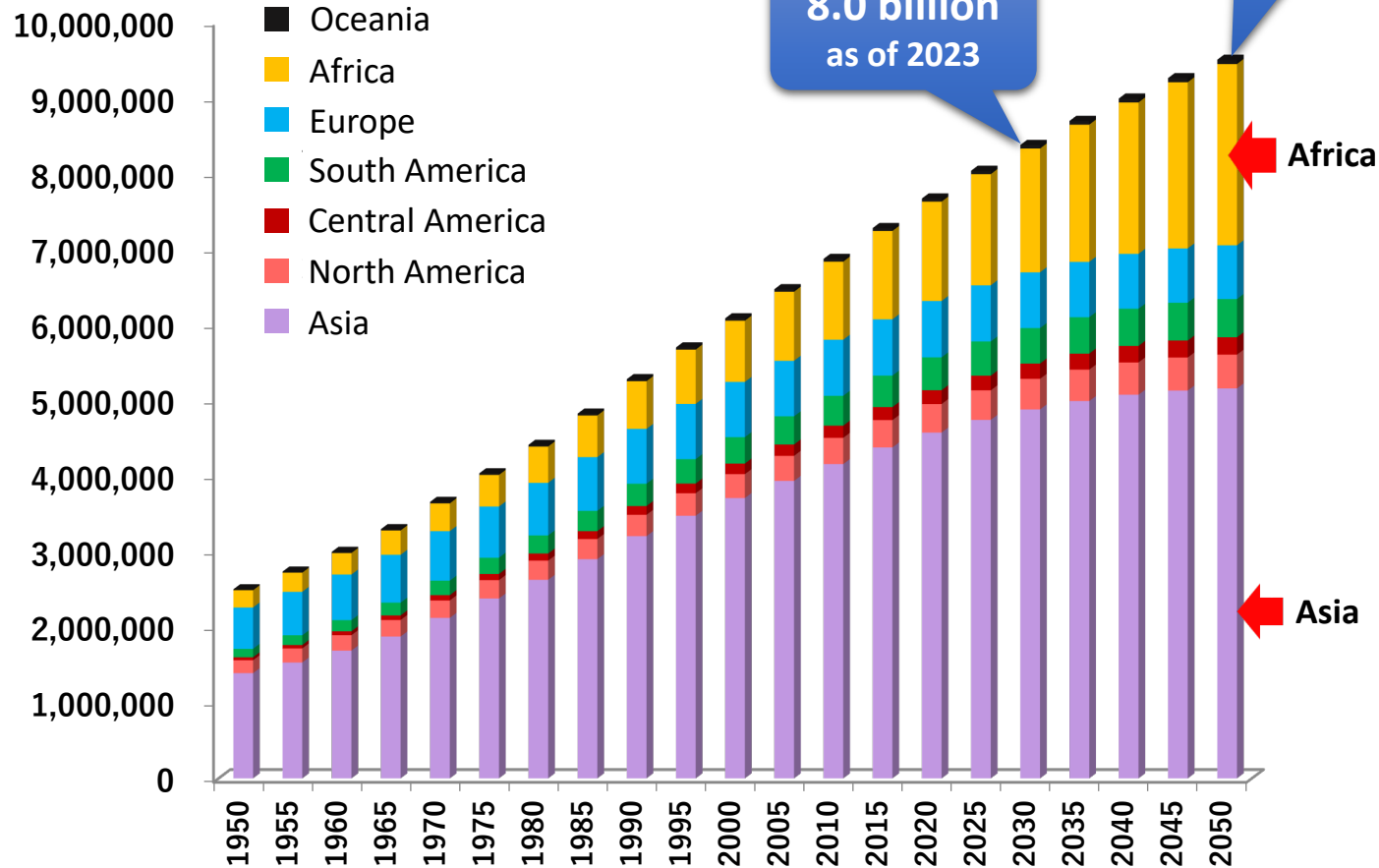
Shortening labor time and reducing burden

Protecting crops

Improving production efficiency

Change in the Global Population and the Rise of Demand for Agrochemical

(Global population : one thousand people)



Global population increase

Necessary Secure and increase production of food supplies

Key point

Efficient production on limited farmland
 Increased use of agrochemicals by
Emerging country
 that previously could not use adequate amounts.

Demand for agrochemicals continues to increase

Source : United Nations Population Division World Population Prospects: The 2017 Revision (arranged)

