

Trade promotion East: Balkan States and Central Asia

Sustainable Production of Apples for the European Union market

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Introduction

- 1 Serbia – one of the largest producers of apples in SE Europe
- 2 Producers have mastered the technology of growing apples
- 3 What is needed for further survival in this business when it comes to sustainability?

Content

- 1 Current situation in apple production in Serbia
- 2 Sustainability – use of plant protection products
- 3 Current state of the apple market in the EU



Current Situation - Apple Production in Serbia

Development of Apple Production in Serbia

Serbia – one of the largest producers of apples in Southeast Europe

	In total (ha)	Total production (t)
2010	15 800	239 945
2017	23 737	328 369
2021	27 034	513 238
2022	27 253	486 215

Apple Production Development in Serbia - An Overview

Significant improvement and growth



Apple production

Modern

At the level of production in Italy with higher yields

- Protection from hail and frost, irrigation
- Good quality, good coloring
- Attractive types



Storage

Modern cold storage

Good production coverage by cold storage capacities

- ULO / DCA atmosphere
- Apples are stored until the next harvest
- Reduction of % decay of apples



Calibration

Uniformity of offer

Maximum reduction of apple manipulation

- Maximum utilization of apples from chambers
- Adaptation to customer needs
- It contributes to the appearance of apples on the shelves

Apple Production Development in Serbia - An Overview

Significant Improvement



Standards

Confirmation of production quality

The number of certified producers in Serbia has been growing rapidly over the last 5 years

- There is no export without the introduction of standards
- Proving production safety
- More standards - less competition



Packaging

Modern

More and more manufacturers have switched from wooden to cardboard packaging

- Modern packaging - a higher category of customer
- Retail chains are looking for eco packaging
- It sets you apart from other suppliers



Export

Diversification of export markets

No more relying on just one export market

- Changes in the main export market
- The EU market is important for the export of apples from Serbia
- More markets – more opportunities

Necessary Quality Standards for Export



No one talks about quality anymore - quality is implicit!!!

Sustainability of Apple Production in Serbia



A farm-to-fork strategy is at the heart of the European Green Deal which aims to make food systems **fair, healthy and environmentally acceptable**.

INTEGRAL PLANT PROTECTION - IPP

Directive on the sustainable use of pesticides, Directive 2009/128/EC aims to achieve sustainable use of pesticides in the EU by reducing the risks and impacts of pesticide use on human health and the environment and by promoting the use of integrated plant protection (IPP) and alternative approaches or techniques, such as non-chemical alternatives to pesticides.

EU countries have drawn up national action plans for the implementation of a number of actions specified in the Directive. The main actions are related to the training of users, advisors and distributors of pesticides, inspection of pesticide application equipment, prohibition of aerial treatment, restriction of pesticide use in sensitive areas and information and raising awareness about the risks of pesticides.

EU countries must also promote integrated plant protection, for which the general principles are set out in Annex III of the Directive.

INTEGRAL PLANT PROTECTION - IPP

The cornerstone of the Directive is the promotion of IPP, for which the general principles are laid down in Annex III of the Directive. Along with the promotion of organic farming, IPP is one of the pest management tools with less pesticide use, and IPP must be implemented by all professional users.

IPP implies an integrated approach to the prevention and/or suppression of organisms harmful to plants through the use of all available information, tools and methods.

IPP aims to keep the use of pesticides and other forms of intervention only to levels that are economically and environmentally justified and that reduce or minimize risk to human health and the environment.

Sustainable biological, physical and other non-chemical methods must be preferred over chemical methods if they provide satisfactory pest control.

INTEGRAL PLANT PROTECTION - IPP

Harmful organisms must be monitored using adequate methods and tools, where available:

- Field observations
- Warning, prediction and early diagnosis systems, where feasible
- Using advice from professionally qualified plant protection experts

Based on the results of the monitoring the professional user has to decide whether and when to apply plant protection measures.

Scientifically sound threshold values are essential components for decision-making.

For harmful organisms threshold levels defined for the region, specific areas, crops and particular climatic conditions must be taken into account before treatments, where feasible.

