Adoption of ePhyto by Serbia, a Cost-Benefit Analysis

Switching from paper-based phytosanitary certification to ePhyto: a cost-benefit analysis for the Serbian fruit sector

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Introduction

Objective	To understand and quantify the costs and benefits of switching from phytosanitary certificates (PCs) in paper form to digital PCs for Serbia.
Methodology	Costs and revenues are considered and compared in a situation with the investment/project and in a situation without the project. Incremental costs and benefits are assessed.
Without Project Situation	Serbia does not transit to ePhyto and trades using paper PCs.
With Project Situation	Serbia uses ePhytos in trade, and paper PCs are no longer required to be included in shipments.
Stakeholders	The analysis considers additional costs (or cost savings) from: • Serbian fruit exporters (all fresh fruits, e.g. peaches, apples, plums) • Administration • Society (for externalities in the form of greenhouse gas emissions (GHG))
Perspective	Analysis from the perspective of the fruit exporting company and from the perspective of administration (economic analysis)

Assessment Methodology
Sources of Data

- Interviewed nine fruit exporting companies in July-August 2023 + 2 logistics companies
- Exchanges with the Serbian Plant Protection Directorate in the Ministry of Agriculture and Environmental Protection
  - Questionnaire
  - Interview
- International Plant Protection Convention (IPPC) country case studies
- United Nations Comtrade Data on Serbian exports by commodity

Assessed Costs and Cost Savings

Cost	Who pays	Savings or additional cost
Cost of obtaining the certificate	Exporters	Not applicable in the Serbian context, otherwise a saving
Extraordinary shipping costs	Exporters	Savings
Administration printing costs	Administration	Savings
Setup costs for ePhyto	Administration	Additional cost
Operational costs	Administration	Additional cost
GHG emissions associated to reissues of PCs	Society	Savings

Assessment Methodology
Without Project Costs: Export Companies Extraordinary Shipping Costs

Category of Extraordinary Costs that ePhyto Could Avoid	Frequency, % of Shipments Facing this Additional Cost	Additional Cost per Occurrence (USD)
Delivering Reissued PCs	2.6%	43
Delays Associated to PCs, per day (assuming one day of delay only)	1.2%	282
Sending PCs by Courier	9%	49

Assessment Methodology
Without Project Costs: Export Companies Extraordinary Shipping Costs