Formulated in 2021

What we want to be in 2030

In the future

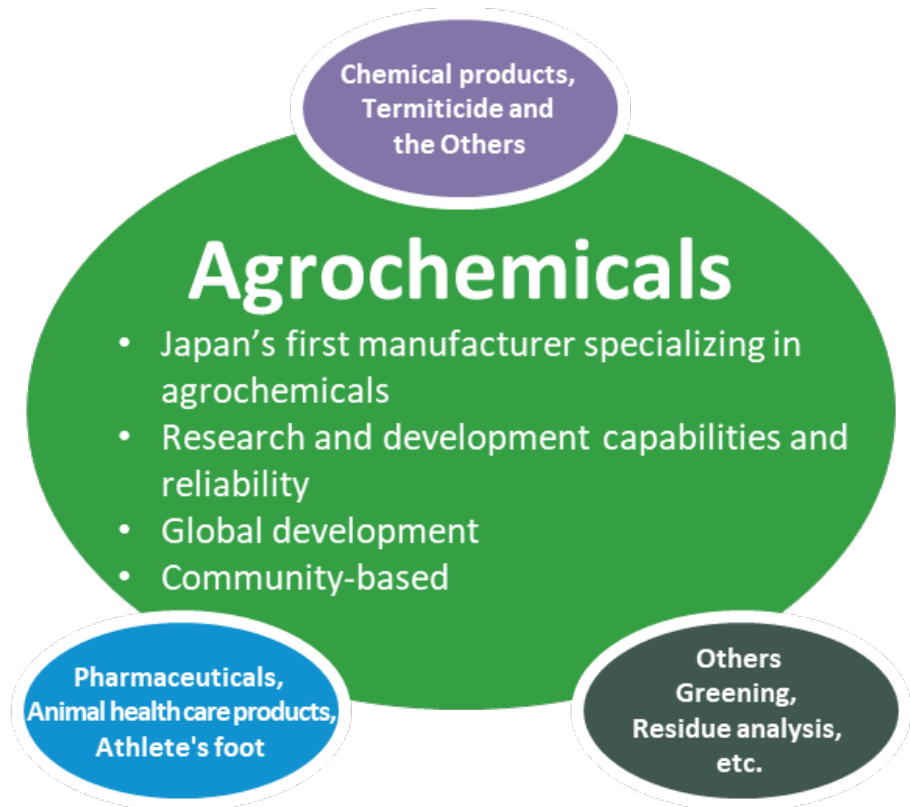


↑ Likely to achieve our goals ahead of schedule

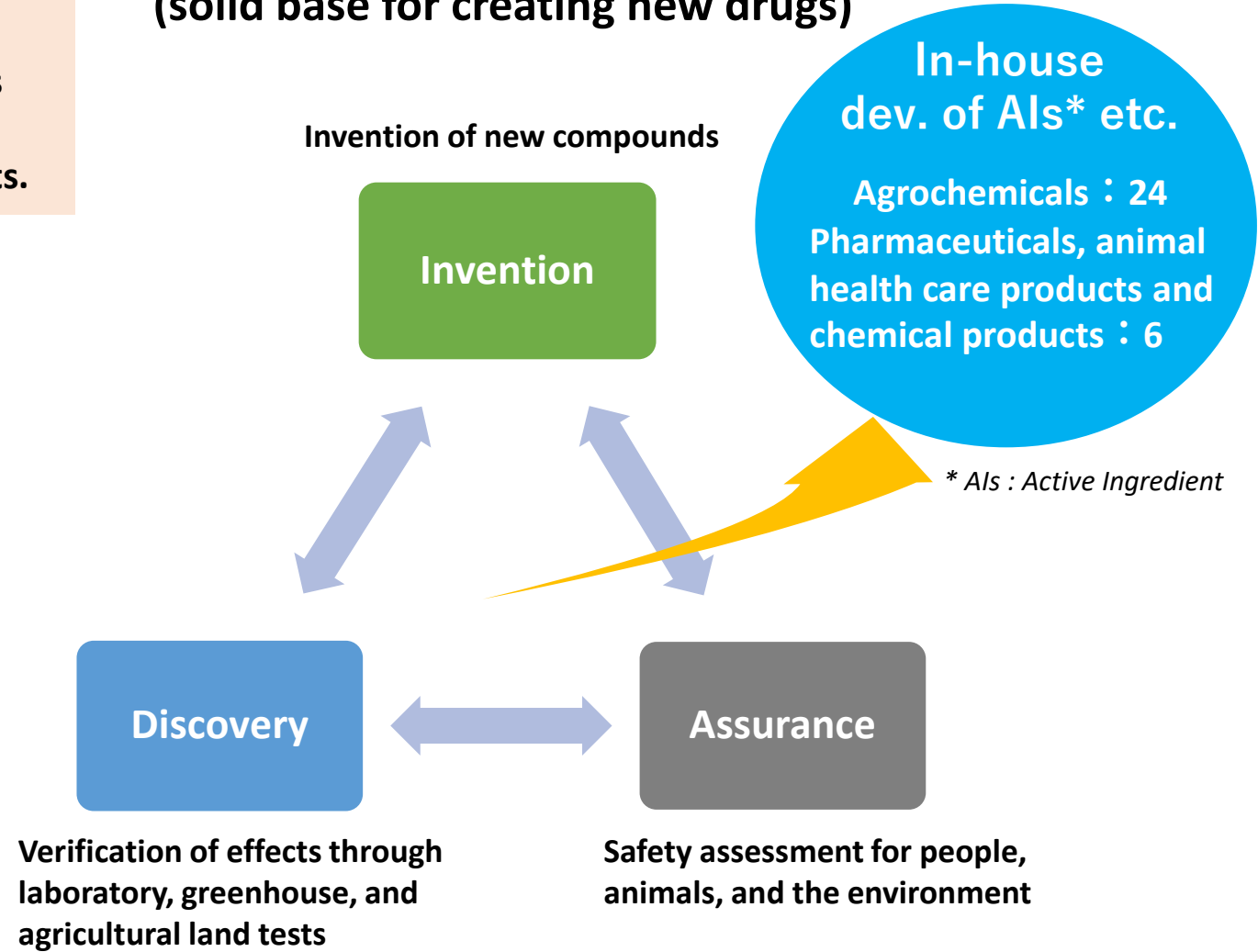
Leveraging the strengths of N I H O N N O H Y A K U Group, and accelerate its growth strategy so that it can achieve OPM 15% or more and net sales of 200 billion yen at an early stage

Main business

With the manufacture and sale of agrochemicals as the core business, N I H O N N O H Y A K U has expanded its business domains to chemical products, pharmaceuticals and animal health care products and provides safe, high-quality products.



Strengths of N I H O N N O H Y A K U (solid base for creating new drugs)



Overview of the agrochemicals market

Japan

Gradually decreasing long-term

- Fewer people engage in businesses involving agrochemicals due to the population aging
- Pressure for the reduction of agricultural material expenses

Our Growth strategy

Maintain and increase profit and influence

Overseas sales ratio

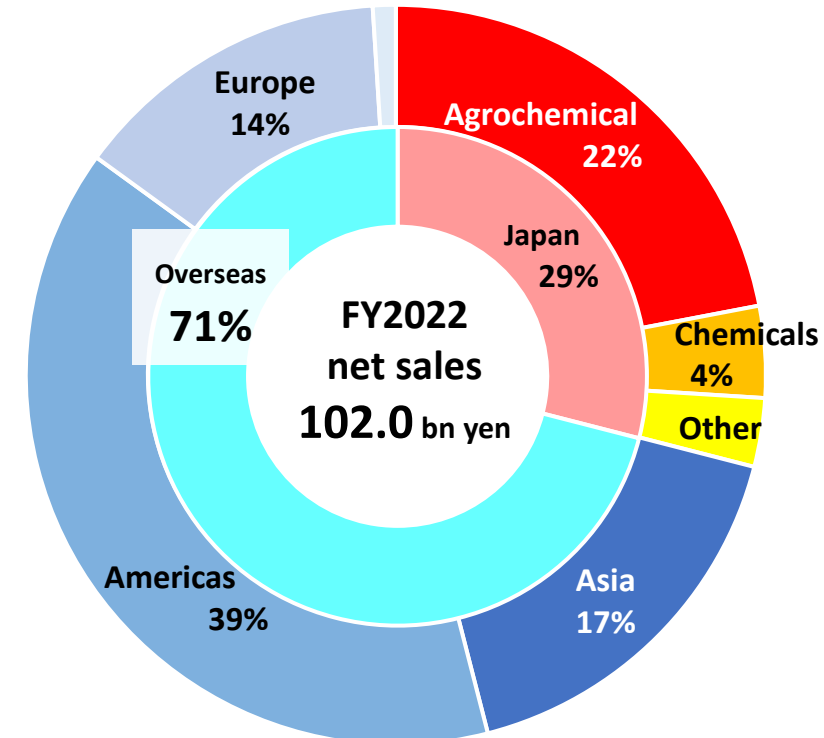
over 70 %

Overseas

Continuing to expand amid rising demand for foodstuffs

- Mergers between major agrochemicals companies and item purchases
- Market for generics and markets in rising nations expand
- Expand into the areas of biopesticides and crop protection materials

Proactive expansion into the overseas market



Operating in-house sites in all of the world's major production areas



- Consolidated/Overseas Subsidiaries
- Overseas manufacturing bases
- Non-consolidated and overseas subsidiaries

Global bases comparison of domestic manufacturers

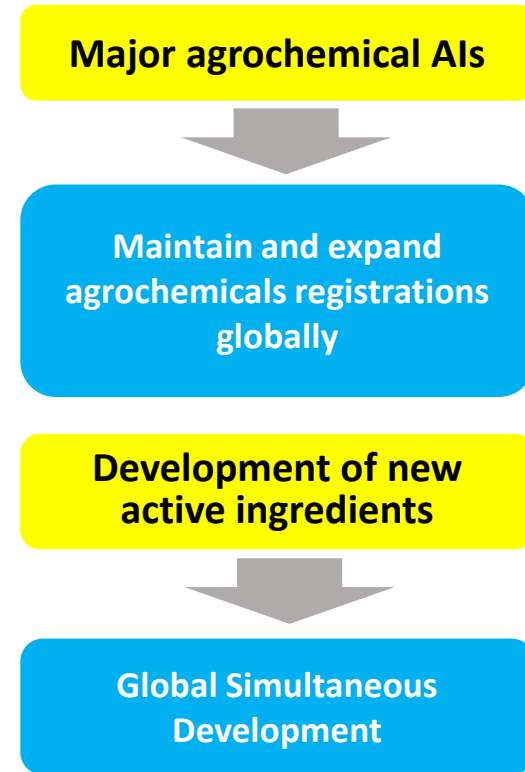
	JPN	IND	NA	BRA	EUR	MEA
Market \$100 million	31	195	127	230	137	28
NIHON NOHYAKU	○	○	○	○	○	
Domestic Company A	○	○	○	○	○	
" B	○	○	○	○	○	
" C	○		○		○	
" D	○	○			○	
" E	○		○		○	

○ Consolidated Subsidiaries

Global Rollout of Major Agrochemical Ingredients (by Region)

⊙ Acquired 90% or more of the planned registrations
 ○ Acquired 30-90% of the planned registrations
 △ Acquired 30% or fewer of the planned registrations
 - No rollout planned










AIs	Applications	JPN	APAC	NA	SA	EUR	MEA
	Market \$100 million	31	195	127	230	137	28
<i>Benzpyrimoxan</i>	Insecticide	⊙	○	-	-	-	-
<i>Flubendiamide</i>	Insecticide	⊙	⊙	-	○	-	○
<i>Buprofezin</i>	Insecticide	⊙	⊙	⊙	⊙	-	○~⊙
<i>Pyrifluquinazon</i>	Insecticide	⊙	○	○	○	-	△
<i>Tolfenpyrad</i>	Insecticide	⊙	○	○	○	-	△~○
<i>Fenpyroximate</i>	Acaricides	⊙	⊙	⊙	⊙	⊙	○
<i>Isoprothiolane</i>	Bactericide	⊙	⊙	-	○	-	-
<i>Flutolanil</i>	Bactericide	⊙	⊙	⊙	⊙	⊙	○
<i>Pyraziflumid</i>	Bactericide	○	△	△	△	△	△
<i>Pyraflufen ethyl</i>	Herbicide	⊙	○	⊙	○	○~⊙	△