INTEGRAL PLANT PROTECTION - IPP

On the sustainable use of pesticides

The European Commission adopted a proposal for a new regulation on the sustainable use of plant protection products, including EU-wide targets to reduce the use and risks of chemical pesticides by 50% by 2030, in line with the EU's farm-to-fork and green agenda strategies.

The proposal, which was adopted on June 22, 2022, is part of a package of measures to reduce the ecological footprint of the EU food system and help mitigate the economic losses we are already suffering due to climate change and biodiversity loss.

The main measures include:

Legally binding targets at the EU level to reduce the use and risks of chemical pesticides by 50%, as well as the use of more dangerous pesticides by 2030. Member States will set their own national reduction targets within defined parameters to ensure that EU-wide targets are met.

INTEGRAL PLANT PROTECTION - IPP

Environmentally acceptable pest control:

The new measures will ensure that all farmers and other professional pesticide users apply Integrated Pest Management (IPM). This is an environmentally friendly pest control system that focuses on pest prevention and prioritizes alternative pest control methods, with synthetic pesticides used only as a last resort.

Prohibition of all pesticides in sensitive areas:

The use of all pesticides is prohibited in places such as urban green spaces, including public parks or gardens, playgrounds, recreational or sports fields, public paths as well as protected areas in accordance with Natura 2000 and any ecologically sensitive area that should be preserved for endangered pollinators .

ZERO RESIDUE LEVEL OF PPP

In the field of integral agriculture, with the possibility of using synthetic plant protection agents, the zero residue level can be reached by using only molecules with fairly rapid degradation on the product and by all means respecting the safety times, which allow less than **0.01 mg/kg** of residue on the product.

The product is defined as Zero Residue when the residues of plant protection agents are less than or equal to 0.01 mg/kg (10 ppb).

In recent years, brands have appeared in several member states that promote the application of no residue or zero residue labels on foodstuffs when residues of synthetic plant protection products are less than or equal to 0.01 mg/kg.



Information about **plant protection products**, maximum residue levels of pesticides...

Domestic and EU legislation

The new list of approved active substances in Serbia is aligned with the EU list as of December 1, 2023.

Information about **plant protection products**, maximum residue levels of pesticides...

Domestic and EU legislation

It was decided for **glyphosate** approval to be renewed for the next 10 years, but only as a herbicide, without the possibility of its application as a desiccant, with a large number of measures to reduce the risk to human health and the environment.

As for the active substance **abamectin**, a decision was made to renew the approval with the restriction of application only in closed spaces.

Information about **plant protection products**, maximum residue levels of pesticides...

Domestic and EU legislation

The Plant Protection Directorate has prepared a new list of approved substances that should be published soon, and the list is harmonized with all EU decisions related to the status of active substances as of December 1, 2023.

Only after the publication of the list of approved substances in Serbia, the decisions on registration are canceled and a deadline is given for the consumption of existing stocks (maximum 18 months).

Maximum residue levels of pesticides – MRL

Regulation (EC) No 396/2005 of the European Parliament and of the Council of 23 February 2005, establishes norms in effect for maximum residue levels of pesticides in food and animal feed of plant or animal origin

- List by active substances and by products
- Unit of measure: mg / kg of product (apple)
- Rules of sampling and analysis by products

Information about pesticides allowed in the EU

Food Safety

Home Food ▾ Animals ▾ **Plants ▾** Horizontal topics ▾

European Commission > Food Safety > Plants

Plants

Genetically Modified Organisms

- Coexistence with conventional and organic agriculture
- GMO authorisation
- GMO legislation
- GMO register
- International affairs
- New techniques in biotechnology
- Post-authorisation
- Public consultations on GM food & feed authorisation applications
- Reports and studies
- Socio-economic considerations
- Traceability and labelling
- Transboundary movements

