



Food and Agriculture Organization  
of the United Nations



European Bank  
for Reconstruction and Development

# Impact of the ePhyto Solution on Global Agrifood Trade

*International Plant Protection Convention (IPPC) Strategic Planning Group Meeting,*

*28 October 2024*

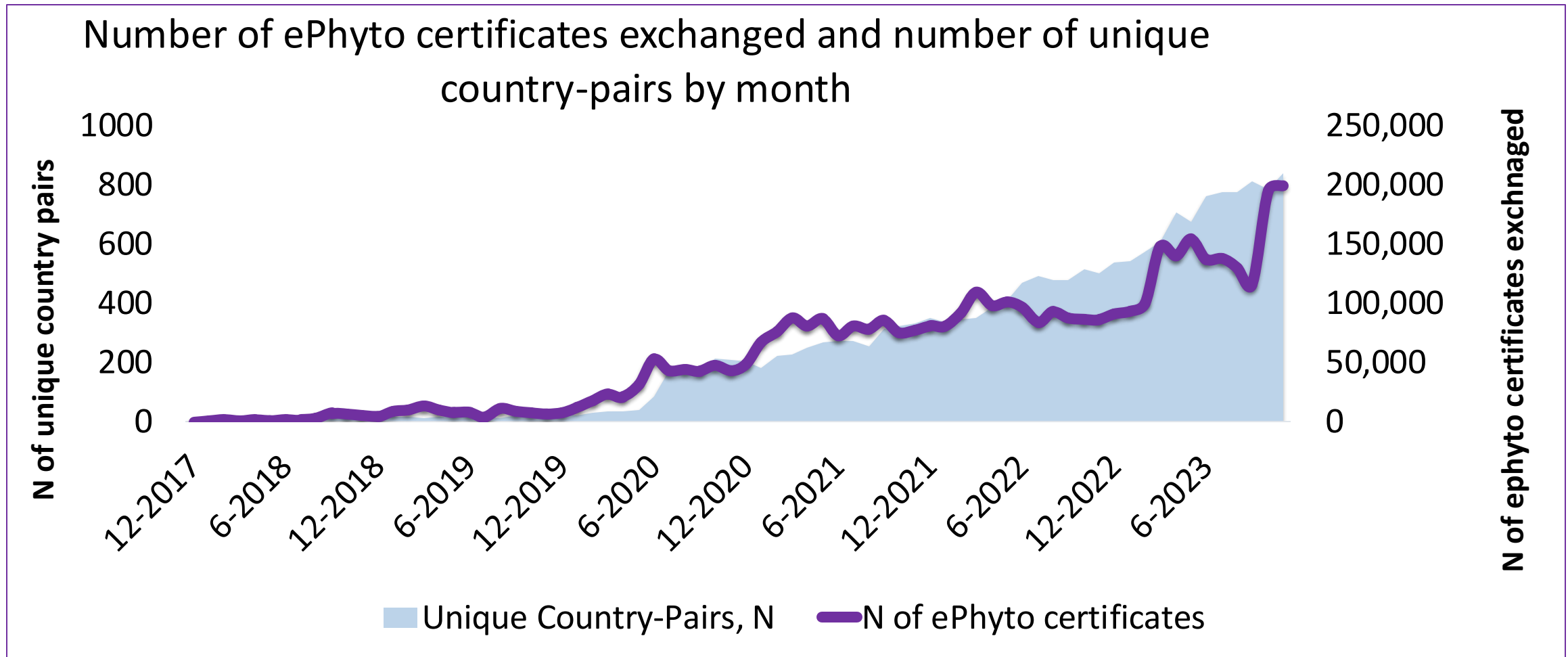
*Rome, Italy*

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Evgeniya Koroleva, PhD

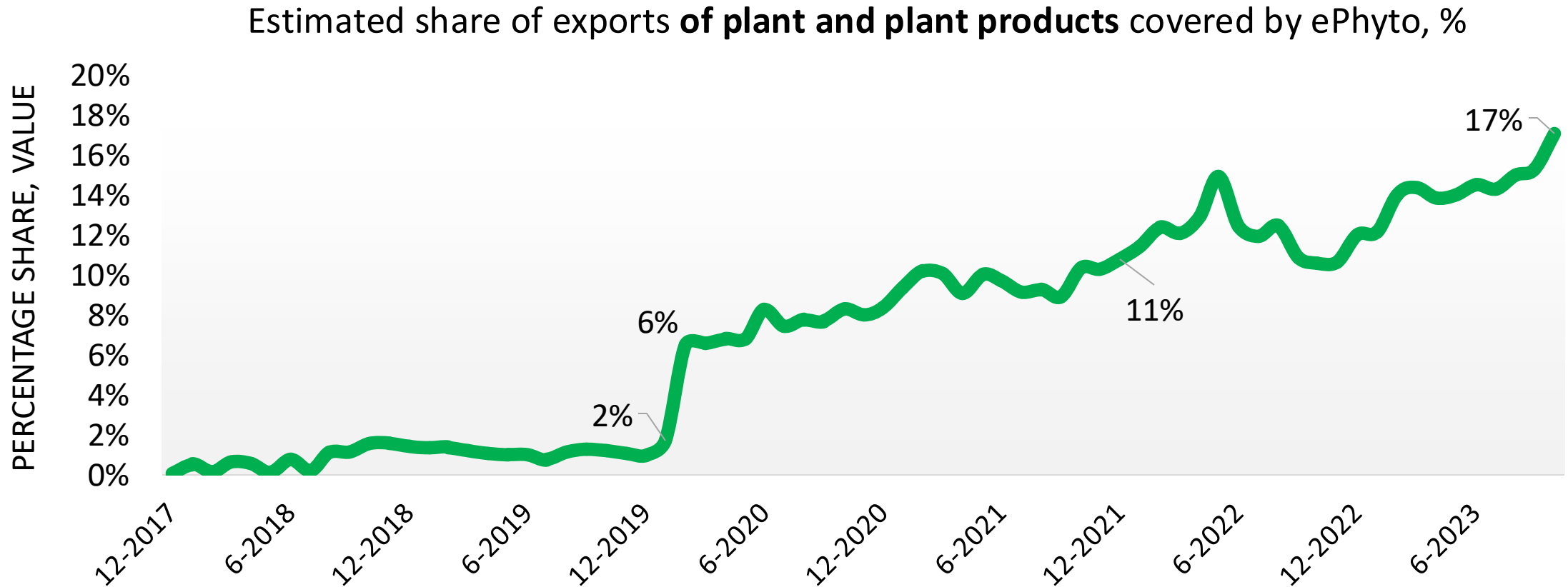
Economist, FAO Trade and Markets Division

# Evolution of ePhyto use



Data source: ePhyto exchanges – United Nations International Computing Centre (UNICC) and International Plant Protection Convention (IPPC) Secretariat. Own calculations.