*Red text indicates major priority items

Global Rollout of Major Agrochemical Ingredients (by crops)

⊙ Acquired 90% or more of the planned registrations
 ○ Acquired 30-90% of the planned registrations
 △ Acquired 30% or fewer of the planned registrations
 - No rollout planned

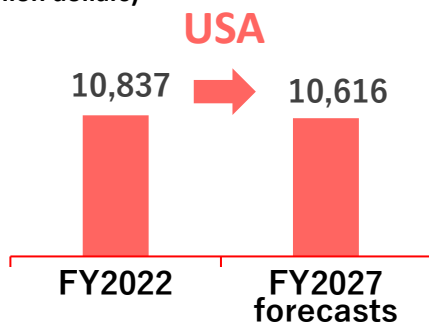
Als	Applications	Large-scale, low-priced market							Small-scale, high-priced markets	
		Paddy rice	Wheat	Soybean	Corn	Cotton	Rapeseed	Potato	Fruit	Vegetable
										
Market \$100 million	63	96	137	89	37	19	18	50	133	
Benzpyrimoxan	Insecticide	○	-	-	-	-	-	-	-	-
Flubendiamide	Insecticide	⊙	-	⊙	⊙	⊙	-	⊙	⊙	○
Buprofezin	Insecticide	⊙	-	-	○	○	-	-	⊙	⊙
pyrifluquinazon	Insecticide	-	-	-	-	○	-	-	○	○
Tolfenpyrad	Insecticide	-	-	-	-	-	-	○	○	⊙
Fenpyroximate	Acaricides	-	-	○	-	-	-	-	⊙	⊙
Isoprothiolane	Bactericide	⊙	-	-	-	-	-	-	○	-
Flutolanil	Bactericide	⊙	-	-	-	-	-	○	-	⊙
Pyraziflumid	Bactericide	-	-	-	-	-	△	-	△	△
Pyraflufen ethyl	Herbicide	-	○	○	○	⊙	○	⊙	○	△

*Red text indicates major priority items

North America (America)

Market size and growth potential

(Million dollars)



Major Crop

Soybean, Corn, Cotton



Cultivation scale

Large

Business partner image

Mainly nationwide wholesalers

Farmer size

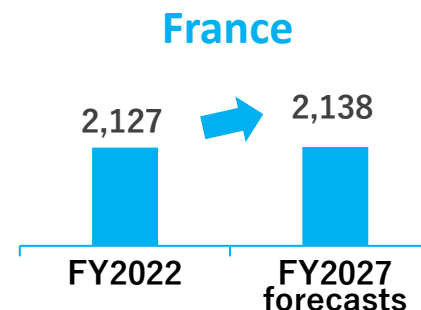
Large ~ Medium

- Deeply cultivate **market for fruits, vegetables, etc.** mainly with self-developed products
- Add more items by dealing in items from other Japan-affiliated companies

Europe (all of Europe)

Market size and growth potential

(Million dollars)



Major Crop

Wheat, Barley, Potato, Fruit and vegetable



Cultivation scale

Large ~ Small

Business partner image

A few companies per country

Farmer size

Large ~ Medium

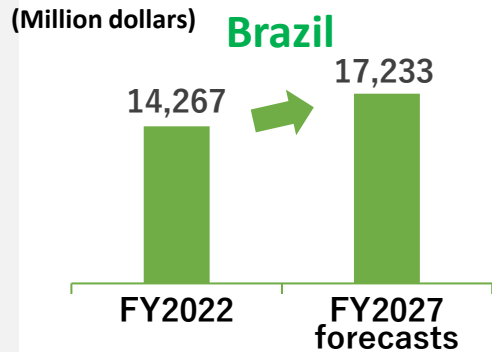
- Deepen the cultivation of fruit, potato and other vegetable, etc. markets mainly leveraging self-developed products
- Strengthen efforts in **non-chemical agrochemicals** to address the tightened regulation of agrochemicals

[FY2022 results](#) ▶ [Acquired Interagro \(UK\) Ltd.](#)

Sales Strategies by Region ②

South America (Brazil)

Market size and growth potential



Major Crop

Soybean, Corn, **Vegetable**



Cultivation scale

Large

Business partner image

Wholesalers, agricultural cooperatives and farmers

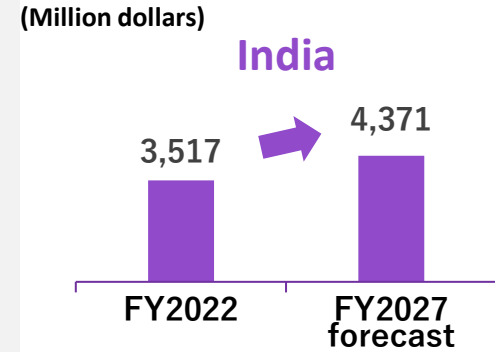
Farmer size

Large ~ Medium

- **Package sales** to farmers and wholesalers by crop
- **Increase product items with a focus on generics** from the JV partner (Sipcam Nichino Brasil S.A.)
- Increase sales to large farms, wholesalers and agricultural cooperatives

Asia (India)

Market size and growth potential



Major Crop

Paddy rice, Fruit, **Vegetable**



Cultivation scale

Medium ~ Small

Business partner image

Small and medium-sized wholesalers and retailers

Farmer size

Small

- Secure an extensive product lineup that also includes generics
- Increase profitability by introducing self-developed products and encouraging people to switch from generics
- **Manufacture ingredients in-house through capital investment**

Sales target of new insecticides for paddy rice in India

New insecticides for paddy rice “Benzpyrimoxane (BPX)” *trade name : orchestra

Peak sales Target of 6 billion yen
Share of planthopper control agents 40%

Sales Results	Plan
2022 BPX single agent 80,000 ha ¥230mn	2023 BPX single agent 230,000 ha ¥700mn

STEP1
2024~25
BPX compound agents
550,000 ha
¥1.5bn

STEP2
2028~29
Expand of lineup of BPX compound agents
1.5m ha
¥4.0bn

Sales Target
2030 and beyond
Expand of BPX business
2.0m ha
¥6.0bn



1. Control planthoppers, one of the most critical pests for rice farmers, and contribute to Indian farmers and food production in India.
2. Use benzpyrimoxan as opportunity to grow Nichino India (NIN) from a small southern Indian company into a medium to large scale company with enhanced marketing capabilities covering all of India.
3. Active ingredients and products locally produced in India (Make-in-India)
4. An Eco-harmonized product with high interspecific selectivity and no effect on natural enemies and useful insects.

Overview of capital investment at NICHINO INDIA

Establishment and operation of the fourth multipass plant (Humnabad plant)

- In addition to *benzpyrimoxane*, it can also be used for manufacturing other AIs

Investment mount	Completion of plant	Quantities available for production(AI)
Approximately 1 billion yen	April 2023	200t/year



Completion ceremony held in April 2023



The fourth multiPass Plant (exterior)

Enhancing the production capacity of AIs

- Increase production and reduce costs through production in India of the company's own AIs
- Plans to further increase facilities to expand production items

