

Maximum Residue Level (MRL) requirements for fresh fruits and berries

PROGRESS regional training webinar

**“Strengthening the capacity of fruit and berry producers in the
Eastern Partnership (EaP) to access the EU market”**

23-24 June 2026

Dionyssis Vlachos, Agronomist, Green Fund, Ministry of Environment
and Energy, Greece; National Expert, European Commission



Overview of
the EU
regulatory
requirements

Overview of the EU MRL requirements for fresh fruit
and berry imports

Common MRL exceedances in fresh fruits and
berries

Role in climate change adaptation



Presentation structure

Common
challenges
and
solutions for
achieving
the
requirements

Importance and good practices on pesticide use and
pesticide logs

How to avoid the use of unauthorised plant protection
products (PPPs)

Brief overview of additional requirements of some
supermarkets

Addressing challenges of smallholder farms to reach
the EU MRL requirements, including issues related to
climate change adaptation



EU regulatory framework for PPPs



- The EU plant protection products (PPPs) regulatory framework is primarily governed by **Regulation (EC) No 1107/2009**, ensuring high protection for human/animal health and the environment. It operates a two-step system:
- EU-level approval of active substances and Member State-level authorization of formulated products.
- This framework relies on the precautionary principle, strict safety data, and harmonized rules to facilitate free movement of products

Maximum Residue Levels (MRLs)



- 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](https://food.ec.europa.eu/plants/pesticides/maximum-residue-levels_en)

Search Pesticide Residues

[European Commission](#) > [Food Safety](#) > [Plants](#) > [Pesticides](#) > [EU Pesticides database](#) > [MRLs](#)

Search options

Product(s)

Select product(s)



Legislation

Select legislation(s)



Footnote

Select footnote(s)



Annex

Select annex(es)



Search

Clear search options

Pesticide Residues (679 matching records)

Display selected items >

Filter results...

- ☐ 1,1-dichloro-2,2-bis(4-ethylphenyl)ethane (F)
- ☐ 1,2-dibromoethane (ethylene dibromide) (F)
- ☐ 1,2-dichloroethane (ethylene dichloride) (F)
- ☐ 1,3-Dichloropropene
- ☐ 1,4-Diaminobutane (aka Putrescine) (++)
- ☐ 1,4-dimethylnaphthalene (R) (F)
- ☐ 1-Decanol
- ☐ 1-methyl-3-(trifluoromethyl)-1H-pyrazole-4-carboxamide (PAM)

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



Be careful: MRLs are often updated...

Code	Products to which MRLs apply	Chlorpyrifos (F) Reg. (EU) 2020/1085 applicable Annex V	Chlorpyrifos (F) Reg. (EU) 2018/686 previous Annex V	Chlorpyrifos (F) Reg. (EU) 2016/60 previous Annex V
		0.01*	0.3	0.2
0152000	 (b) strawberries			

What to remember

In the European Union, MRLs are governed by Regulation (EC) No 396/2005 which sets:

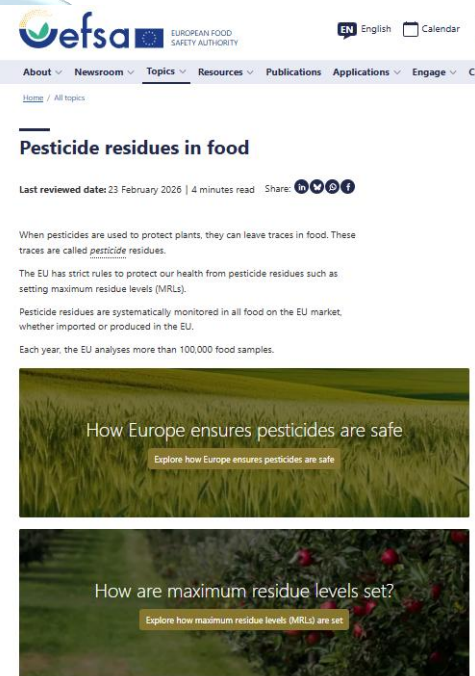
- ✓ **Legal limits** for pesticide residues in food
- ✓ Harmonized standards across all Member States
- ✓ A default MRL of **0.01 mg/kg** when no specific level is set

MRLs are based on:

- **Good Agricultural Practices (GAP)**
- Toxicological assessments (ADI and ARfD)
- Consumer exposure models

It is critical to emphasize:

MRLs are not toxicological safety limits, but compliance indicators of proper pesticide use.



What to remember

Maximum Residue Limits (MRLs) are strict regulatory thresholds for pesticide residues in food

Exceedances can lead to:

- ✓ Rejected exports and financial losses
- ✓ Loss of buyer trust and market access
- ✓ Legal penalties and reputational damage



Key Message:

Proper pesticide use is not just agronomy—it's market access, compliance, and business sustainability.