Pesticides

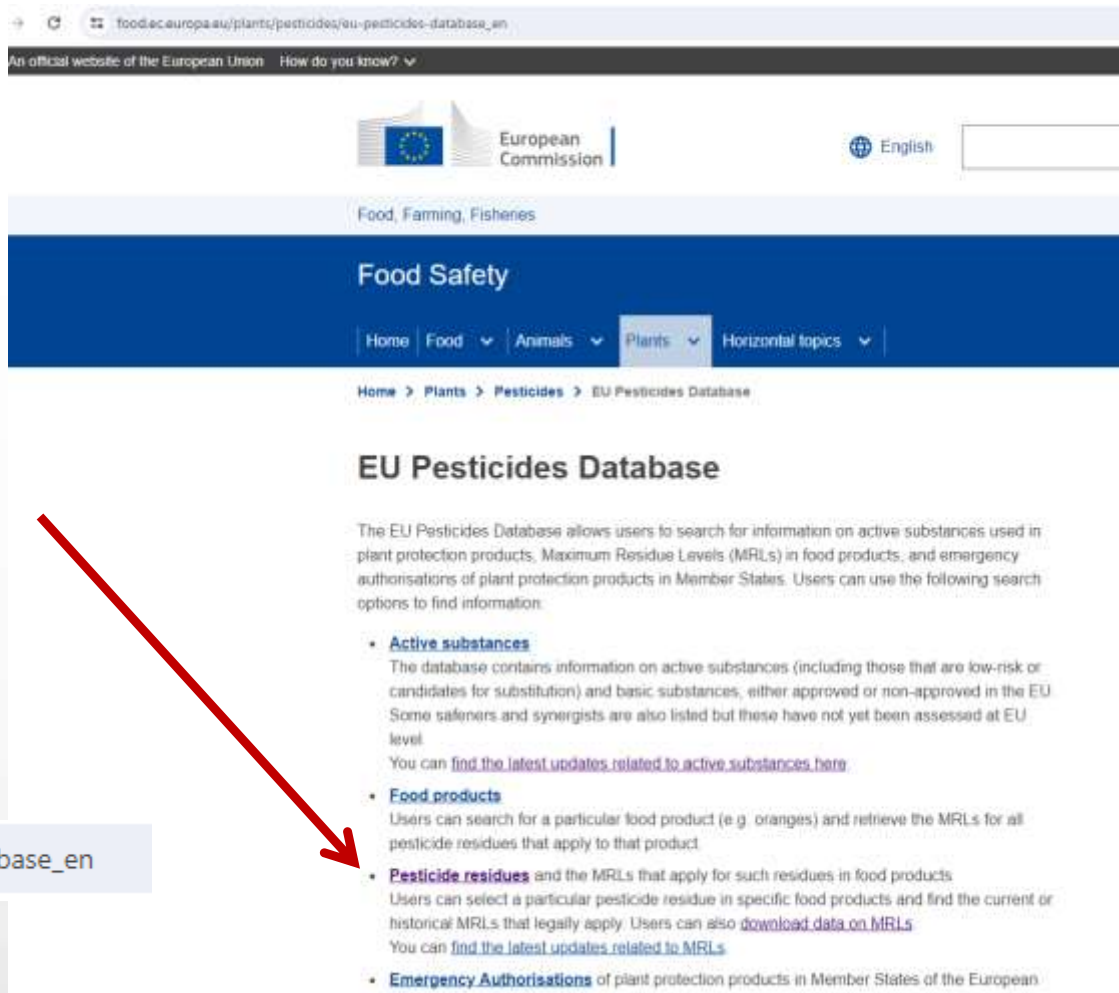
- Approval of active substances
- Authorisation of Plant Protection Products
- EU Pesticides Database**
- Maximum Residue Levels
- Protection of bees
- REFIT - Evaluation of the EU legislation on plant protection products and pesticides residues
- Sustainable use of pesticides
- Legislation on Plant Protection Products (PPPs)

Plant health and biosecurity

- EU plant health legislation
- European Union Notification System for Plant Health Interceptions - EUROPHYT
- Expert groups and working groups
- Harmful organisms outbreaks in the EU
- Protected zones
- Trade in plants & plant products from non-EU countries
- Trade in plants and plant products within the EU

Information on maximum residue levels of pesticides in the EU

food.ec.europa.eu/plants/pesticides/eu-pesticides-database_en



The screenshot shows the official website of the European Commission, specifically the EU Pesticides Database. The page is titled "EU Pesticides Database" and provides information on active substances, food products, pesticide residues, and emergency authorisations. A red arrow points from the text "Information on maximum residue levels of pesticides in the EU" to the "Pesticide residues" section of the database.