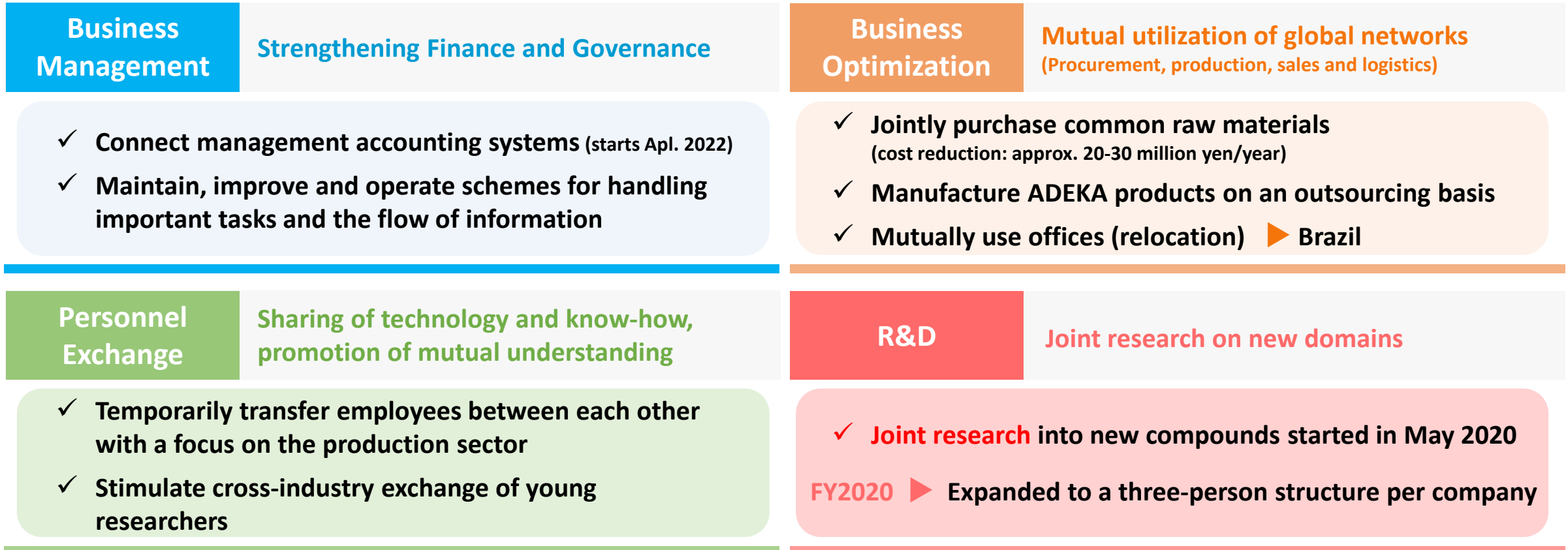
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3. Synergy of A D E K A × N I H O N N O H Y A K U

Four Quadrants of the Pursuit of Synergy

Capital and business alliance agreement signed in 2018

→ Complementing business areas and pursuing synergies through technological collaboration, etc.



The greatest synergy

Creation of new results by combining the two companies' technologies

A D E K A – N I H O N N O H Y A K U Junior Colleagues' Society

purpose	<ol style="list-style-type: none">① Develop human resources through cross-industry exchange② Facilitate the evolution of both companies' research technologies		
Contents	 <p>Business Introduction</p>	 <p>Laboratory Tour</p>	 <p>Cooperative Research</p>



< Feedback from participants >



I keenly felt a lack of motivation to take action voluntarily.
This is a good opportunity for me to change my mindset for actions.

I'd like to continue to exchange information.

Learned about their high awareness of safety.

Despite differences in the fields of research, hopefully this will lead to the creation of new research subjects !



The society has added “the creation of seeds of ideas for new research subjects” to its mission and keeps going forward.



Develops *SOZAI* using basic technologies based on existing chemicals
**SOZAI* = Our Excellent Value : Products, Technologies and Services

Interface control

Polymer functionalization

Stabilization

Polymer Additives

Functional chemicals

Emulsification

Optical characteristic control

High purification

Food products

Electronics and IT materials



Uses many different forms of synthesis to create compounds that do not exist in the world

Synthesis research

Formula research

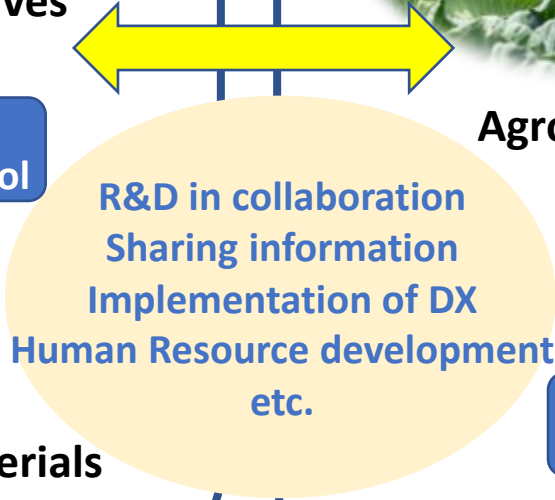
Process chemical research

Agrochemicals

Safety research

Pharmaceutical research

Chemicals/Pharmaceuticals/
Animal health products



Expanding ADEKA Group's Life Science Business

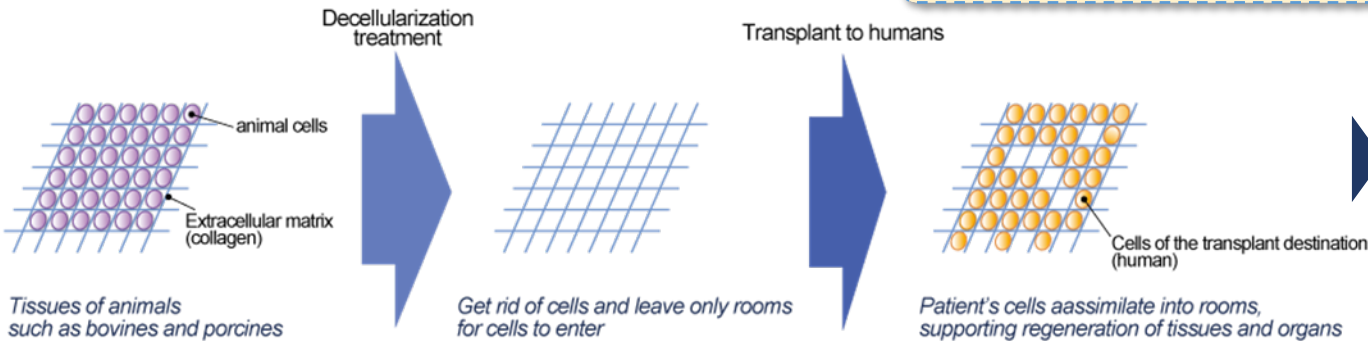
ADEKA

Regenerative Medicine

- Decellularized tissue
Animal (e.g. cows, pigs)-derived heterogeneous grafts

Our Contribution :
Developing safe and high-quality "scaffold" materials

2019 : Acquisition of ISO13485 certification



Preventive Medicine, QOL

New ingredients for cosmetics, health foods, pharmaceutical raw materials, etc.



Fermentative production and enzyme application technology

Extract and evaluate

Heart and blood vessels, cosmetic surgery, Tissue reconstruction, etc.

Creating synergies

Cosmetics, fragrances and environmental cleanup

Health aids

Bio pesticides
Biostimulants
High value-added crops

Animal health products (pets)

