D5.12 Policy Proposals
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novIGRain

Data Management Plan	
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Dissemination Level	
X	**PU = Public**
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Preliminary Note :

Under WP5 the consortium sought contact with EU policy makers; outreach to Members of the European Parliament and to the Commission was recorded as unsuccessful. This brief is a renewed attempt at that dialogue.

A research project is a snapshot. The project's monitoring ends with the project; without a permanent mechanism, the EU returns to the situation novIGRain was created to remedy.

Policy Proposal 1

Resistance, Tools and Training

Helping the Grain Storage sector to measure insecticide resistance throughout the storage process and equipping the sector to manage this. A policy proposal emanating from novIGRain Work Package 1, addressed to the European Commission, DG SANTE — Food Safety, Sustainability and Innovation.

Resistance was detected in every country sampled by novIGRain — and in each country, to at least one of the tested active ingredients.

At the same time, the authorised chemical toolbox for stored grain is narrowing, national authorisations diverge, and no insect growth regulator is currently authorised for stored-grain use in the EU. Resistance cannot be managed by product substitution alone — and it cannot be managed at all by operators who have neither the diagnostic means to detect it nor the training to respond to it.

The Ask

Assess the case and promote a permanent EU monitoring scheme for resistance in stored-product pests, built on validated protocols and resistance-mapping approach. Leading to a mandatory resistance testing scheme.

Support the continued availability of a sampling manual and decision-support tool after the project ends, as public goods for the sector.

1. The evidence: what novIGRain Work Package 1 measured

The project applied the scientific definition of resistance — survival above a discriminating dose that kills susceptible laboratory individuals — under a standardised bioassay. Across three active substances and six target species, 618 field-strain tests were performed: 247 against phosphine, 186 against deltamethrin and 185 against pirimiphos-methyl.

Finding	Detail
Present throughout	A certain type and level of resistance was detected in all sampled countries; in each, to at least one tested active ingredient.
Geographical gradient	The highest resistance frequency tended to be found in southern countries.
Species differ	*Oryzaephilus surinamensis* and *Sitophilus granarius* were less frequently resistant; *Sitophilus oryzae*, *Tribolium spp.* and *Rhyzopertha dominica* more frequently resistant.
Fumigant ≠ contact	Different resistance frequencies were found between organophosphate or pyrethroid sprays and the phosphine fumigant.
Site-level, not national	Knockdown curves for field populations of *Sitophilus oryzae* diverge widely from the susceptible benchmark and from one another. Resistance must be measured at the site, not assumed from a map.

2. The context: a narrowing toolbox and a curative operating practice

The toolbox is shrinking and fragmenting	Practice is reactive, and the drivers are not chemical
• Approval end dates for deltamethrin, cypermethrin, pirimiphos-methyl, pyrethrins, aluminium and magnesium phosphide, spinosad and sulfuryl fluoride all fall between 2026 and 2028 • Pirimiphos-methyl is authorised in FR, ES, IT, RO and HU but not in DE; piperonyl butoxide is banned in FR but authorised in DE; sulfuryl fluoride and diatomaceous earth are not authorised in HU or RO. • Chlorpyrifos-methyl in cereals: MRL now 0.01* mg/kg, down from 3 mg/kg. • No insect growth regulator — the mode of action most complementary to incumbent adulticides — is authorised for stored-grain use in the EU.	• Storage organisations perform more curative than preventive treatments; control remains based on contact insecticides. • Flat storage: 43% of samples infested, against 26% in vertical cells. • No grain thermometry: 47% infested; mobile 41%; fixed 26%. • No sanitation of empty cells: ~45% infested, against 30% where cleaning was complete. • 65.5% of surveyed lots carried detectable residues; 17.2% carried two or three substances. • Measured cost of insect control: EUR 0.17–1.19 per tonne, against near-zero commercial tolerance for live pests and the cost of rejected shipments.

The binding constraint is therefore not the marginal cost of treatment, nor chemistry alone. It is the diagnostic capability and the competence to choose the right response — and a preventive larvicidal approach reaching the market on the indicative 2028–2031 pathway will need both in place beforehand. The consortium's own SWOT lists the need for training, technical support and stewardship, and a mindset change from curative to preventive, as conditions for success.

The asset at stake

359 Mt	1 year	0–2 live pests per kg
EU-28 storage capacity for cereals, oilseeds and protein crops — up 20% since 2005, with growth in all 28 Member States.	Typical duration of stock in silos; occasionally sold within about six months. This is the period over which populations develop and selection pressure operates.	Current commercial tolerance. Where buyers detect pests, shipments are frequently rejected and returned, with re-treatment, handling and vessel rental penalties on top.

3. Proposal: five connected measures

Measurement generates the information; tools translate it into decisions; the IPM obligation creates the duty to act on it; training builds the capability to do so; and regulatory facilitation ensures there is something to act with.