## Dynamics of ePhyto use and trade

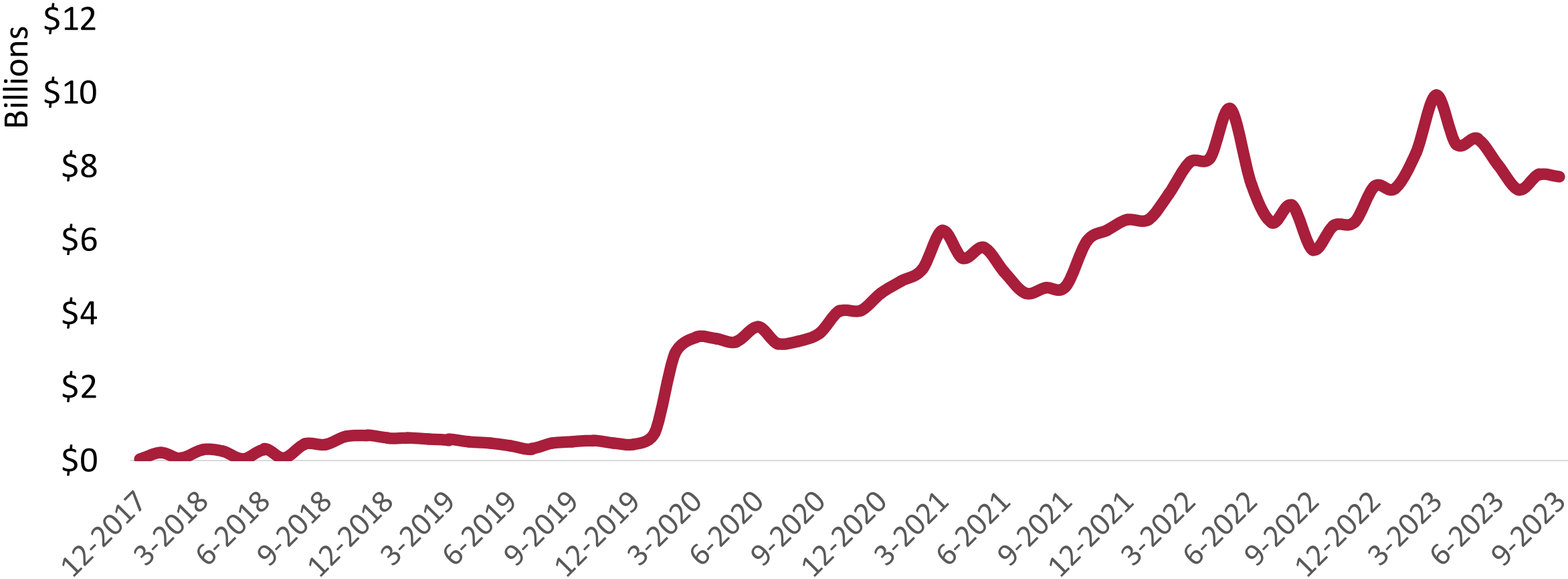


**The share of agrifood exports requiring phytosanitary certificates is around 30-35%**

Data source: ePhyto exchanges – UNICC and IPPC, trade data – Trade Data Monitor (TDM). Own calculations.

# Dynamics of ePhyto use and trade

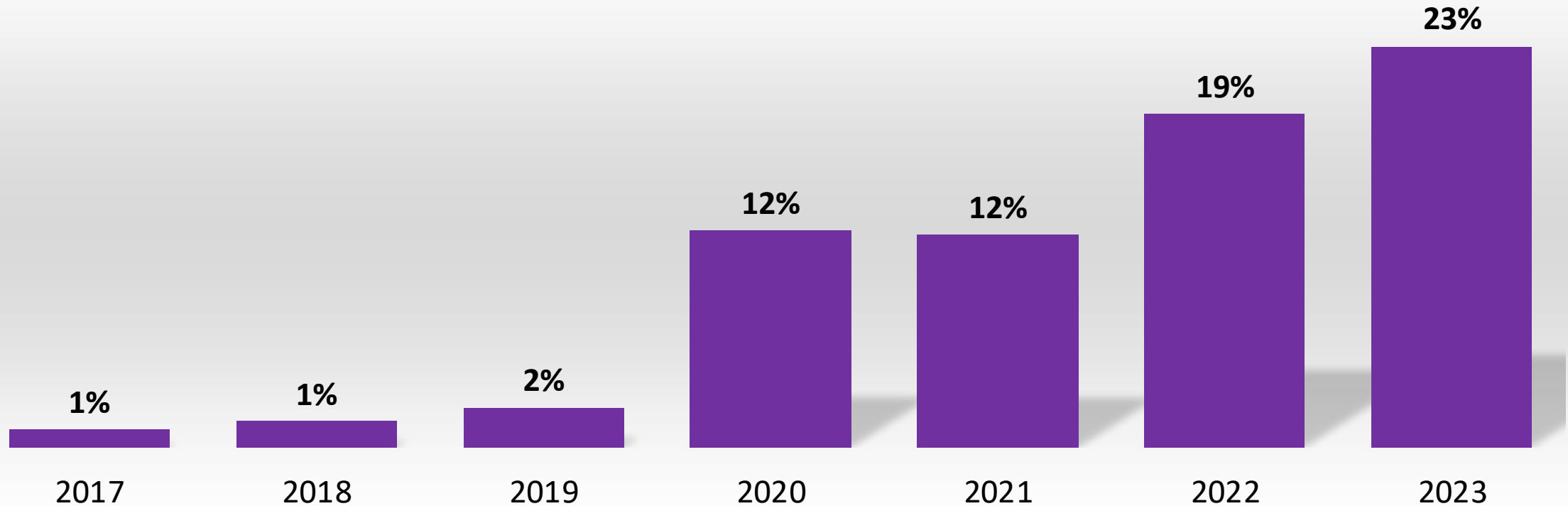
Global export of plant and plant products from ePhyto using countries



Data source: ePhyto exchanges – UNICC and IPPC, trade data – Trade Data Monitor (TDM). Own calculations.

## ePhyto versus paper certificates

Share of the ePhytos issued by 23 NPPOs, % of total number of phytosanitary certificates



Data Source: results of ePhyto survey implemented in partnership with IPPC (36 respondent National Plant Protection Organisations, NPPOs, of which 23 reported using ePhytos). Own calculations.

# Methodology for estimating the impact of ePhyto Solution on global agrifood trade

The gravity model (workhorse) of trade in economics:

- predicts bilateral trade flows based on the economic sizes (usually GDP) and distance between two units (typically countries)
- similar to Newton's law of gravity in physics, where the gravitational pull between two objects depends on their masses and the distance between them.
- allows to estimate an impact of a specific policy measure

In the context of trade, the model assumes:

- ❖ **export / import as gravitational power**
- ❖ **distance between two countries matters** : closer countries trade more and have fewer barriers related to distance
- ❖ **larger economies trade more**: countries with larger economies (higher GDP) tend to trade more with each other because they have more resources and larger markets.