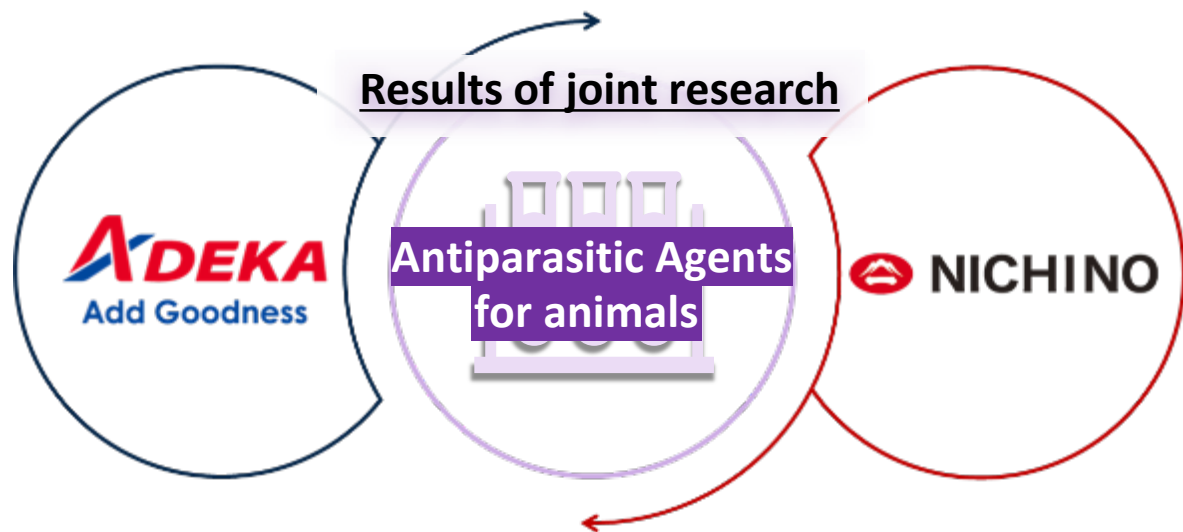
▶ P24-26

Knowledge and know-how related to licensing business

NIHON NOHYAKU

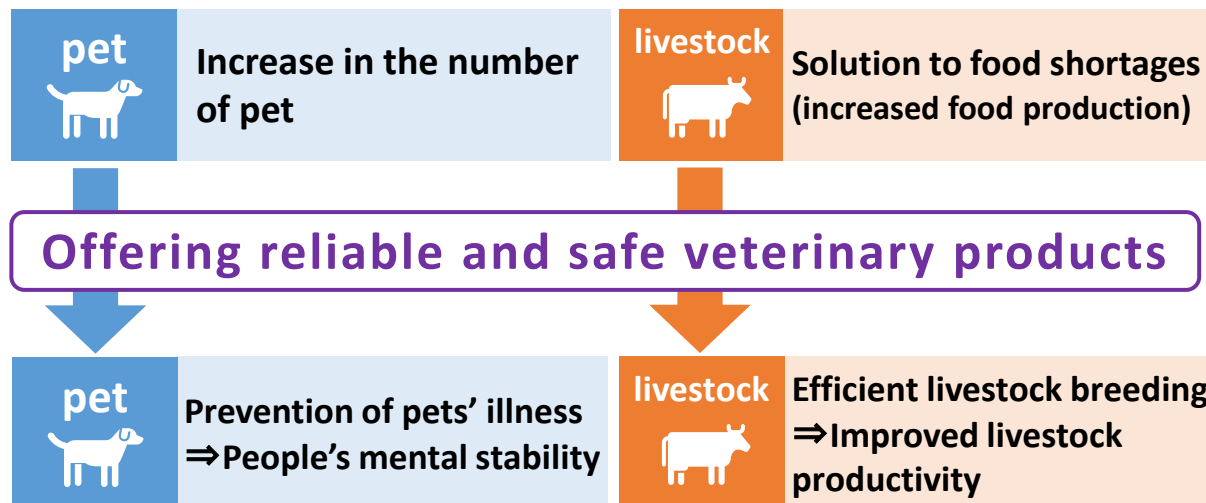
- Agrochemicals
- Pharmaceuticals
- Animal health products (livestock)

Efforts to develop Animal health products



Search for compounds with potential as antiparasitic agents
⇒ Four patent applications have been internationally published by the World Intellectual Property Organization (WIPO)

social value



economic value



Consider apparent resistance to existing products and continued market growth to be business opportunities and seek to create products

Technologies

■ ADEKA ■ NIHON NOHYAKU

Organic synthesis

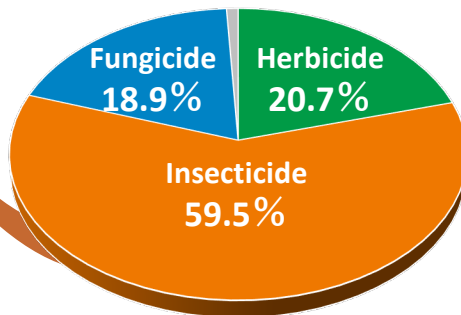
Research of insecticides

Coordination of chemistry, biology and safety

Antiparasitic Agents*

Net sales of Nihon Nohyaku's crop protection materials(2022)

713 million dollars



*Many of the existing antiparasitic agents are derived from agricultural insecticides

Target

animal

pet



livestock



Parasite

Endo-parasites*

Ecto-parasites

*The international patent applications published on July 6, 2023 is for endoparasites.

Supply chain

Animal health

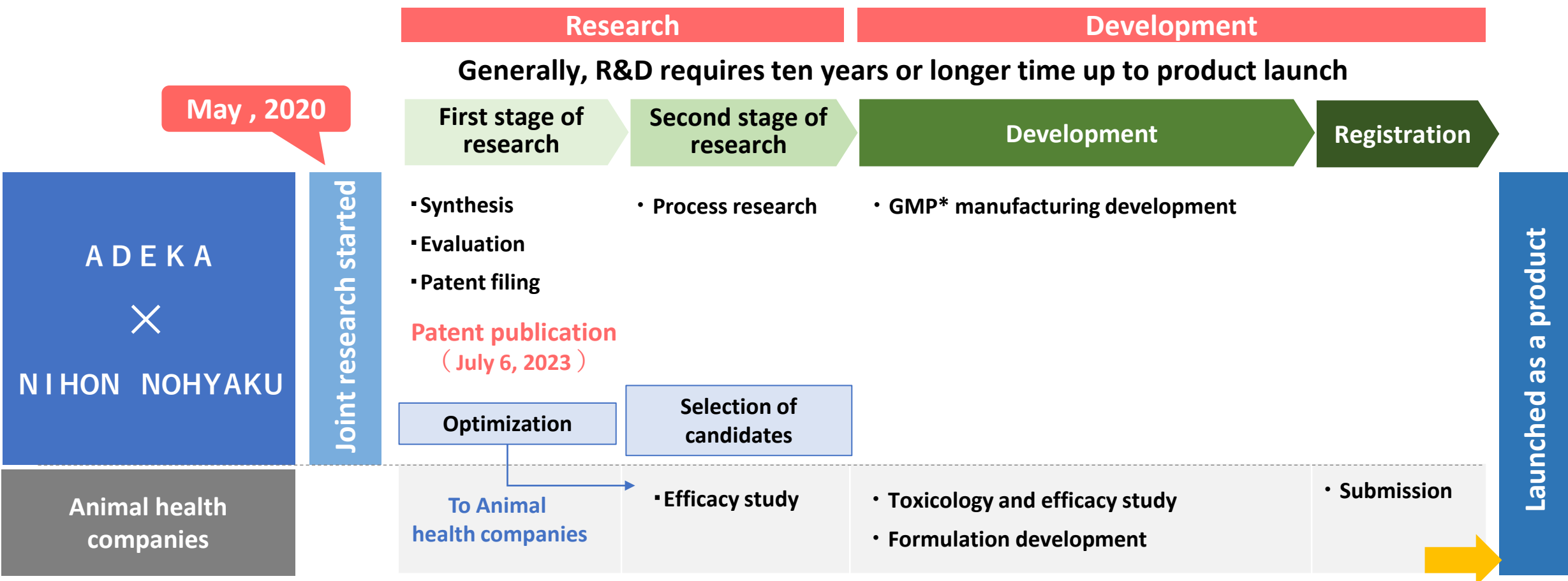
Active pharmaceutical ingredients

Domestic and global

Animal health companies (formulation product)

Market (animal hospital, commercially supplied etc.)

Development Scheme and Schedule



Strengthen joint research structure for animal health and Accelerate R&D in pursuit of the continued increase of our pipelines.

* GMP (Good Manufacturing Practice) : Standards for manufacturing management and quality management that manufacturers (including foreign manufacturers) and the businesses manufacturing and selling products are required to obey

The logo features a stylized letter 'A' on the left, composed of a red upper half and a blue lower half. To the right of the 'A' is the word 'DEKA' in a bold, red, italicized sans-serif font. The entire logo is set against a light beige rectangular background.

ADEKA

Add Goodness

APPENDIX



What are agrochemical?

Means fungicides, insecticides and other chemicals (including substances specified by Cabinet Order among those in which the chemicals formulated as their materials or ingredients) to be used for controlling bacteria, fungi, nematodes, mites, insects, rats, or other animals, plants or viruses (hereinafter referred to collectively as “pests”) that harm crops (including trees, and agricultural and forestry products; hereinafter referred to as “crops, etc.”), and growth stimulants, germination inhibitors and other chemicals that are used for enhancing or inhibiting the physiology of crops, etc.

→ **Chemicals that are used for the management of the cultivation of crops, etc.**
(e.g. insecticides, herbicides, rat poison, plant growth regulators)

※Excerpted from the Agricultural Chemicals Regulation Act

Fungicide

An agent used to kill pathogenic or harmful microorganisms.

Fungicides include pharmaceuticals, agrochemicals and industrial products. Fungicides in agrochemicals are agents used to kill microorganisms that are pathogenic to plants or inhibit their growth.

Because fungi generally do harm to crops more often than bacteria, they are often collectively referred to in English as *Fungicides* (fungicides and fungicide).

Insecticide

It is an agent used to kill (exterminate) pests (animals, including insects) that are harmful to humans and crops.

