



The Climate Risk Reality

The economics of resilience

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Farmers must produce more with less, withstand volatile weather, deliver ecosystem services, all while making a living.

COMPETITIVE

Economically viable

RESILIENT

*Withstands
climate & market
shocks*

**How can biostimulants
contribute and to
what degree?**

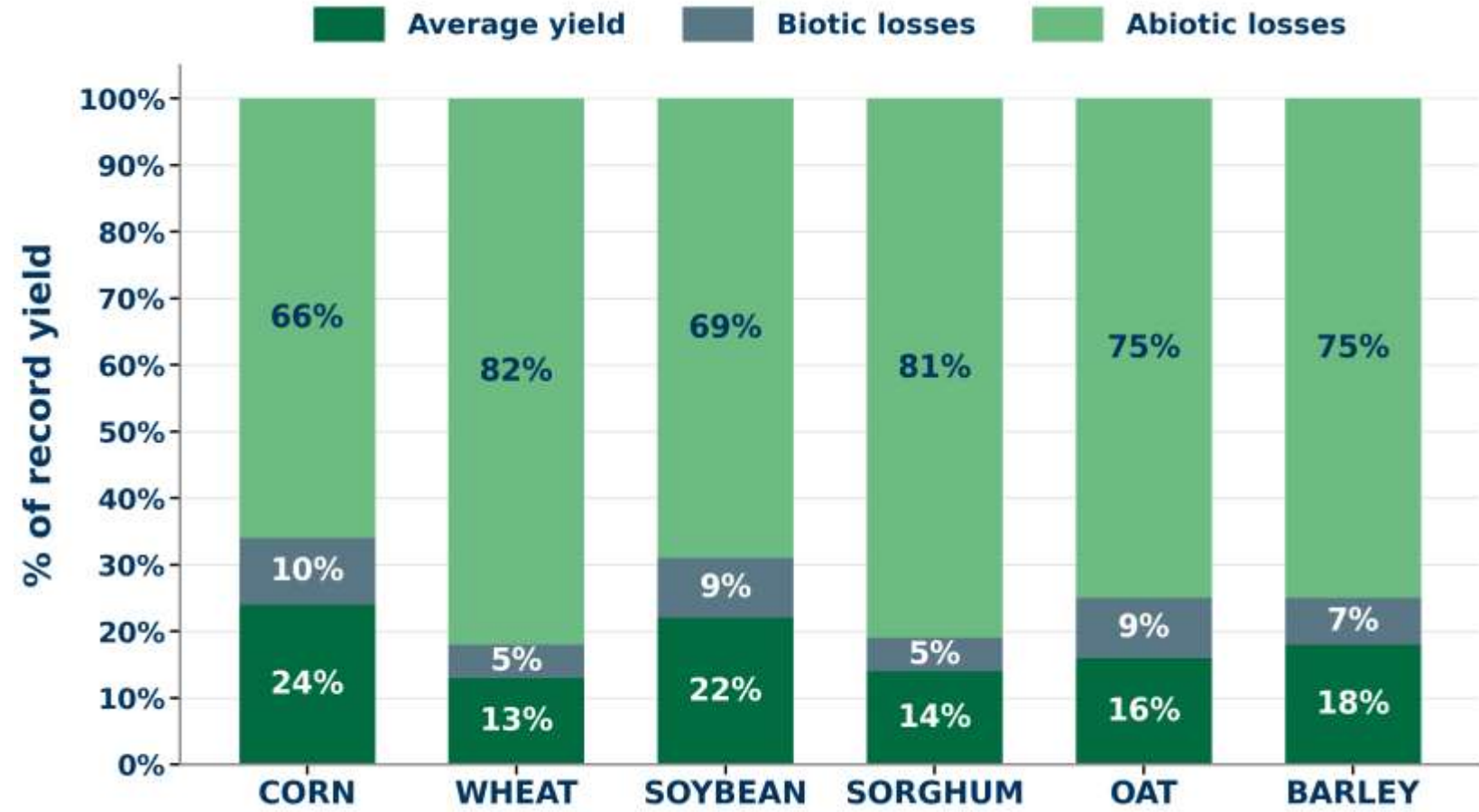
SUSTAINABLE

Ecosystem services

FOOD SECURE

Reliable supply

Climate is the biggest threat to crops



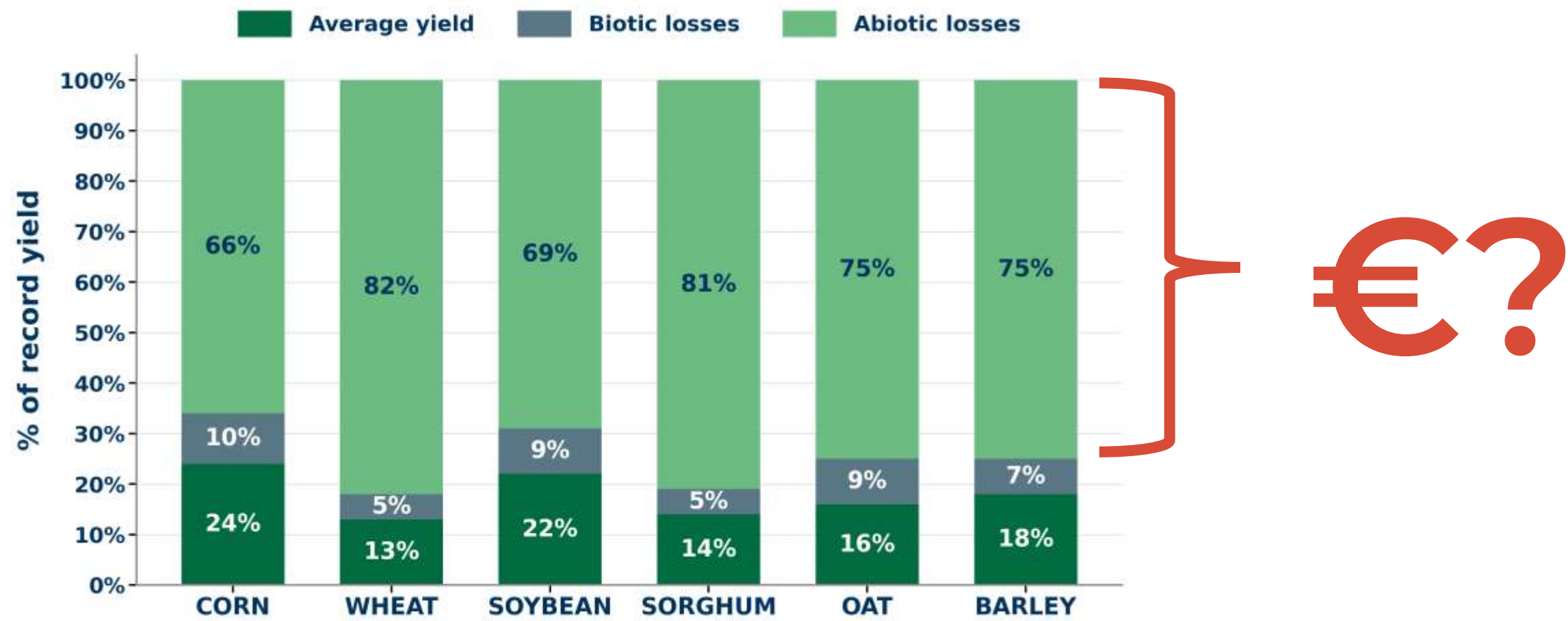
YIELD GAP ANALYSIS

>70%
CLIMATE LOSSES

<10%
PESTS & DISEASE
LOSSES

Source: adapted from Buchanan, Gruissem, Jones: Biochemistry and Molecular Biology of Plants, American Society of Plant Physiologists, 2000

What is the value of reducing this vulnerability?



Source: adapted from Buchanan, Gruissem, Jones: Biochemistry and Molecular Biology of Plants, American Society of Plant Physiologists, 2000



EU farmers' average crop
loss

€17.4bn

to abiotic stress
such as drought
every year

Source: fi-compass / European Investment Bank, 2025.



By 2050, abiotic stress
losses of EU crops
will rise to

€28.3bn

average every year

Source: fi-compass / European Investment Bank, 2025.



Only
20-30%
of EU farmers are
insured

Source: fi-compass / European Investment Bank, 2025.



