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# Slide Materials on Genetically Modified (GM) Crops



**バイテク情報普及会**  
COUNCIL FOR BIOTECHNOLOGY INFORMATION JAPAN

Genetic modification technologies are developing possibilities for contributing to people's everyday lives.

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# Contributions and Potential of Genetically Modified Crops (1)

## Stable Supply of Food

### Contributions of GM crops that have been cultivated to date

### GM crops under development



Herbicide-tolerant Crops



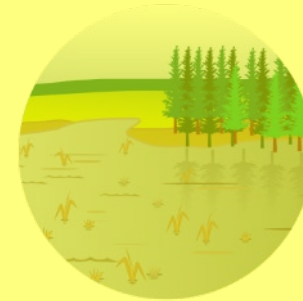
Disease-resistant Crops



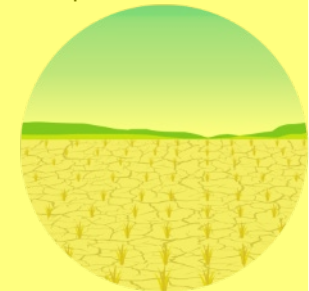
Insect-resistant Crops



Drought-tolerant Crops



Flood-resistant Crops



Salt-resistant Crops

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A stabilized harvest and secondary cropping allow:

- An increase in yield of **20%** or more, compared to non-GM crops<sup>1</sup>
- An annual yield growth effect equivalent to **23 million ha** of agricultural land worldwide<sup>2</sup>

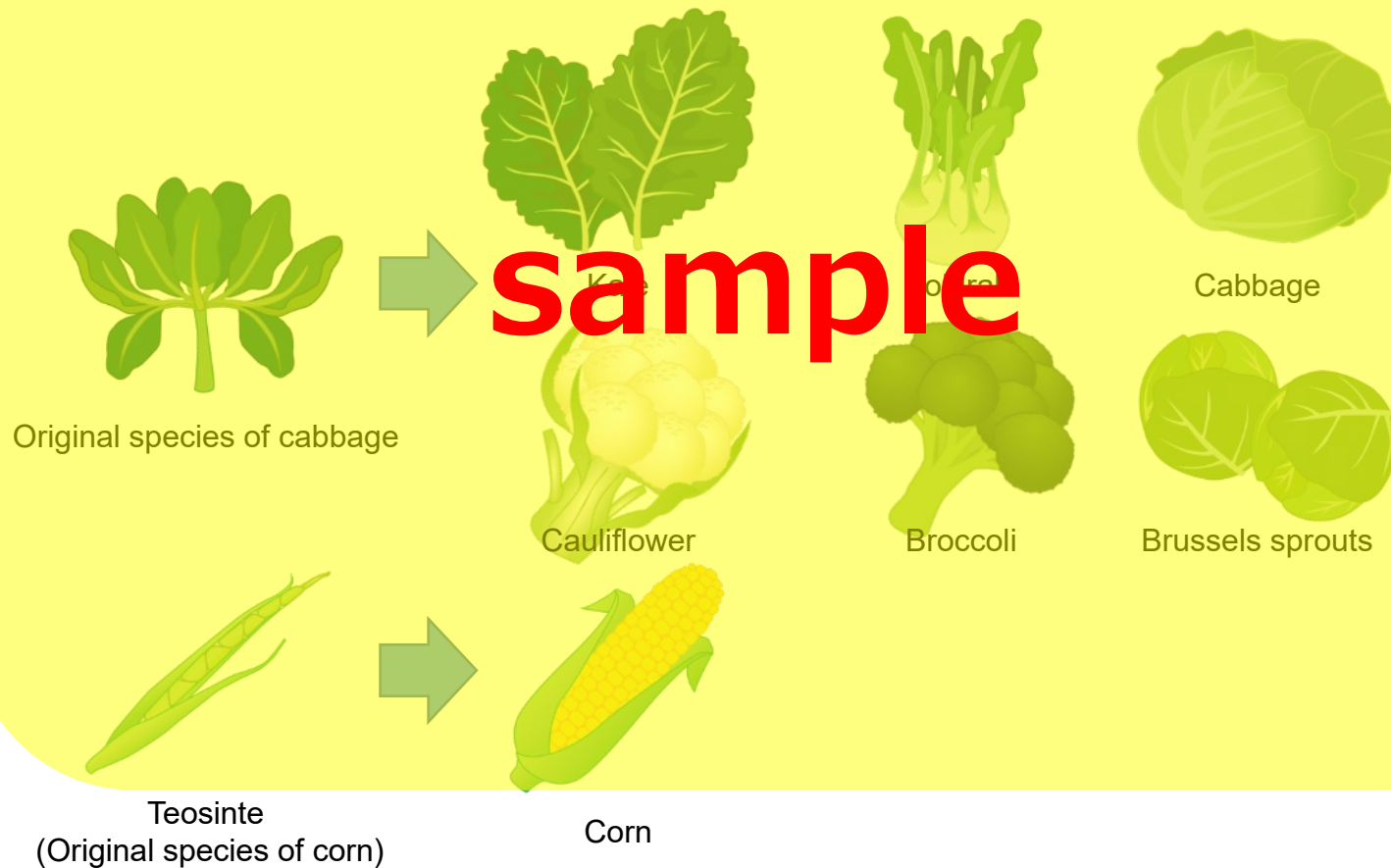
Expected to ease the impact of climate change on harvests