In a broad sense, it also includes acaricides (Acaricide, Miticide) and nematicides (Nematicide). Insecticides include ovicides, larvicides, pupicides, and adulticides, with larvicides and adulticides being the most commonly used.

Herbicide

It is a agrochemical used to kill plants (weeds)

There are two types of herbicides: nonselective herbicides that kill all plants they come in contact with and selective herbicides that kill targeted plant species. Plant-killing mechanisms can be divided into three categories: those that inhibit photosynthesis, those that disrupt plant hormones, and those that inhibit plant-specific amino acid biosynthesis.

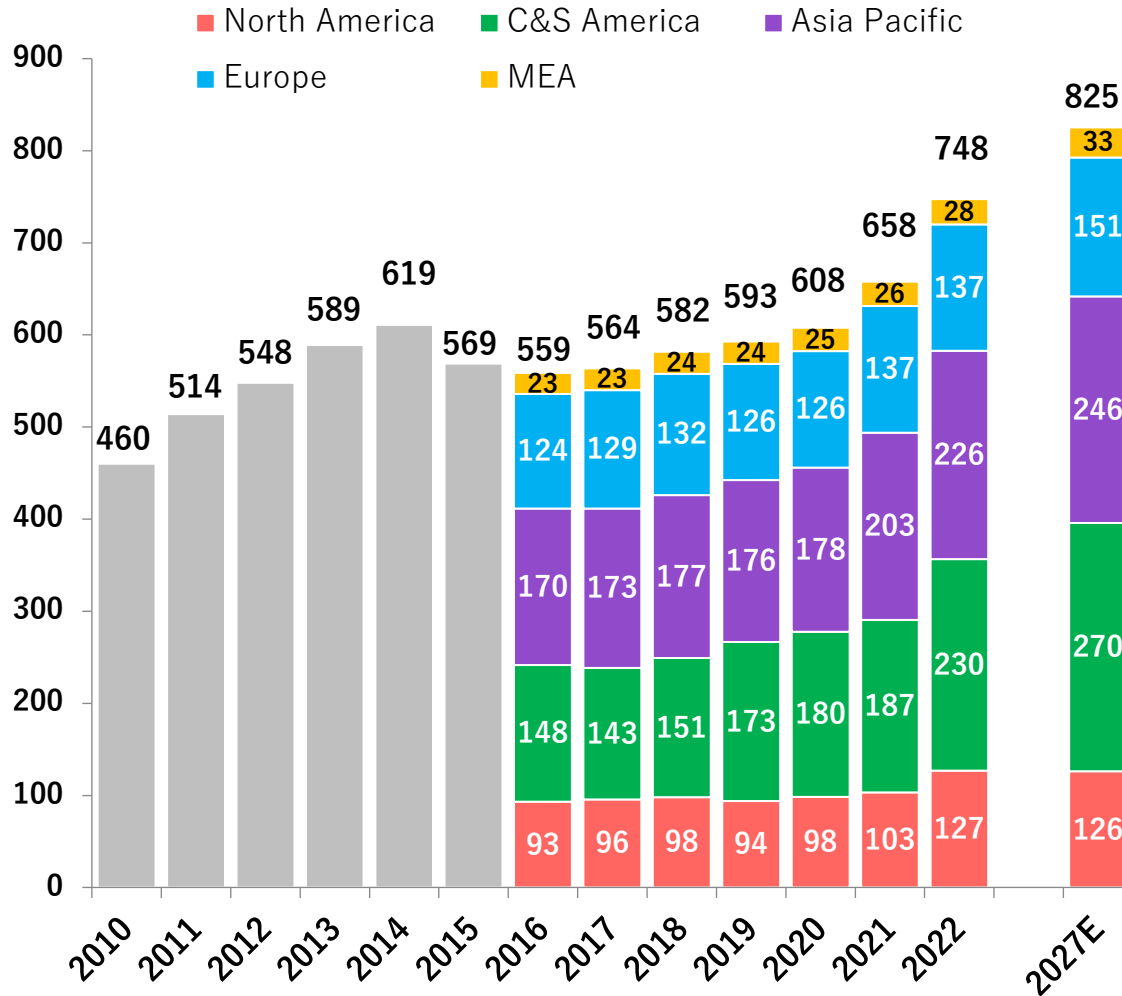
*Fungicides, insecticides, and herbicides (Created by ADEKA CORP. with reference to the Japanese page of Wikipedia)

Global agrochemical market (by Region and by Country)

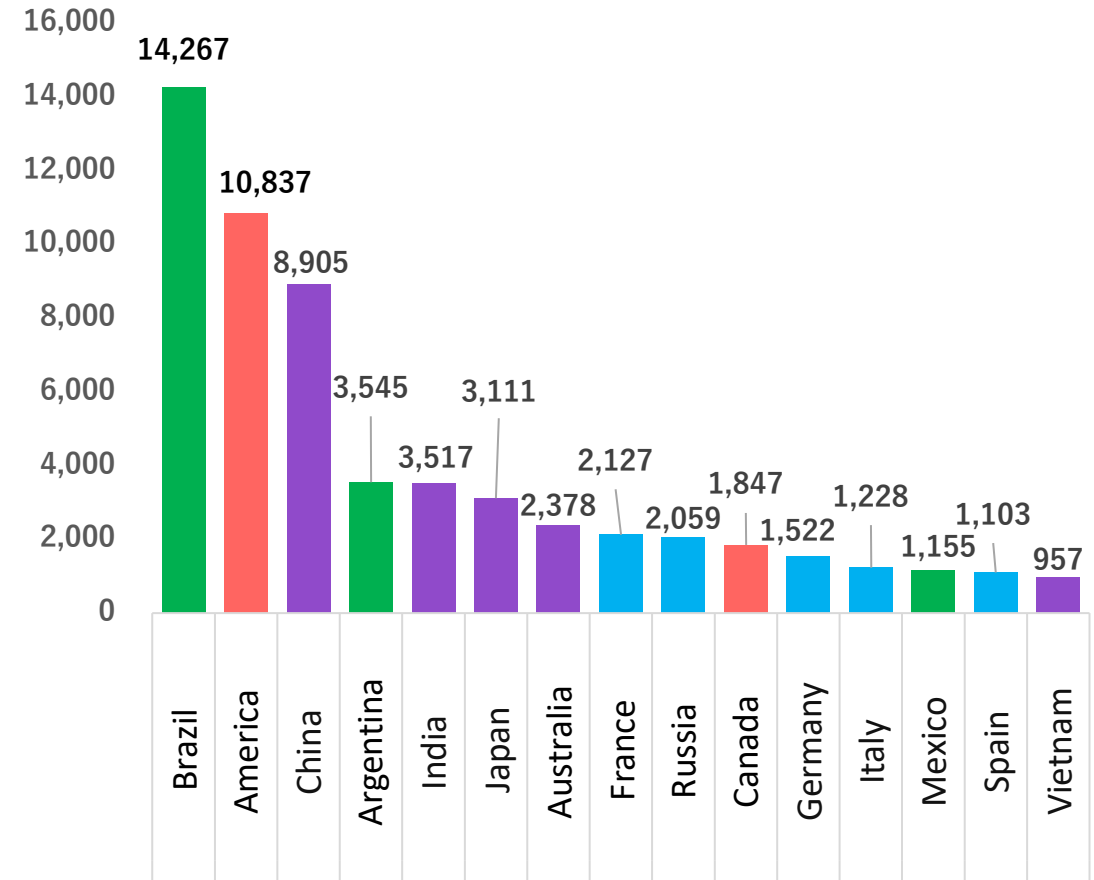
by Region

by Country

(100 million dollars)



(million dollars)



