



13-4-BIOFERTILIZERS

SOWING INNOVATION
HARVESTING SUSTAINABLE YIELD

Biostimulants Certification Pathways

Presented by:

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NEVAL CRO 93/17

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From Innovation to Market: Regulatory Pathways for
Biofertilizers and Biostimulants in Europe

Checklist before claiming any agronomic effect

- ☐ What exact sentence will appear on the label?
- ☐ Which crop groups, application routes, doses and stages will it cover?
- ☐ What primary endpoint demonstrates that sentence in each crop?
- ☐ What control and statistical comparison will test it?

WHAT DO YOU NEED FOR YOUR LABEL?



NEVAL is performing and making the trials to give solid results



Protocols are built around the intended use and target crop



Trials Reports linking the research question, the data and the conclusions



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Co-funded by
the European Union

Crop groups used for plant-based claims

Broadacre: cereals, maize, potato and other extensive or processing crops.

Vegetables, ornamentals and aromatic/medicinal plants: e.g., lettuce, tomato, melon, pepper etc.

Woody perennials: e.g., citrus, grapevine, almond and olive.

EN 17700-1 framework for plant-based claims. Each claim must be supported within the intended crop scope.



How many trials for a plant-based claim?

One crop: 3 individual trials. One crop group: 6 trials across ≥ 2 crops.

Two crop groups: 8 trials, 4 per group and ≥ 2 crops per group.

All three groups: 9 trials, 3 per group and ≥ 2 crops per group.

Alternative: a trial series per crop with ≥ 4 field trials or ≥ 15 strip trials per series.

Count the trials supporting each claim separately. Soil-only claims have different minima.



The 4 EU biostimulant claims

01

Nutrient use efficiency

How the crop uses a specified nutrient

03

Quality traits

Which crop attribute improves

02

Tolerance to abiotic stress

How the crop responds to a defined stress

04

Availability of confined nutrients

Which nutrient becomes more available in soil or rhizosphere



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Claim 1 | Efficiency - An example across crop groups

N efficiency: compare a defined N programme with and without the biostimulant.

Cereal: grain yield and N input; tomato: marketable kg/ha and N input; citrus: fruit kg/ha and N input.

If claiming nutrient recovery, also quantify the plant nutrient export needed for that index.



How efficiently does the crop use a specified nutrient?



Yield, nutrient uptake and nutrient inputs define the indices

- Comparisons use “the product and a relevant control”
- Some indices need additional baseline treatments

1.	CONTROL NPK 50%
2.	CONTROL NPK 100%
3.	NPK 50% + PRODUCT 1x
4.	NPK 50% + PRODUCT 1,5x



INDEX EFFICIENCY



Index	Formula	Measurement and budget
Internal efficiency (Ie)	Y / U	Production per uptake. Plant assay
Partial productivity (Pfp)	Y / F	Production per supply. Document F
Nutrient export (Ne)	$Y \times C$	Exported nutrient. Plant assay
Recovery efficiency (Re)	$(U - U0) / F$	Recovery. Plant assay + controls
Physiological efficiency (Pe)	$(Y - Y0) / (U - U0)$	Conversion. Plant assay + controls
Agronomic efficiency (Ae)	$(Y - Y0) / F$	Extra production. Added controls

Y: production U: nutrient acquired F: nutrient supply C: concentration 0: baseline



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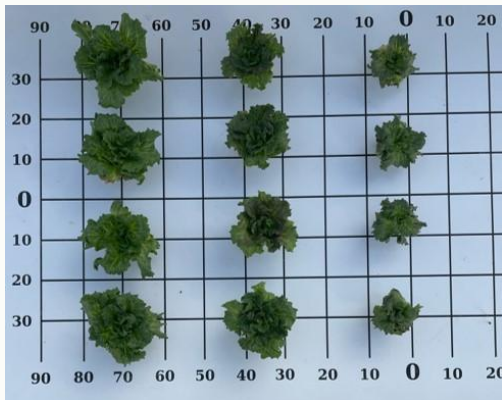
Claim 2 | Tolerance to abiotic stress



State the stress: drought, salinity, heat, cold or another defined abiotic factor.

Verify exposure with weather, soil or plant stress markers.

- Compare agronomic response under equivalent stress in treated and untreated plots.
- Soil-filled pots under cover can control water deficit and irrigation.
- Preferred arms: unstressed untreated; stressed untreated; stressed treated.
- Match stress duration and intensity, and record plant and agronomic markers.



Rainfall can erase a drought contrast; record the event and the actual stress₀

1 2 3 4

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Claim 3 | Commercial quality traits

Define the trait by crop: °Brix, firmness, colour, fruit calibre, grain composition or oil content.

Choose a recognised measurement method and commercial sampling stage.

Compare like harvests and specify the primary quality endpoint.



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Claim 4 | Confined nutrients in soil or rhizosphere

Specify the nutrient, the soil or rhizosphere matrix, and the pH.

Measure its available fraction with one consistent extraction method, or plant nutrient export when plants are used.

Characterise initial nutrient pools, texture, pH and product nutrient inputs.



COULD WE OBTAIN MORE THAN 1 CLAIM IN THE SAME TRIAL?

“We can share measurements and reduce costs, but we still need to demonstrate each claim separately.”

- Doses
- Phytotoxicity
- Timing
- Application method

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Nutrient use efficiency	“If we claim improved nitrogen use efficiency, we must define how we measure that efficiency and compare the product with a relevant control.”
Abiotic stress tolerance	“If we claim drought tolerance, we first need to demonstrate that the plants experienced drought.”
Quality traits	“If we claim improved fruit quality, we must specify whether we mean sweetness, firmness, size or another measurable trait.”
Nutrient availability	“If we claim improved phosphorus availability, we must distinguish mobilisation of soil phosphorus from phosphorus supplied by the product.”

COULD WE OBTAIN MORE THAN 1 CLAIM IN THE SAME TRIAL?

A Nutrient efficiency + quality

Proposal	Study and budget
Candidate claims	Nutrient efficiency + fruit quality
Trial design	Same nutrition, with / without product
Shared measurements	Yield, documented number increase, documented nutrient inputs, calibre and °Brix
Budget advantage	Pfp formula needs NO tissue nutrient assay

COULD WE OBTAIN MORE THAN 1 CLAIM IN THE SAME TRIAL?

B Stress tolerance + quality

Proposal	Study and budget
Candidate claims	Tolerance to a defined stress + quality
Trial design	Stress / no stress, with / without product
Shared measurements	Agronomic response and a quality trait
Budget trade-off	More plots. In-house stress measurements



COULD WE OBTAIN MORE THAN 1 CLAIM IN THE SAME TRIAL?

C Efficiency + nutrient availability

Proposal	Study and budget
Candidate claims	Efficiency + availability of one nutrient
Trial design	Defined soil and pH, with / without product
Shared measurements	Dry biomass and nutrient concentration
Budget advantage	One plant assay may support both assessments





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