Common MRL Exceedances in Fruits and Berries

Based on EU monitoring programs, exceedances in fresh fruits and berries often involve:

- Use of **non-approved active substances**
- Incorrect application rates or timing
- Residues from **post-harvest treatments**
- Cross-contamination or spray drift



Common MRL Exceedances in Fruits and Berries

High-risk commodities include:

- Strawberries
- Raspberries
- Citrus fruits
- Table grapes



Role of climate change adaptation

Climate change is a **major emerging driver** of MRL exceedances.

We observe:

- ✓ Expansion of pest ranges into new regions
- ✓ Increased pest generations per season
- ✓ Emergence of invasive species

This leads to:

- ❑ **More frequent pesticide applications**
- ❑ Emergency or off-label uses
- ❑ Higher risk of non-compliance



Role of climate change adaptation

Example dynamics:

- Warmer winters → higher pest survival
- Humidity shifts → increased fungal diseases in berries
- New pests such as *Spodoptera frugiperda*, which has reached your borders



How Climate Change Increases Residue Risks

Rising temperatures → faster pest cycles → more frequent spraying

Irregular rainfall → wash-off or re-application → higher residues

Drought stress → plants absorb chemicals differently

New pests and diseases → unfamiliar control strategies

Longer growing seasons → cumulative pesticide use

Key message:

Compliance depends on
good agronomic practices,
proper record keeping and
climate-resilient pest management



**“Climate pressure can unintentionally
push farmers to exceed MRLs”**



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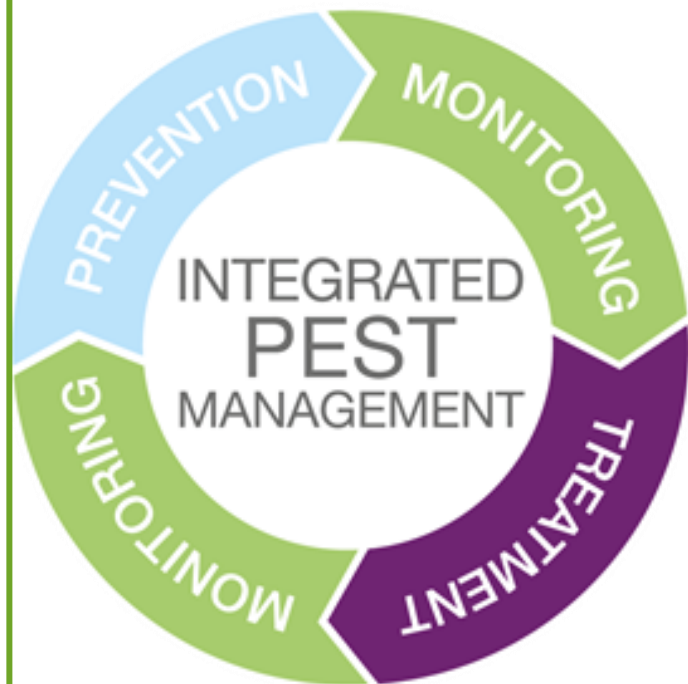
Importance and good practices on pesticide use and pesticide logs

First rule:

- Reduce the use of plant protection products up to the necessary level
- Integrated pest management (IPM)

IPM means careful consideration of all available plant protection methods and subsequent integration of appropriate measures that discourage the development of populations of harmful organisms and keep the use of plant protection products and other forms of intervention to levels that are economically and ecologically justified and reduce or minimise risks to human health and the environment.

“IPM” emphasises the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.



Good practices in pesticide use

Before Application

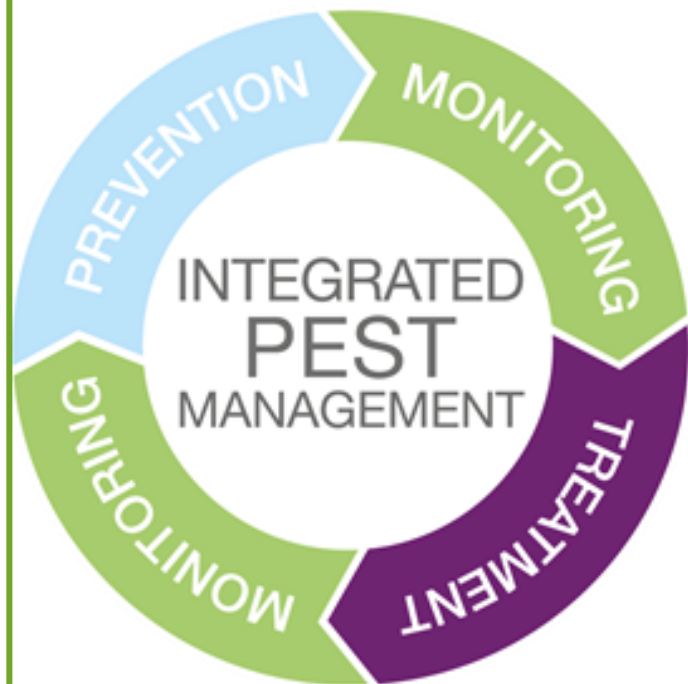
- ✓ Use only approved products for the specific crop and country
- ✓ Follow label instructions strictly (dose, timing, frequency)
- ✓ Calibrate equipment regularly