1. Klümper and Qaim (2014) A Meta-Analysis of the Impacts of Genetically Modified Crops. PLoS ONE 9(11).
2. Graham Brookes (2022) Farm income and production impacts from the use of genetically modified (GM) crop technology 1996-2020 DOI:10.1080/21645698.2022.2105626

# Wild and Cultivated Species

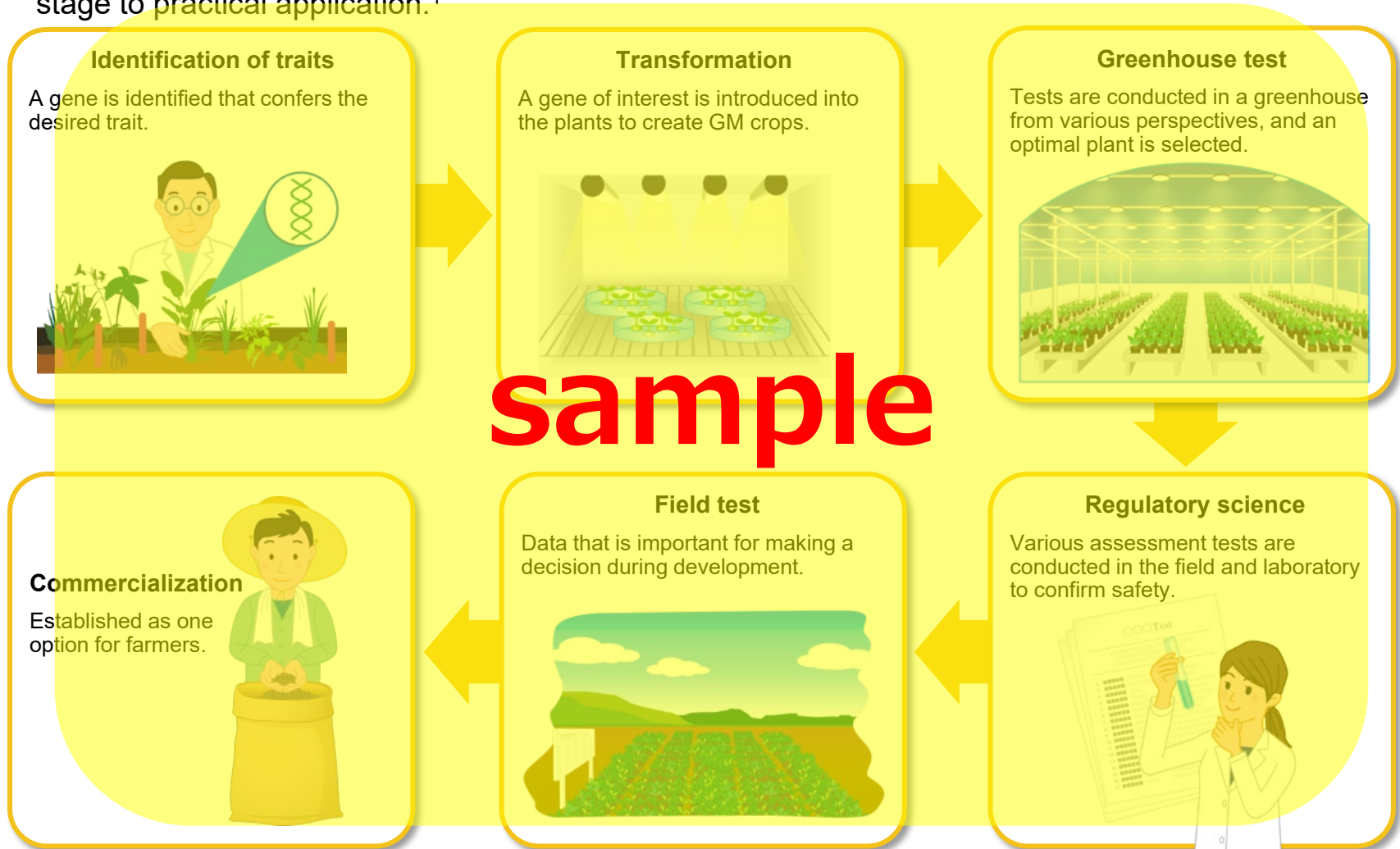
The agricultural products we consume have not always had their current appearances and tastes.