#	Measure	Content	Suggested indicator
1	EU resistance monitoring scheme for stored-product pests	Permanent, harmonised and recurrent monitoring on the discriminating-dose method validated in WP1, covering phosphine, pyrethroid and organophosphate protectants across the six target species. Resistant populations move with the commodity, so a scheme confined to individual Member States will underestimate its spread.	Member States reporting annually; populations tested per species and substance; published frequency time series.
2	Decision-support tools for end users	EU support for the maintenance, translation and free distribution, beyond the project's life, of the WP1 sampling manual for non-specialists and the decision tree that lets operators identify pests and distinguish resistance from application failure.	Availability in all relevant EU languages; registered users by user level.
3	Post-harvest storage explicitly inside the IPM obligation	Recognition of grain storage and transformation as a distinct IPM setting, with minimum expectations on grain temperature monitoring, sanitation of empty structures before filling, action thresholds, and records of treatments and modes of action used.	Share of storage capacity under a documented IPM plan; share of cells with fixed thermometry.
4	Compulsory resistance and IPM training for the sector	A dedicated stored-grain module inside the existing mandatory training and certification framework for professional PPP users (Directive 2009/128/EC), covering pest identification, hidden infestation, thresholds, sanitation, resistance versus	Certified operators by user level and Member State; coverage as a share of national storage capacity.

#	Measure	Content	Suggested indicator
		application failure, mode-of-action rotation, equipment calibration including ULV and dual application, and residues and MRLs. Differentiated for farms, silos and traders, and port terminals, per Task 5.5.	
5	A predictable route to market for new modes of action	Timely and predictable evaluation of new active substances and technologies for post-harvest use, with resistance-management value recognised in the assessment — consistent with the principle that resistance risk is a key part of the approvals process.	Distinct modes of action authorised per Member State; time from submission to decision.

4. Delivery: no new Directive is required

- Requirements arising from the Directive on the sustainable use of pesticides are already incorporated into the statutory management requirements forming part of CAP conditionality — an existing legal hook for storage-specific IPM and training provisions.
- The CAP Strategic Plans carry EU-27 targets of 6 Million persons benefitting from advice, training or knowledge exchange, 201.792 advisors integrated within AKIS, and 2 Million persons on environmental and climate performance. The comparative assessment of those plans found that national values on pesticide use and risk are rarely set and implementation strategies frequently lack clarity; a stored-grain module would give measurable content to those commitments.
- Established expert networks already engaged by the project — IRAC, the IOBC-WPRS working groups on integrated protection of stored products, and the permanent committee of the International Working Conference on Stored-Product Protection — can carry the monitoring scheme.

5. Requests to the Commission

- Receive a technical briefing on the WP1 resistance results, including the methodology and the country and species-level findings.
- Assess the case for a permanent EU monitoring scheme for resistance in stored-product pests, built on the WP1 protocols and resistance-mapping approach.
- Consider the explicit treatment of post-harvest grain storage within the IPM provisions of the EU framework on the sustainable use of pesticides.
- Consider extending mandatory PPP training and certification to the grain storage and transformation sector, incorporating the stored-grain module set out under Measure 4.
- Support the continued availability of the WP1 sampling manual and decision-support tool after the project ends, as public goods for the sector.
- Take account, in future programming, of the narrowing authorised toolbox and of the absence of any authorised insect growth regulator for stored-grain use in the EU.

Sources : Every statement above is drawn from: the novIGRain regional conference deck (ILVO Merelbeke, 31 March 2026); the novIGRain technical report, third reporting period, annexes (21 December 2023); the Market Study H2020 Step 1, updated 2024, and its update note; the EU pesticide residues database extract of 2 September 2024; IRAG UK, Insecticide resistance and its management, v4 (2021); European Parliament AGRI study PE 747.255 (2023); the Areté study on EU storage capacities for DG AGRI (2017); and Shaheen, Crickmore and Husain (2016).

Policy Proposal 2

Novel PPP — Preventive Action — Short Track

Stimulating the short-track registration of novel active substances and plant protection products with preventive action in the EU grain storage sector. A policy proposal emanating from novIGRain Work Package 2, addressed to the European Commission, DG SANTE — Food Safety, Sustainability and Innovation.

The ask

Create an explicit, time-bound short-track evaluation route under Regulation (EC) No 1107/2009 for novel active substances and plant protection products intended for post-harvest protection of stored grain where the intended effect is preventive — preventing adult infestation from developing rather than killing established adults.

Actively promote preventive methods within EU integrated pest management policy for the storage stage of the cereal chain.