food.ec.europa.eu/plants/pesticides/eu-pesticides-database_en

An official website of the European Union How do you know? ▾

European Commission

English

Food, Farming, Fisheries

Food Safety

Home | Food | Animals | Plants | Horizontal topics

Home > Plants > Pesticides > EU Pesticides Database

EU Pesticides Database

The EU Pesticides Database allows users to search for information on active substances used in plant protection products, Maximum Residue Levels (MRLs) in food products, and emergency authorisations of plant protection products in Member States. Users can use the following search options to find information:

- **Active substances**
The database contains information on active substances (including those that are low-risk or candidates for substitution) and basic substances, either approved or non-approved in the EU. Some safeners and synergists are also listed but these have not yet been assessed at EU level. You can [find the latest updates related to active substances here](#).
- **Food products**
Users can search for a particular food product (e.g. oranges) and retrieve the MRLs for all pesticide residues that apply to that product.
- **Pesticide residues** and the MRLs that apply for such residues in food products. Users can select a particular pesticide residue in specific food products and find the current or historical MRLs that legally apply. Users can also [download data on MRLs](#). You can [find the latest updates related to MRLs](#).
- **Emergency Authorisations** of plant protection products in Member States of the European

Information on maximum residue levels of pesticides in the EU

Food Safety

Home | Food | Animals | **Plants** | Horizontal topics

Home > Plants > Pesticides > Maximum Residue Levels

Maximum Residue Levels

The traces pesticides leave in treated products are called "residues".

A [maximum residue level](#) (MRL) is the highest level of a pesticide-residue that is legally tolerated in or on food or feed when pesticides are applied correctly (Good Agricultural Practice).

Key points

- The amounts of residues found in food must be safe for consumers and must be as low as possible.
- The European Commission fixes MRLs for all food and animal feed
- The MRLs for all crops and all pesticides can be found in the [MRL database on the Commission website](#)

Related links

- [EFSA: The 2020 European Union report on pesticide residues in food](#)

<h4>Chlorate</h4> <p>In its scientific opinion, EFSA found that current levels of chlorate in drinking water and in foods were too high.</p>	<h4>Cumulative Risk Assessment</h4> <p>Technical Annex</p>	<h4>EU legislation on MRLs</h4> <p>EU legislation harmonises and simplifies pesticide MRLs, and sets a common EU assessment scheme for all agricultural products for food or animal feed.</p>
<h4>Enforcement</h4>	<h4>Guidelines - Maximum Residue levels</h4>	<h4>How are EU MRLs set?</h4> <p>Applicants e.g. producers of plant protection</p>

Pesticide residue(s) and maximum residue levels (mg/kg)

European Commission > Food Safety > Plants > Pesticides > EU Pesticides database > MRLs > Pesticide residue(s) and maximum residue levels (mg/kg)

← Back to search

Export history

1 product selected



Search filter...

Abamectin (sum of avermectin B1a, avermectin B1b and delta-8,9 isomer of avermectin B1a, expressed as avermectin B1a)

(R),(F)
Reg. (EU)
2023/198

applicable

Abamectin (sum of avermectin B1a, avermectin B1b and delta-8,9 isomer of avermectin B1a, expressed as avermectin B1a)

(R),(F)
Reg. (EU)
2018/1514

previous

Code

Products to which MRLs apply

0130010

Apples



0.006*

0.03

Information about pesticides allowed in the EU

Chlorpyrifos (insecticide)

Chlorpyrifos is banned for use in the EU, but is still present as a residue in fruit imported into the EU.

In multiple epidemiological studies, exposure to chlorpyrifos during pregnancy or childhood has been associated with lower birth weight and neurological changes such as slower motor development and attention problems.

Exposure to low levels of chlorpyrifos is increasingly associated with changes in children's cognitive and behavioral performance.

Chlorpyrifos has been labeled as a potential endocrine disruptor.