During Application

- ✓ Apply under appropriate weather conditions (avoid wind/rain)
- ✓ Ensure even coverage and correct dosage
- ✓ Use protective equipment

After Application

- ✓ Respect Pre-Harvest Intervals (PHI)
- ✓ Avoid unnecessary repeat treatments
- ✓ Store products safely and correctly



Importance of pesticide logs

Why Keep Detailed Records?

- ❑ Proof of compliance with MRL regulations
- ❑ Traceability for buyers and auditors
- ❑ Helps identify risks and improve practices
- ❑ Required for certifications (e.g., GLOBALG.A.P.)

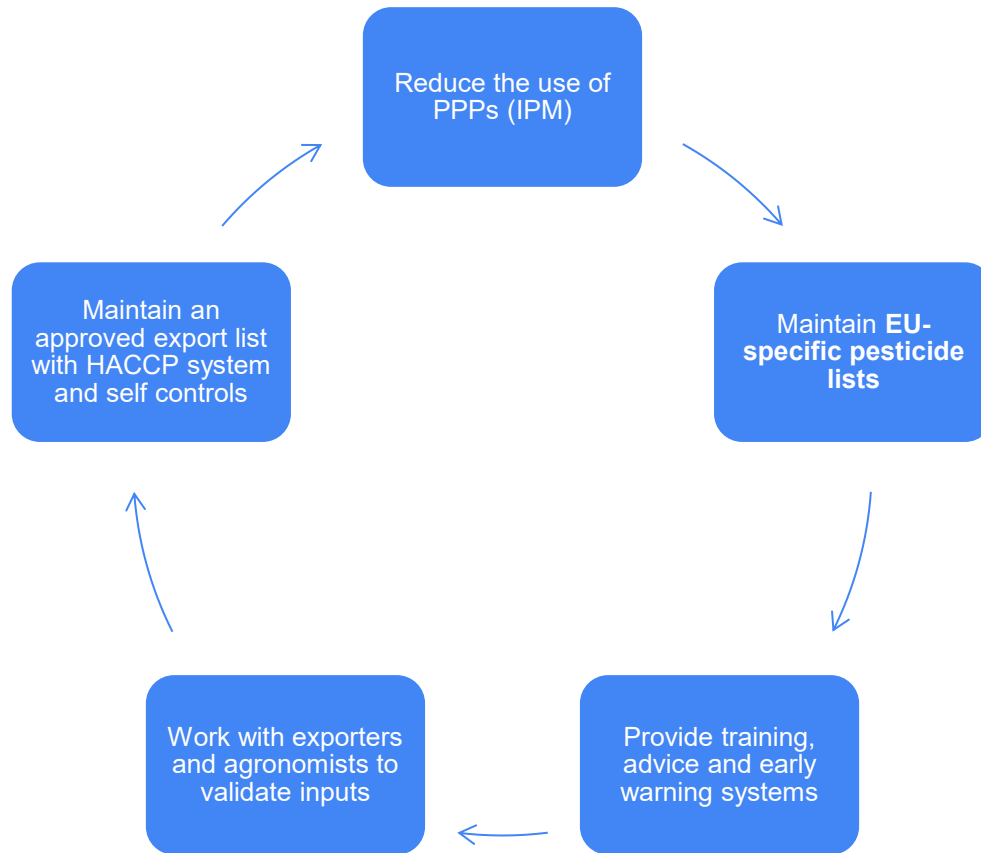
What to Record

- ✓ Date of application
- ✓ Crop and field/plot
- ✓ Product name and active substance
- ✓ Dose and volume used
- ✓ Operator name

Best Practices

- ❖ Record immediately after application
- ❖ Use digital tools or standardized templates
- ❖ Review logs regularly before harvest/export