70–80%

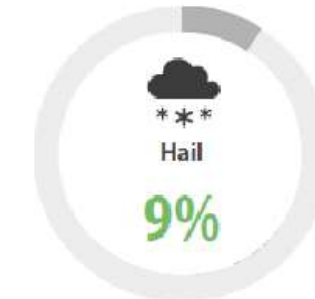
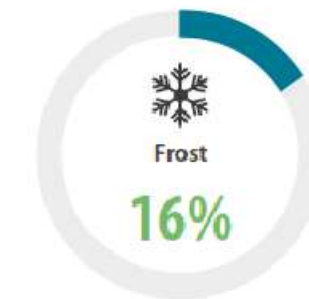
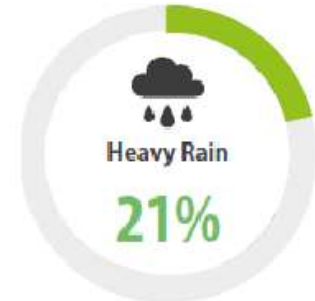
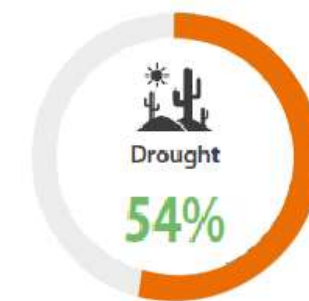
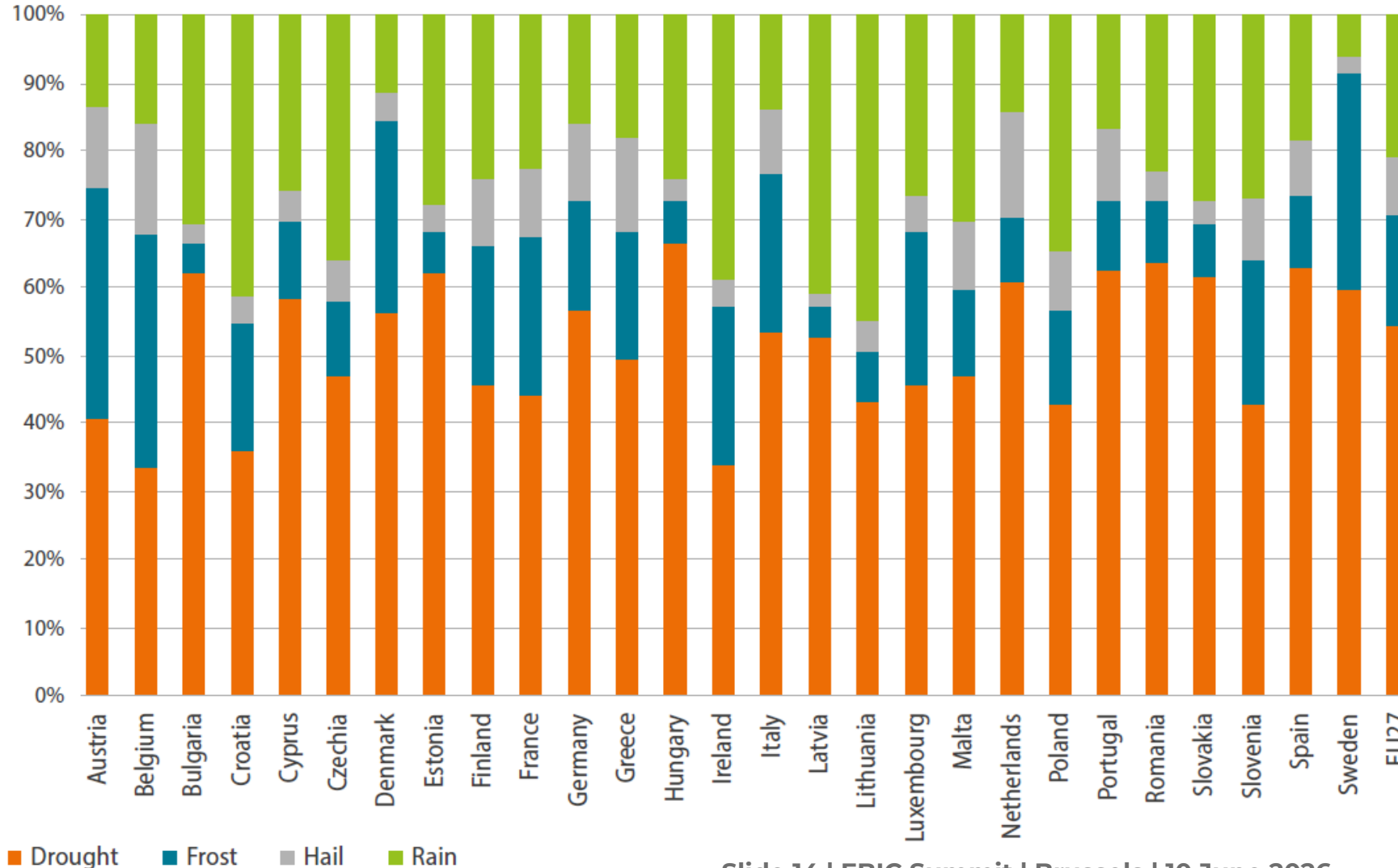
of the cost of these crop failures are borne by farmers, then governments through bailouts...