Information on maximum residue levels of pesticides in the EU


Pesticide residue(s) and maximum residue levels (mg/kg)

European Commission > Food Safety > Plants > Pesticides > EU Pesticides database > MRLs > Pesticide residue(s) and maximum residue levels (mg/kg)



← Back to search Export history

1 product selected Search filter

Code	Products to which MRLs apply	Chlorpyrifos (F) Reg (EU) 2020/1085 Applicable	Chlorpyrifos-methyl (R),(F) Reg (EU) 2020/1085 Applicable	Sulfoxaflor (sum of isomers) Reg (EU) 2018/832 Applicable
130010	Apples	0.01*	0.01*	0.4



Analysis of pesticide residues

Internationally accredited laboratories	Number of a. s.	Detection threshold mg/kg
 REALAB [®] Professional laboratory	606	0.01 and 0.05
 SPLABORATORIJA	Above 550	0.01 and 0.05

Analysis in an internationally accredited laboratory – your greatest asset for defending the quality of your apples

**FOOD SAFETY
IS IMPORTANT**

A close-up photograph of a hand holding a rectangular piece of brown cardboard. The cardboard has the words "FOOD SAFETY IS IMPORTANT" printed in a bold, black, sans-serif font. The text is arranged in two lines: "FOOD SAFETY" on the top line and "IS IMPORTANT" on the bottom line. The hand is visible on the left side, gripping the bottom edge of the sign. The background is out of focus, showing a crowd of people at what appears to be a public demonstration or protest. Other signs are partially visible in the background, including one with red text and another with blue and white patterns.



EU Apple Market – Current State

An Overview

European Union Market

are they the biggest buyers of apple

EU?

75% fruits
and vegetables
sold through retail
chains.



- ✓ Retail chains dictate procurement
- ✓ Safety most important
- ✓ Sustainability and CSR
- ✓ Fruit ready for consumption
- ✓ Quality is implicit
- ✓ Everyone wants first class
- ✓ More stringent MRL requirements
- ✓ Controls from planting to shelf

Characteristics of the EU Fruit Market

Changes in the supply chain

- Increasing importance of retail chains
- Increasing demand for protocols on food/fruit safety
- Increasing demand with sustainable and social responsible business
- Exporter role changed into the supply chain manager role
- Increasing demand for fruit ready to eat



Characteristics of the EU Fruit Market

Socially responsible business

- Care for the environment
- CO₂ emission
- Domestic production for domestic consumers
- Consumer awareness of social opportunities
- Ethical trade
- Fair trade



Ethical Trading Initiative

Respect for workers worldwide



BSCI

Business Social Compliance Initiative



**the sustainable
trade initiative**

TRADE IMPACT FOR GOOD

Retail Chains Requirements Regarding Pesticide Residues

Food safety of fruit

- The most important issue - food safety
- New food safety protocols
- Global food laws
- Stricter control of MRL
- Supermarkets are stricter than European laws regarding the maximum residue levels of pesticides in fruit



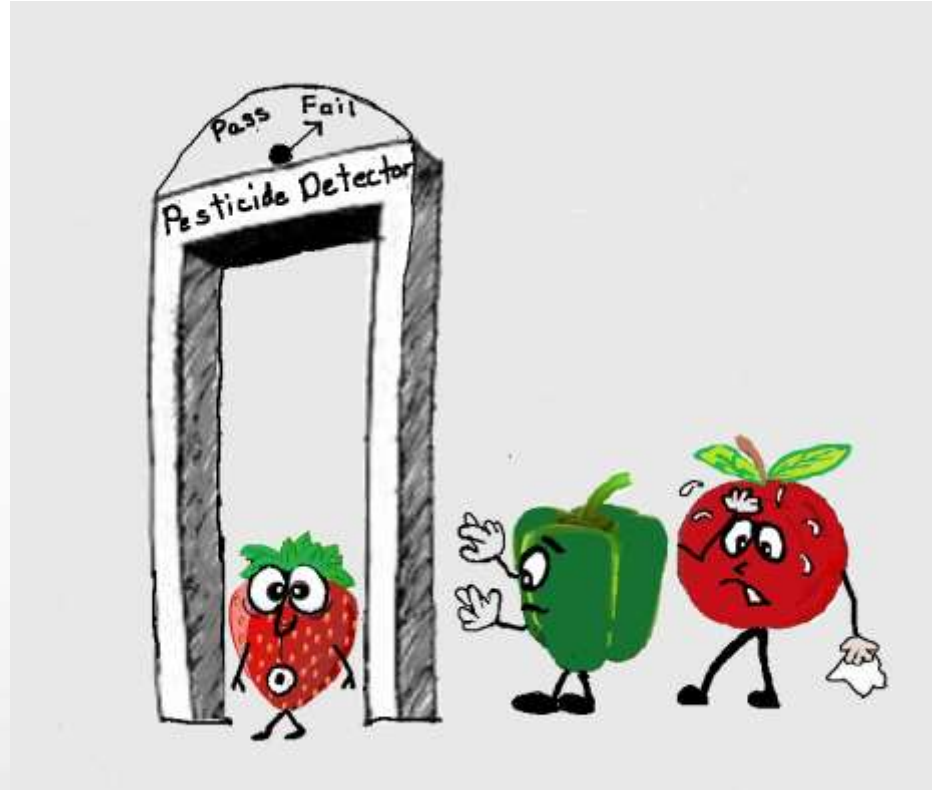
Retail Chains Requirements Regarding Pesticide Residues