# Methodology for estimating the impact of ePhyto Solution on global agrifood trade

## Settings:

- all countries
- bilateral export
- monthly/annual: **January 2015 – December 2023**
- **aggregate**, as well as by group of commodities: **vegetables, cereals, fruits and others**
- gravity variables

**Commodities requiring PS certification** that are part of agrifood definition (WTO), i.e. **plants and plant-based products**:

- ✓ compiled from 4 country NSO lists (Egypt, Georgia, Ukraine, Uzbekistan, valid for import / export transactions)
- ✓ the number of HS6 commodities requiring PSS is **267** out of **1167** agrifood HS

Policy indicator to measure: **ePhyto use through the number of ePhytos exchanged bilaterally**

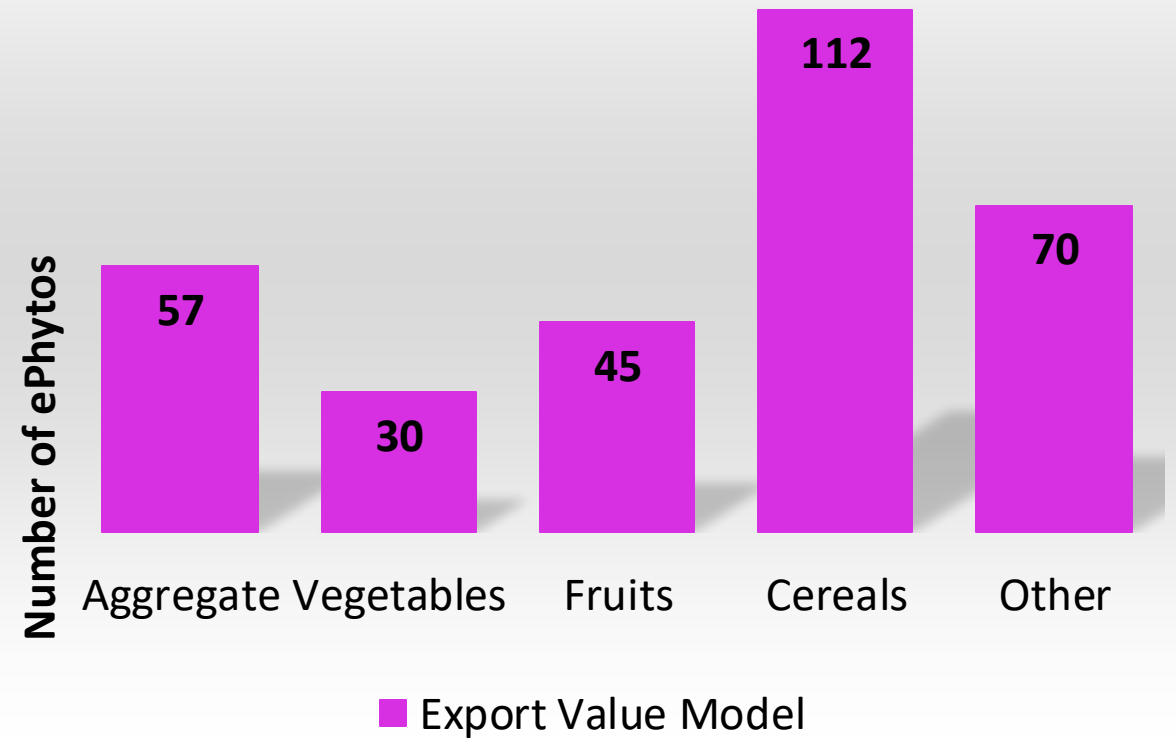
Estimation: **Pseudo-Poisson Maximum Likelihood**

Robustness checks and goodness of fit tests conducted

## Empirical results

- **On average globally, at the aggregate level** of all agrifood commodities requiring PS certification, a minimal number of **57 ePhytos** is required to be exchanged bilaterally in order to start having a positive effect on export.
- After an exporter passes the threshold of 57 certificates exchanged bilaterally, its exports begin to rise to an extent that depends on the number of electronic certificates that replaced paper versions.
- For commodity groups that are more perishable, a smaller minimum number of ePhytos is required to obtain the export boosting effect from ePhyto use.

Minimum number of annual ePhytos exchanged bilaterally required to increase exports







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# THANK YOU

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