In order to survive in a harsh natural environment, a wild species may possess an uneven growth period, have seeds covered with a thick seed coat or thorns, or contain harmful components. Since humans began selecting wild species and farming, selective breeding has been repeatedly performed over a long period of time, resulting in the creation of cultivated species that are convenient for humans.



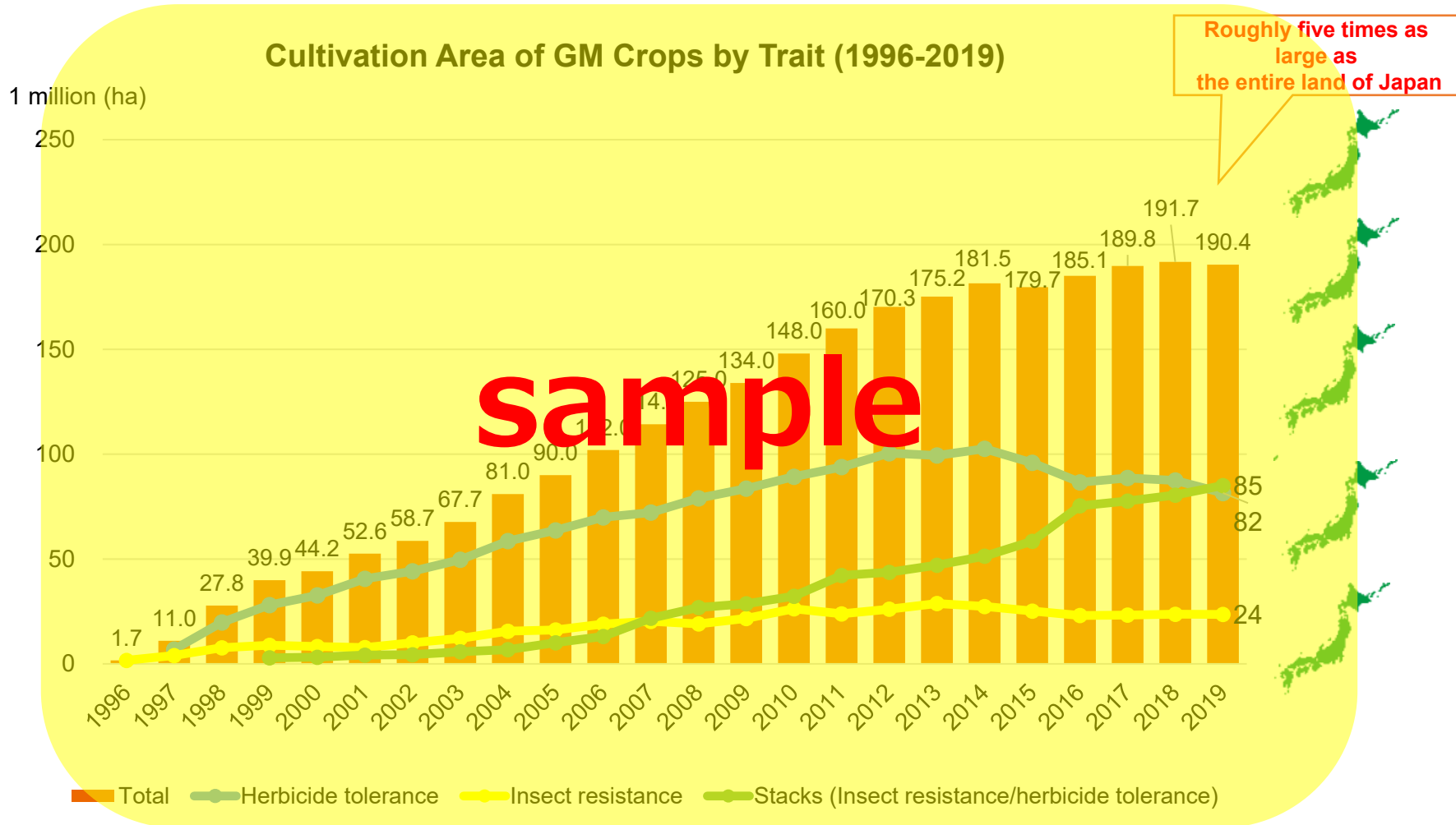
# Flow from Development to Practical Application of Genetically Modified Crops