...and then into supply chains and food prices

Source: fi-compass / European Investment Bank, 2025.

Drought is the dominant cause of losses

Relative Percentage of Crop AAL by Hazard and Country



Biostimulants help reduce vulnerability

H

x

E

x

V

=

LOSS

HAZARD

Climate event
probability and
intensity

*Outside farmer
control*

EXPOSURE

What is at risk:
crops, area, value

Farmers must farm

VULNERABILITY

Damage at given
stress intensity.

*Can be reduced
by biostimulants*

Source: [fi-compass / European Investment Bank, 2025.](#))

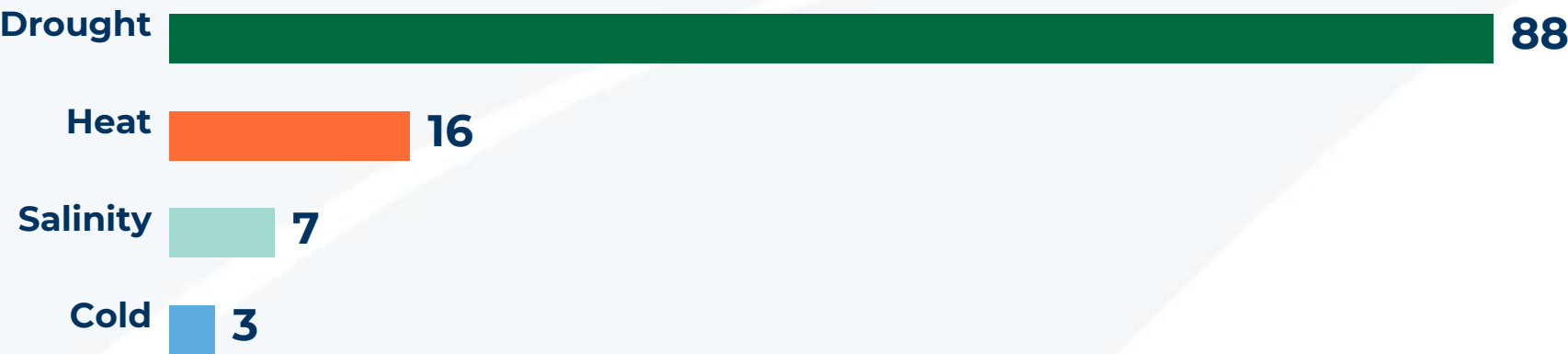


**Can EBIC evidence
show reduced loss
under abiotic stress?**

Industry R&D is responding to farmers' needs for drought tolerance tools



Trials by stress type



DROUGHT-FOCUSED

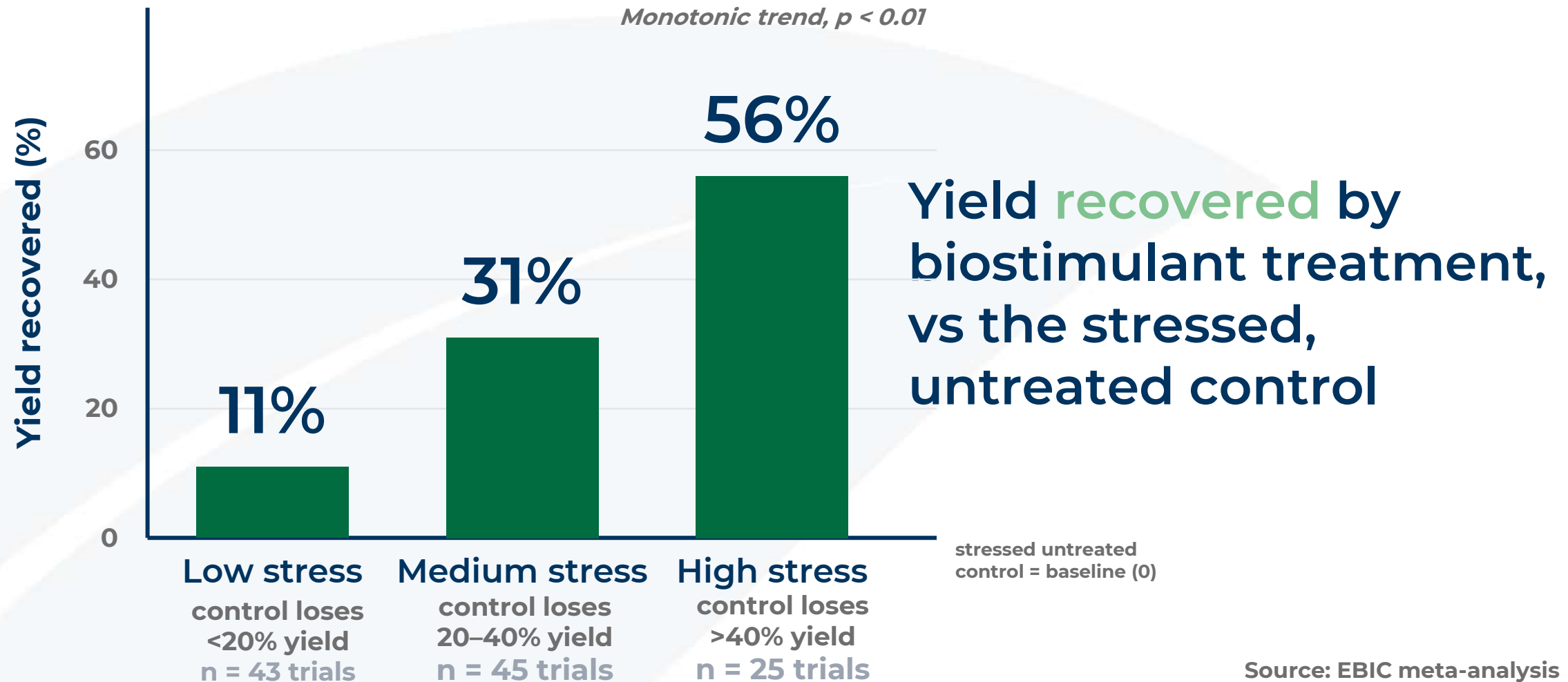
77%

of EBIC's trials are on the dominant EU climate risk

Evidence Base:
34 field / 71 controlled / 9 protected
Controlled trials establish efficacy; field trials validate real-world applicability (31.3% field-validated)

Source: EBIC meta-analysis (114 trials, 623 observations).

The worse the stress, the larger the benefit



Source: EBIC meta-analysis

Lab to field: the benefit holds

Positive effects maintained across all trial settings (expressed as a mean)



Scientific literature backs up the usefulness of plant biostimulants under drought and heat stress

Comprehensive Global Assessment

1,087 observations
180 studies worldwide

Average field yield
effect: **+17.9%**
across all conditions

+24.8%

yield lift from plant
biostimulants in arid
conditions

(higher response in poor soils)

Source: Li et al. (2022) Frontiers in Plant Science, Vol 13, 836702

4-8% points of climate-related loss avoided

Illustrative proof-of-concept:

SCENARIO 1
Moderate stress
region

20%
yield loss to
abiotic stress

×

19.7%
biostimulant