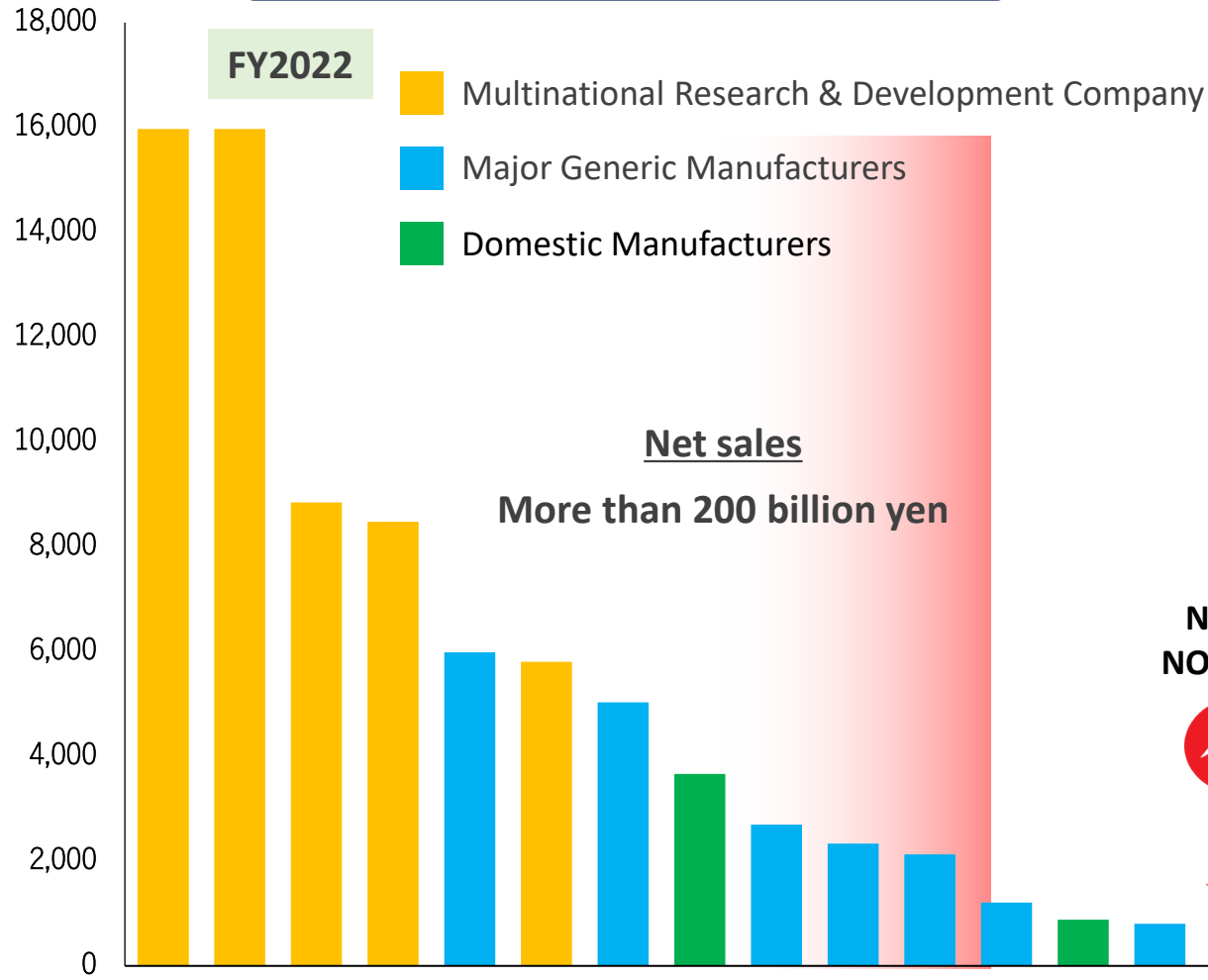
Source : AgbiInvestor

Source : AgbiInvestor

Global agrochemical market (by Major Agrochemicals Company and by Crop)

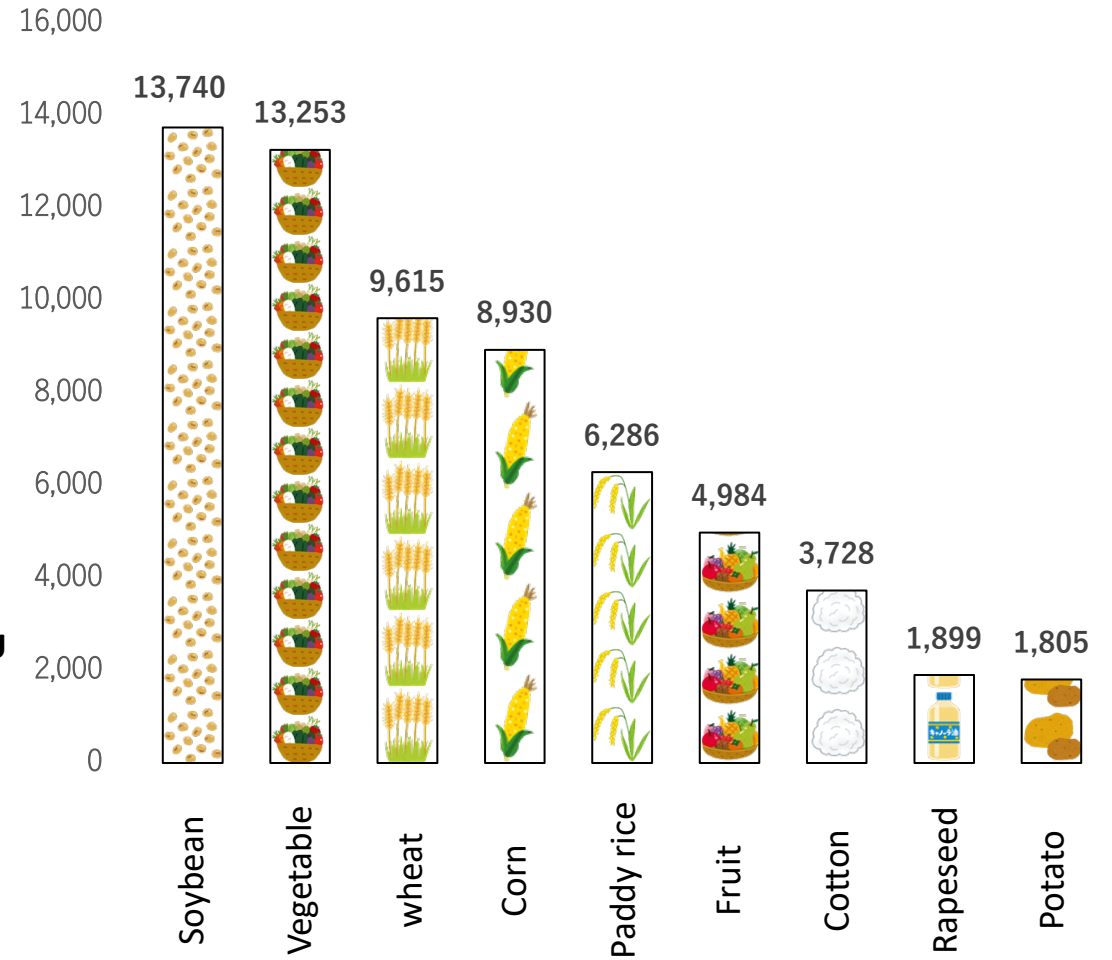
(million dollars)

by Major Agrochemicals Company



(million dollars)

by Crop



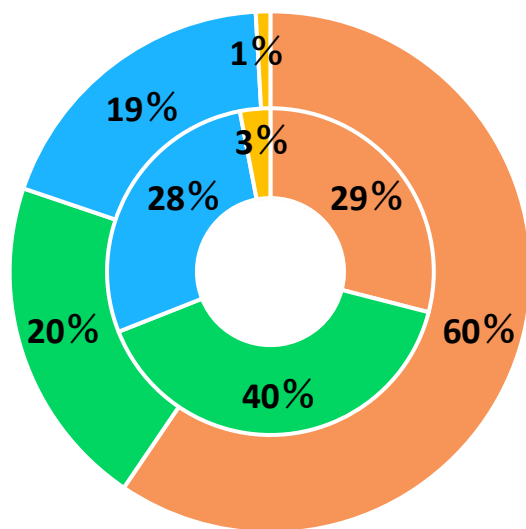
Source : AgbioInvestor

Source : AgbioInvestor

Composition ratio of net sales (NIHON NOHYAKU)

Global agrochemicals market and net sales of NIHON NOHYAKU (Sprit by Segments , CY2022)