1. The problem

- **The toolbox is closing.** The novIGRain market study records that, with the sole exception of kieselguhr, the approval periods of the active substances relied upon by the sector — deltamethrin, cypermethrin, pirimiphos-methyl, pyrethrins, aluminium and magnesium phosphide, sulfuryl fluoride, spinosad — terminate in the coming years. Several are already banned nationally, and pirimiphos-methyl is forbidden in Germany.
- **Resistance is everywhere the project looked.** WP1 tested field strains of six stored-product species against phosphine, deltamethrin and pirimiphos-methyl (26 to 56 strains per species and substance). A certain type and level of resistance was detected in all sampled and countries; in each country, resistance was recorded to at least one of the tested active ingredients; the highest frequency tended to be found in southern countries. Sitophilus oryzae, Tribolium spp. and Rhyzopertha dominica were more frequently resistant.
- **The preventive chemistry is absent by regulatory status, not by technical failure.** The market study states that juvenile hormone analogues — methoprene, kinoprene, hydroprene — are of interest but are not authorised under the EU plant protection product regulations.
- **The sector is structurally curative.** French storage-organisation audits show more curative than preventive treatments, while prevention demonstrably works: 45 % of cells infested without cleaning against 30 % when fully cleaned including frames; 47 % infested without thermometry against 26 % with fixed thermometry. Direct insect control costs 0.17 to 1.19 EUR per tonne — against rejected and returned shipments, additional cleaning and weight loss, re-treatment, and penalties for delayed vessel rental when control fails, at a market tolerance of zero to two live pests per kilogram.

2. The demonstrated alternative — novIGRain WP2

Methograin IGR 30 ULV: a ready-to-use, plant oil-based ULV formulation containing 30 g/L S-methoprene, applied at 4 L per 100 tonnes, for post-harvest treatment of cereal grain in closed indoor storage, providing 9 months of long-term preventive control without noticeable odour. It disrupts insect development rather than acting as a neurotoxic adulticide, and is positioned by the project as supporting resistance management by reducing reliance on adulticide-based approaches. Some sprayers allow the larvicide and a conventional insecticide to be applied through two nozzles in a single pass, enabling mode-of-action alternation at loading.

3. The bottleneck

The regulatory pathway presented by the project places approval of the new active substance under Article 37 at around 2028 and product registration under Article 33 at around 2031 — several years beyond completion of the underlying science, which was reported to the Commission for the period ending 2023. The zonal registration step alone runs 12 to 21 months, followed by 120 days in concerned Member States plus a clock stop of up to 6 months. The project's own SWOT lists "complex regulation — long time to market" as an explicit threat, alongside a reducing number of available active substances, growing resistance to conventional treatments, and a market waiting for new products.

4. Six proposed measures

#	Measure	Instrument and evidence basis
1	Establish a defined, time-bound short-track evaluation route for post-harvest stored-grain active substances, with published stage timelines, disciplined clock stops and pre-submission technical dialogue	Regulation (EC) No 1107/2009, procedural guidance — basis: the 2028/2031 pathway and the SWOT threat on time to market
2	Make preventive intended effect, novel mode of action and demonstrated contribution to resistance management explicit prioritisation criteria for entry to the track	Evaluation prioritisation criteria — basis: WP1 resistance across all sampled Member States; juvenile hormone analogues not authorised under EU PPP rules
3	Streamline the authorisation stage for indoor, closed-facility post-harvest uses through a single zonal assessment with accelerated mutual recognition, without reducing assessment requirements	Zonal assessment and mutual recognition practice — basis: the indoor closed-storage use pattern and divergent national authorisations
4	Run the MRL procedure in parallel with active substance approval, so an authorised product has an applicable MRL in place at authorisation	MRL procedure sequencing — basis: the residue and MRL workstream in the WP2 package; cereals MRLs for incumbent substances
5	Address the storage stage explicitly in EU IPM policy: recognise post-harvest storage as a distinct IPM setting, integrate stored-grain preventive practice into mandatory training and certification, promote cleaning and fixed thermometry, and support ULV application equipment through existing instruments	Directive 2009/128/EC, national action plans, training and stewardship, investment instruments — basis: the project's IPM framework and the SWOT weaknesses on mindset change, machinery, training and stewardship
6	Establish or designate a standing EU-level resistance monitoring function for stored-product pests using harmonised discriminatory-dose methodology, and use its outputs to trigger prioritisation under Measure 2 and to inform renewal decisions	Standing monitoring function — basis: the WP1 programme and the discriminatory doses established for each species and substance

5. Requested action

- Take note of the novIGRain WP2 outcomes summarised here — efficacy, toxicological profile and regulatory pathway.
- Receive the consortium for a technical briefing on the WP1 resistance dataset and the WP2 regulatory package.
- Consider the six measures for integration into the EU work programme, beginning with Measures 1 and 2, which require procedural rather than legislative change.
- Indicate which Commission service and instrument would be the appropriate vehicle for a short-track route for post-harvest stored-grain uses.

Sources: novIGRain Regional Conference (ILVO, 31 March 2026); novIGRain technical report, 3rd reporting period — annexes (21 December 2023); Market study H2020 Step 1, updated 2024, and its 2024 update; pesticide residue export, MRL comparison for cereals (02 September 2024); IRAG UK, Insecticide resistance and its management, v4 (April 2021). Every factual statement above is drawn from these documents. The six measures are recommendations of the consortium. Full document: NIG-PP-002.