Stricter MRL

(maximum residue levels of pesticides)

Introduction of ARfD

Reduced number of active
substances that can be found in
apples



Retail Chains Requirements Regarding Pesticide Residues

- ADI (acceptable daily intake) is an estimate of the amount of a specific substance in food or drinking water that can be ingested daily over a lifetime without an appreciable health risk (WHO, 1987).
- ARfD (Acute Reference Dose) is an estimate of the amount of a substance in food or drinking water that can be ingested over a short period of time, usually during one meal or one day, without appreciable health risk to the consumer (JMPR, 2002).
- Both ADI and ARfD are external reference values and are expressed based on body weight. ARfD is a new concept in toxicology and risk assessment, and is mainly used to assess the health effects of short-term exposure to environmental chemicals.

Retail Chains Requirements Regarding Pesticide Residues



< 70% MRL EU/A. S.
< 5 A.S.



= MRL EU



< 70% MRL EU / A. S.
Prohibited products



< 33% MRL EU/A. S.



< 33% MRL EU/A. S.



< 70% MRL EU/A. S.
< 6 A.S.

European Union Market

Rapid alert system for food and feed (RASFF)

The Rapid Alert System for Food and Feed (RASFF) is a notification system operated by the European Commission to exchange information on identified hazards between Member States and covers food, food contact materials and animal feed.



European Union Apple Market

EU27 IMPORT VOLUME – 080810

	Total Marketing Year	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
2023/2024	65 829	24 124	18 276	23 429	-	-	-	-	-	-	-	-	-
2022/2023	229 583	28 414	17 383	18 959	18 881	5 522	5 005	4 949	7 074	14 488	24 044	39 160	45 703
2021/2022	312 672	35 737	24 363	23 392	29 263	13 997	5 766	6 707	10 425	14 678	29 623	64 547	54 175
2020/2021	326 946	19 402	25 419	27 792	27 989	9 125	3 892	4 525	6 960	20 192	38 608	70 203	72 840
2019/2020	382 721	21 315	22 235	42 119	36 806	9 583	9 228	7 944	8 935	22 852	47 548	83 342	70 815
2018/2019	360 589	34 765	28 688	26 602	22 163	14 610	3 519	6 293	11 782	27 583	50 638	68 036	65 910
2017/2018	412 445	23 474	20 300	28 530	18 807	9 425	5 956	4 695	8 045	38 767	67 065	92 791	93 791
2016/2017	307 704	16 924	11 642	18 712	21 509	8 057	4 750	5 679	8 424	27 759	44 202	64 886	75 162
2015/2016	326 059	16 106	10 778	21 759	23 783	12 006	8 543	10 380	10 359	34 479	44 982	66 542	66 341
2014/2015	277 934	9 551	4 466	9 484	10 669	10 471	3 000	6 607	10 833	35 111	43 549	66 919	66 466
2013/2014	425 005	20 814	15 068	29 567	28 876	10 004	7 881	11 028	19 387	62 327	74 337	77 070	68 568
2012/2013	424 654	15 461	7 767	7 777	8 616	5 011	4 246	4 532	17 006	66 746	92 775	94 042	100 594
2011/2012	376 003	8 529	13 007	31 943	20 958	4 740	3 117	4 816	19 746	53 856	72 916	78 893	63 562
2010/2011	456 009	20 013	7 091	20 374	28 203	4 735	2 774	3 478	24 775	76 556	100 100	103 159	65 346