loss mitigation

=

4.0%
Yield saved

SCENARIO 2
High stress
region

40%
yield loss to
abiotic stress

×

19.7%
biostimulant
loss mitigation

=

8.0%
Yield saved

€0.7–1.4bn worth of crop potentially saved
enough to justify the next risk-modelling step

Biostimulants act as biological shock absorbers

**RISK LAYER 3:
CATASTROPHIC**
Exceeds insurance capacity

Reduce loss escalation
Fewer events tip into severe or catastrophic loss

RISK LAYER 2: SEVERE
Insurance-covered losses

Stabilise yield
Lower variance supports insurability and bankability

RISK LAYER 1: ATTRITIONAL
Frequent losses that erode margins

Protect farm margins
Absorb frequent small losses that erode reserves

Source: [fi-compass / European Investment Bank, 2025.](#)

Why this matters beyond the farm gate

Plant biostimulants protect farmers

by defending margins against recurring climate stress

Plant biostimulants support food companies

through steadier sourcing, protected contracts and supply continuity

Plant biostimulants reduce risk for insurers and lenders

by lowering yield variance and supporting insurability

Plant biostimulants give policymakers an adaptation lever

by making vulnerability reduction measurable, financeable and scalable

Same reduced loss. Different balance sheets. Shared reason to invest.

Realising the full potential of plant biostimulants

~€1bn of crop losses potentially recoverable

- 1 Remove inappropriate regulatory obstacles**
by modernising frameworks, including definitions and technical requirements
- 2 Streamline regulations across sectors**
to minimise duplication and allow proven technologies to move faster from evidence to adoption
- 3 Recognise and reward vulnerability reduction**
translate reduced loss under stress into models, finance and policy frameworks, so farmers do not carry the full adoption cost alone