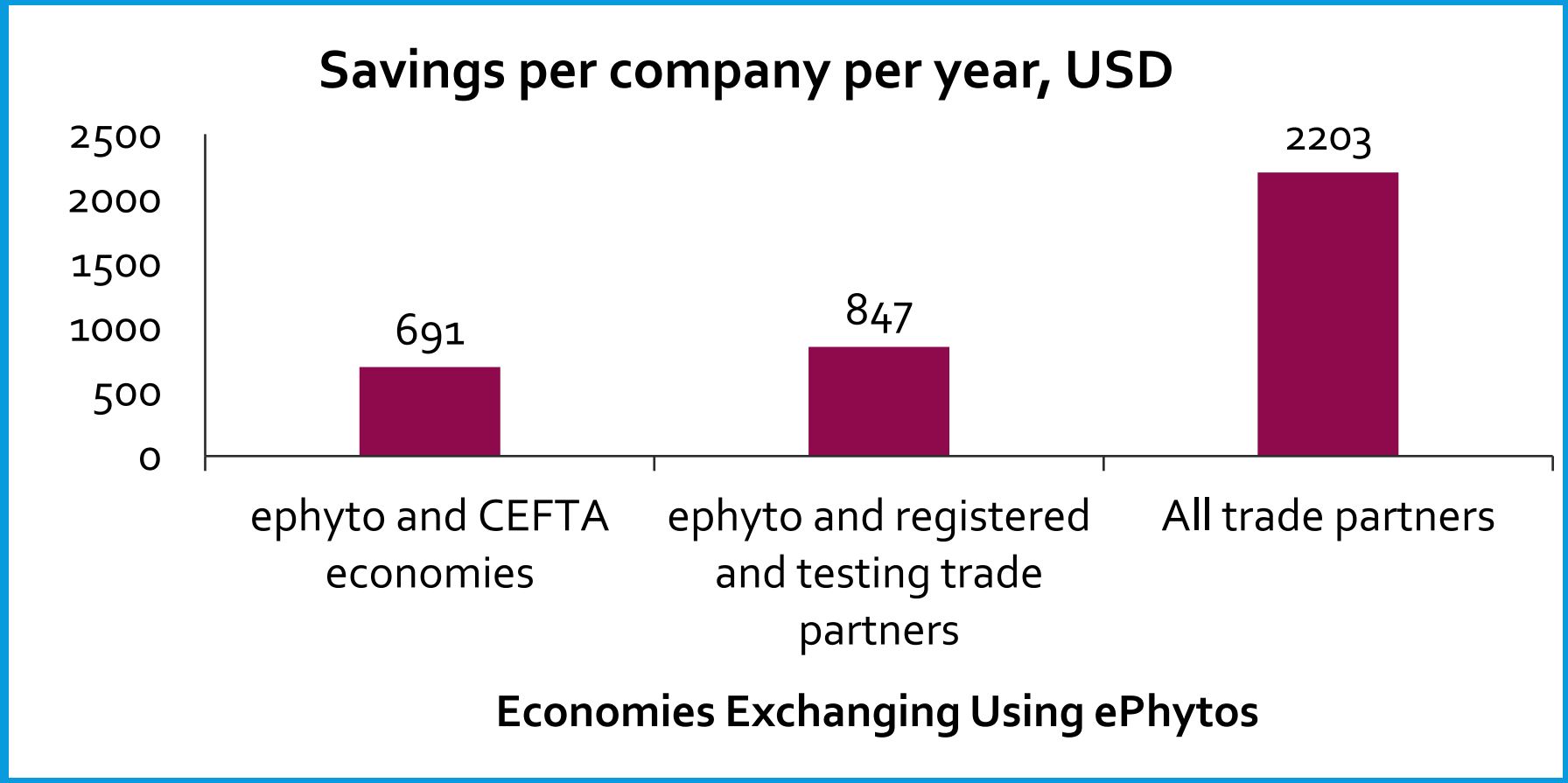
Estimated Fruit Shipments per Market, 2022 (source: UN Comtrade and author's computations)							
Shipments, per Commodity and Market	EU	CEFTA	Russia	Other	Other	Other	Total
Market's ePhyto Status	Exchanging	Testing	Unregistered	Exchanging	Registered or testing	Unregistered	
Fresh fruits	2,402	1,334	5,892	291	368	1,090	**11,377**

Having a breakdown of export shipments by export market is important because the savings associated above would not apply to all markets.

- Not all importing markets would use ePhyto in their trade.
- Some of the extraordinary costs described above are more likely to occur for shipments to specific markets.

Results
Company Level

Considering an average fruit exporting companies with 250 shipments per year



Results

Summary of Identified Additional Costs/Savings

Cost	Who pays	Savings or additional cost	Year that this cost applies	Incremental Financial Value, USD	Incremental Economic Value, USD
Extraordinary costs	Exporters	Savings	From year 2 onwards*	From 31,492 to 41,084	
Government printing costs	Administration	Savings	From year 2 onwards	34,954	
Setup costs for ePhyto	Administration	Additional cost	Year 1 only	15,000	
Operational costs	Administration	Additional cost	From year 2 onwards	15,000	
GHG emissions associated to reissues of PCs	Society	Savings	From year 2 onwards*	NA	From 397 to 650

* Savings on reissue costs and GHG costs change based on ePhyto partners (the more ePhyto partners there are, the higher the savings).