Overview of Apple Exports from Serbia to the EU

3.36%

August 2022/July 2023	kg	Eur	price / kg
Romania	495,289.00	191,989.25	0.39
Bulgaria	450,189.00	134,572.75	0.30
Germany	15,268.00	9,551.00	0.63
France	100,369.00	81,130.00	0.81
Croatia	634,887.00	329,821.63	0.52
Hungary	1,556,138.00	304,691.95	0.20
The Netherlands	241,896.00	198,842.00	0.82
Slovenia	576,944.00	346,726.38	0.60
Slovakia	426,770.00	343,202.00	0.80
Czech Republic	52,884.00	34,898.00	0.66
Sweden	221,680.00	141,405.00	0.64
Greece	425,178.00	349,256.76	0.82
Italy	459,888.00	232,816.00	0.51
Norway	20,592.00	15,856.00	0.77
Denmark	35,428.00	25,416.00	0.72
Belgium	20,597.00	14,401.00	0.70
Spain	1,410,650.00	1,158,082.29	0.82
Portugal	579,567.00	464,264.86	0.80
TOTAL:	7,734,214.00	4,376,922.87	

Sustainability of Apple Production and Export to the EU

Food safety of apples - the most important factor for export

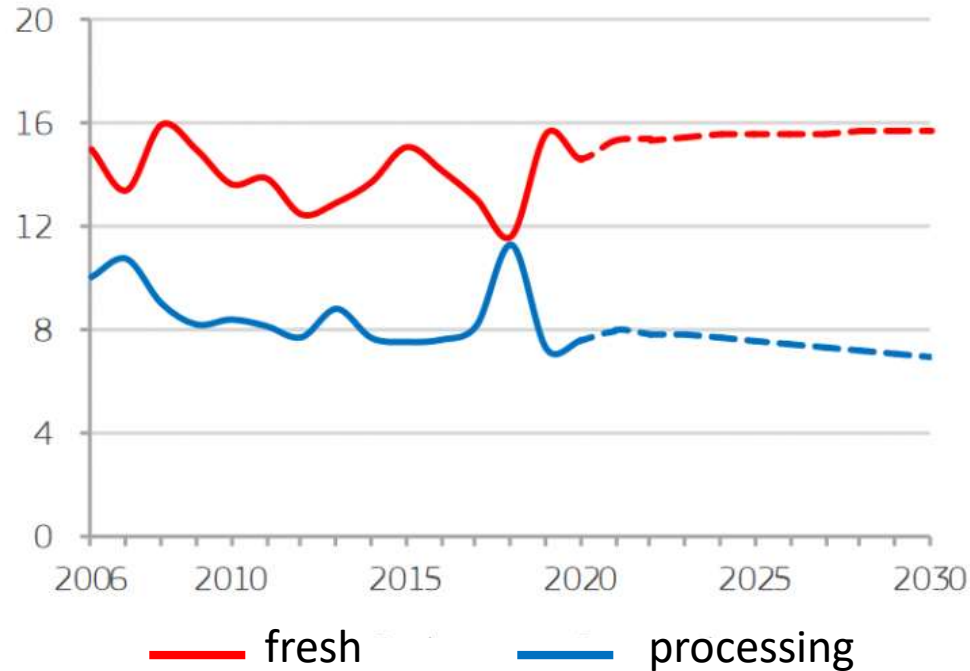
Would the sale of apples to the market of EU countries be successful:

- Implementation of integral plant protection
- Production without residue
- Use of original PPP
- Use of biological PPP
- Respecting the withholding period



European Union Market

Consumption of apples in EU countries (kg per capita - annually)



European Union Apple Market

Who is responsible for the safety of produced apples according to EU laws, in case of import?

Whoever puts apples on the market in any EU country is responsible for health safety!

Importer of apples in the EU
Producer of apples in SRB

THANK YOU FOR YOUR ATTENTION!