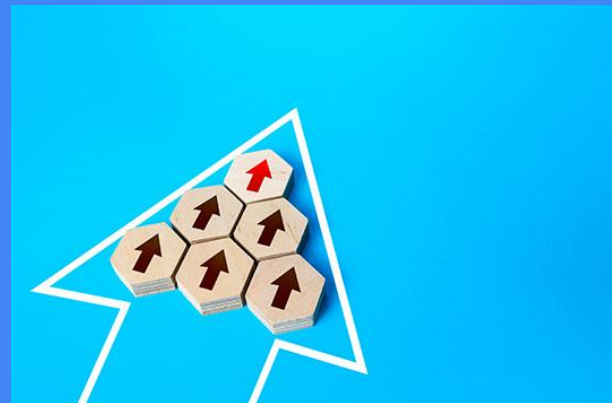
How to avoid the use of unauthorized PPPs



Pre-export Testing and Risk Management

Recommended measures:

- ✓ Residue testing before shipment
- ✓ Supplier risk categorization
- ✓ Contract farming with compliance clauses



Prevention is far more cost-effective than border rejection

Brief overview of additional requirements of some supermarkets

Retailer practice	Typical requirement
Reduced MRLs	30–80% below EU legal limits
Number of residues	Max 3-5 substances to be detected (no “cocktails” of residues)
Negative lists	Additional prohibited substances
Supplier controls	Testing and traceability requirements

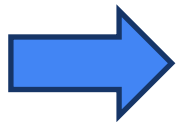


Why MRL Compliance Is Difficult for Smallholders

- EU Maximum Residue Limits (MRLs) are strict and frequently updated
- Limited access to:
 - Approved pesticides and alternatives
 - Up-to-date advisory services
- Small farm size → less buffer for mistakes
- Informal markets & inconsistent record-keeping
- Limited testing access → residues often unknown until rejection

Compliance is not just about *what you spray*, but *how and when you spray it*





Where Problems Typically Arise

- Incorrect dosage or over-application
- Ignoring pre-harvest intervals (PHI)
- Mixing multiple pesticides without guidance
- Use of non-authorized or counterfeit products
- Poor calibration of spraying equipment
- Lack of protective/storage practices

Regional Challenges

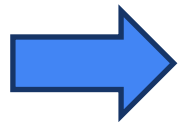
- ☐ Variable enforcement across markets
- ☐ Limited farmer training in some areas
- ☐ Pressure to maximize yield under pest stress



**“More pesticide ≠ better protection —
often it leads to market rejection”**



Pathways to Safer Production & Compliance



Better Pest Management

- Integrated Pest Management (IPM)
- Pest monitoring and forecasting
- Threshold-based interventions
- Biological control options
- Resistance management

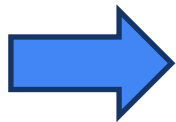
**“Precision, not quantity” is the key to
meeting EU standards**

Better Application Practices

- Respect PHIs
- Calibrate sprayers
- Follow label instructions
- Maintain pesticide records



Pathways to Safer Production & Compliance



Climate Adaptation

- Resistant varieties
- Crop diversification
- Improved irrigation management
- Soil health improvement
- Early warning systems

Knowledge and Cooperation

- Farmer groups and cooperatives
- Training and advisory services
- Digital tools and decision-support systems
- Pre-export residue testing

"Precision agriculture and integrated pest management are the most effective pathways to achieve both climate resilience and MRL compliance"



Case study

- Strawberry
- Pest: *Drosophila suzukii*



Drosophila suzukii ovipositing on a strawberry. Copyright: Yann Le Poul.

Problem:

- Increased pressure from *Drosophila suzukii*
- Longer activity periods due to warmer temperatures
- Frequent insecticide applications

Risks:

- Short PHIs
- Residue accumulation
- MRL exceedances

Case study

- Strawberry
- Pest: *Drosophila suzukii*



Drosophila suzukii ovipositing on a strawberry. Copyright: Yann Le Poul.

Integrated Pest Management

- Monitoring traps (bait traps) and identification
- Harvest sanitation (culling): Promptly remove or destroy infested, unmarketable, or dropped berries
- Netting
- Biological control
- Threshold-based applications

MRL Compliance Strategy

- Use authorised products only
- Rotate modes of action
- Respect PHIs
- Maintain pesticide records
- Residue testing before export

Early detection is critical

PROGRESS

Promoting Green Deal Readiness in
the Eastern Partnership Countries

From Farm to Fork CONTROLLING THE SAFETY OF THE AGRI FOOD CHAIN

NATIONAL ENFORCEMENT
AUTHORITIES PERFORM
CONTROLS ON FARMS,
BUT ALSO...

...BORDER CONTROLS
FOR IMPORTED ANIMALS, PLANTS,
SPECIFIC FOODSTUFF
FROM OUTSIDE THE EU
AND...

CONTROLS DURING
TRANSPORT WITHIN
THE EU, AND...

...CONTROLS ON
FOOD PROCESSING PLANTS,
WHOLESALE, SUPERMARKETS
RETAILERS AND RESTAURANTS

Thank you