Results
Economic Results, Country Level

Results for Different Scenarios of the Economic Analysis		
		Net Present Value, @10%, USD (20 years)
Baseline, Scenario 1	**Baseline**	**343,133**
Scenario 2	changing assumptions on savings on extraordinary costs per year: Russia joins ePhyto from year 11 onwards	439,949
Scenario 3	changing assumptions on savings on extraordinary costs per year: all countries join ePhyto from year 11 onwards	460,721
Scenario 4	considering cost savings on all PCs issued, not only fruit PCs	860,487

Comparing Methodology and Results

Aspect	Egypt and Uzbekistan	Serbia
Identified or assessed savings for companies	Focus on savings for the regular delivery of certificates Assumes 100 amendments per year on average	No savings on regular certificates The focus is on extraordinary costs linked to reissues, delays or having to ship the certificate by courier
Number of exporters for aggregate results	For Egypt, 100 are assumed For Uzbekistan, aggregate levels based on number of interviewed exporters	Calculated based on the basis of exported shipments of fruits, using Comtrade data
Trade partners	All included	Depending on the year and scenario, different trade partners are assumed (based on who also adopts ePhyto)

Comparing Methodology and Results

Results	Egypt, oranges	Egypt, potatoes	Uzbekistan, cherries	Uzbekistan, raisins	Serbia, mixed fruits, only ePhyto partners	Serbia, mixed fruits, all trade partners
Number of exporters in aggregate results (unit)	100	100	5	8	46	46
Savings, year 2, aggregate (USD)	291,217	477,327	324	620	31,492	100,375
Savings year 2, per exporter (USD)	2,912	4,773	65	77	691	2,203
Average shipments per exporter (unit)	1,370	1,370	15	15	250	250
Savings per shipment (USD)	2.13	3.48	4.32	5.16	2.77	8.82

ANNEX SLIDES

Phytosanitary Certification for Serbian Exports

24 hours prior to loading	Loading day		Loading day or next day	
Exporter sends information to phytosanitary inspector and PC request by e-mail	Phytosanitary inspector visits and inspects the shipments.	The inspector gives out the PC.	Shipment leaves with PC	Shipment crosses the BCP/CCP and the PC is inspected
Digitally	On loading site		The shipment and PC have left	

Assessment Methodology
Without Project Costs: Administrations Paper Certificates Printing Costs

- One major cost of paper PCs for the administration is the cost of producing the PC forms . Every year, the Ministry of Agriculture has to pay for the production of forms for the certificates at the Serbian Institute for Manufacturing Banknotes and Coins.
- Assuming that exports would not decrease over the next few years, the 2022 cost data is used for the analysis, USD 34,954 per year . The data comes from the Ministry of Agriculture and Environmental Protection.

Assessment Methodology
With Project Costs: Administration Cost of Setting-up and Operating ePhyto

- **Set-up costs:** Based on the experience from other economies, the analysis assumes the initial incremental setup cost of USD 15,000
- **Recurrent costs:** The analysis assumes incremental recurrent costs of USD 15,000 per year

Assessment Methodology
With Project Costs: Social Cost of Greenhouse Gas Emissions from Transporting Reissued PCs

- With ePhyto, there will be a reduction in trips necessary to bring reissued PCs at the BCP/CCP, and this reduction in trips would lead to a reduction in GHG emissions.
- The GHG emissions per reissue correspond roughly to one petrol car travelling the distance between Belgrade and the Croatian BCP/CCP to bring the reissued PC, about 200 km back and forth, or about 0.0479 tons of GHG per trip.
- Without project, the number of trips corresponds to the number of reissues needed without project.
- With project, the number of trips corresponds to the number of reissues with project, fewer than without projects since reissues only apply for exports to economies that have not adopted ePhyto.
- The value of GHG emissions is calculated using the emissions and the social price of GHG as estimated by the World Bank (2017), adjusted in 2023. The savings associated to ePhyto are the difference between the value of GHG emissions without project and with project.