Inside: Global agrochemical market
Outside: Results of NIHON NOHYAKU

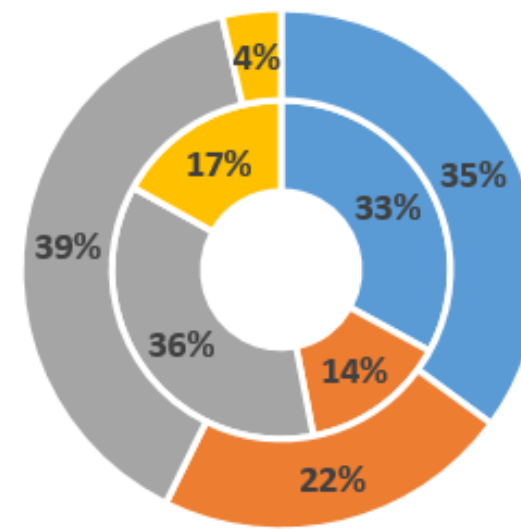


■ Insecticide ■ Herbicide ■ Fungicide ■ others

Source: AgbioInvestor

JAPAN agrochemicals market and net sales of NIHON NOHYAKU (Sprit by Crop , Agricultural year 2022)

Inside: JAPAN agrochemical market
Outside: Results of NIHON NOHYAKU

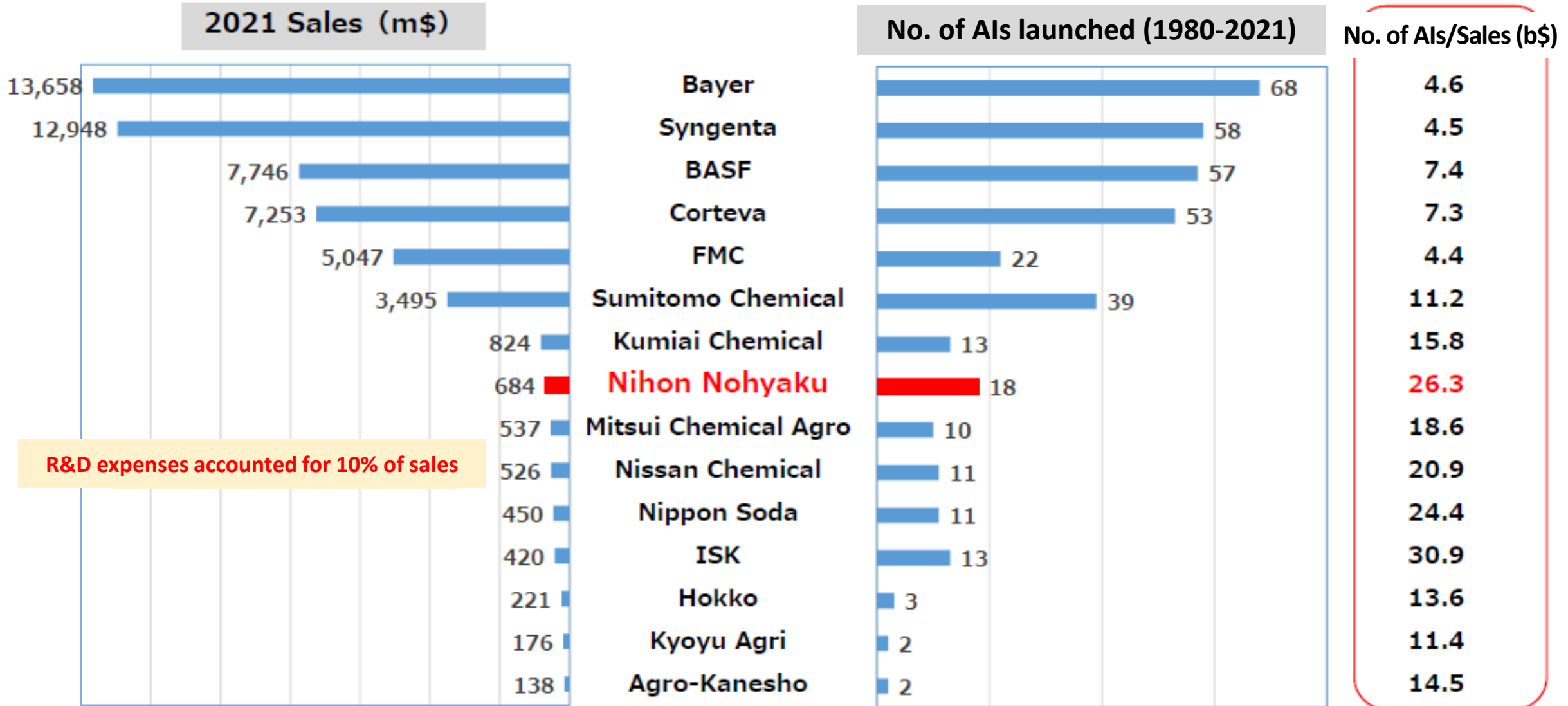


■ Rice ■ Fruit ■ Vegetable, Row crops ■ Other

(*)2021/10~22/9

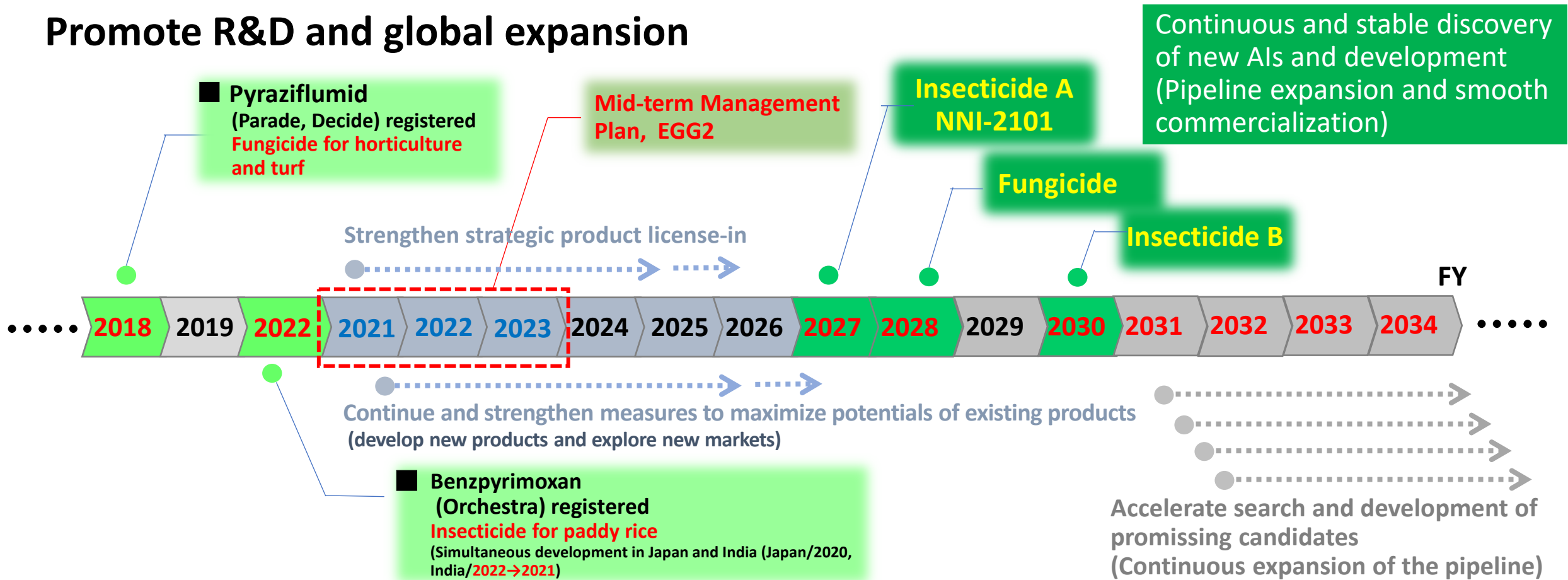
Source: Japan Crop Protection Association

Sales value of global agrochemical companies & No. of newly developed AIs



Source: Agbioinvestor 2023 and NIHON NOHYAKU creation from the Agbioinvestor database

Promote R&D and global expansion



- Steady progress in expanding pipeline compounds amid increasing difficulty in discovery of new AIs
- Steadily commercialize new products through strategic R&D investment (approximately 10% of net sales)
- Strengthen global registration and development capabilities by collaboration among group companies

Sales Strategy by Major Crop

(million dollars)

Sizes of major crops' markets

Nihon Nohyaku's major operating regions

- India
- Brazil
- Europe
- North America
- Japan

Focus regions for future sales increase

Regions that Nihon Nohyaku is good at operating in