An average of 16.5 years and 115 million dollars are required from the research and development stage to practical application.<sup>1</sup>



1. AgbioInvestor /CropLife International, 2022. [Time and Cost to Develop a New GM Trait](https://cbijapan.com/wp-content/uploads/2018/01/Lifecycle-of-a-GMO-Infographic_JPN.pdf)  
Reference [https://cbijapan.com/wp-content/uploads/2018/01/Lifecycle-of-a-GMO-Infographic\\_JPN.pdf](https://cbijapan.com/wp-content/uploads/2018/01/Lifecycle-of-a-GMO-Infographic_JPN.pdf)

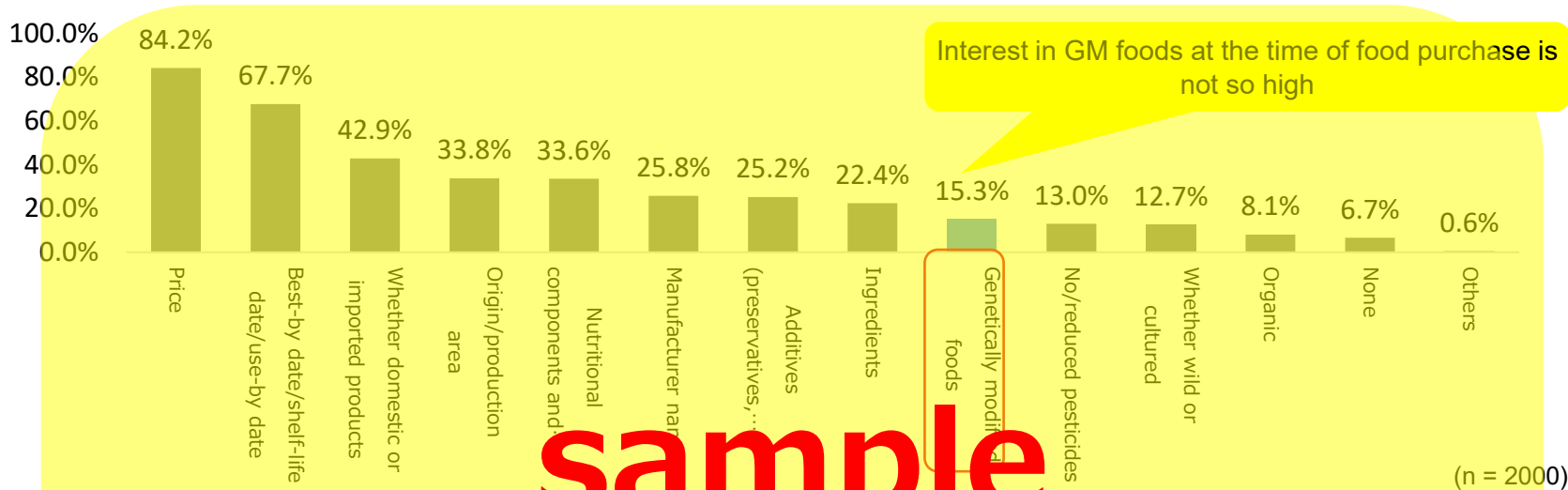
# Global Usage Status (1) Cultivation Status of Genetically Modified Crops by Trait (2019)



Stacks: Hybrid variety developed by crossing GM varieties with different traits.

# Consumer Awareness Survey Conducted by the Council for Biotechnology Information Japan (1)

What have you recently been interested in when purchasing food items? (multiple answers allowed)



In addition, please choose what you are most interested in (one item)

