

# RESULTS IN DETAIL 2018 - 2022

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# 01 SEED SAFETY AND FIELD EMERGENCE WITH GRAINGUARD

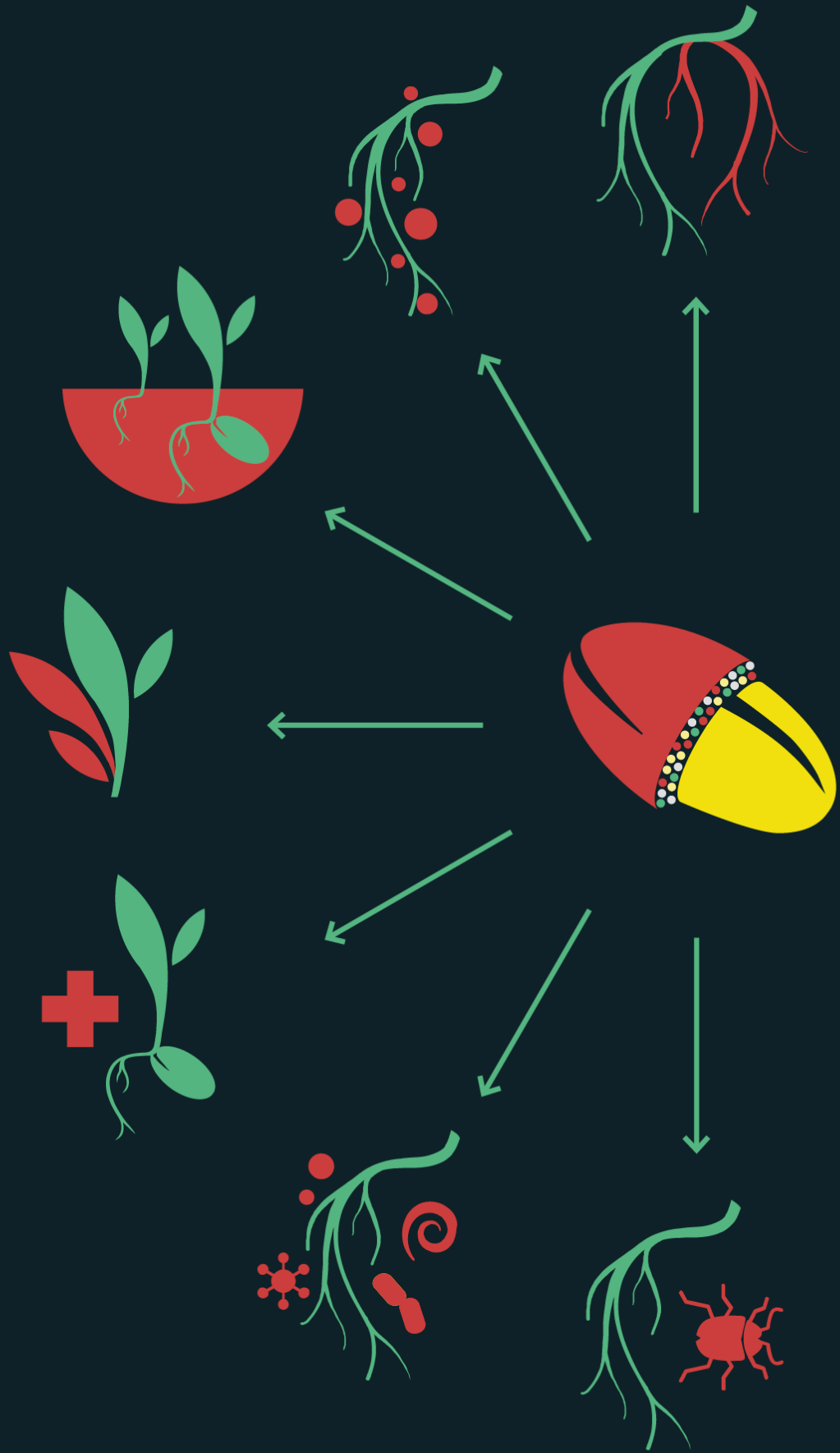
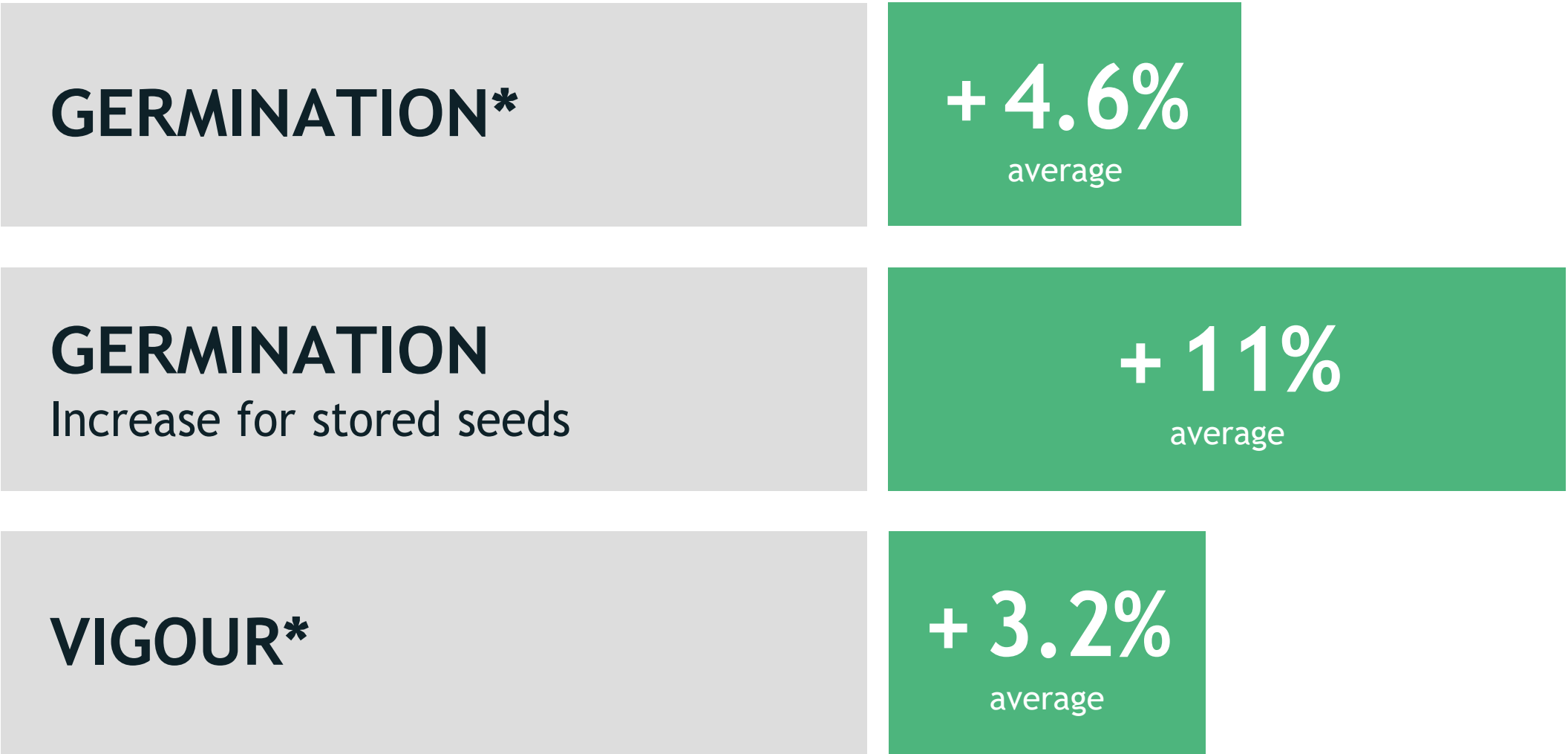
- Important components for a good field emergence are a high germination capacity of the seeds as well as a high vigour.
- **GRAINGUARD** contains more than 20 selected and carefully balanced active ingredients and nutrients. Already during germination, they ensure the activation of numerous enzymes involved in the metabolism.
- Due to the activation of metabolic processes, seeds treated with **GRAINGUARD** show higher germination capacity, germination speed and vigour in laboratory tests.
- Field trials from 2019 to 2022 showed a positive effect on field emergence due to improved germination with **GRAINGUARD**. Seeds treated with **GRAINGUARD** showed up to 30 % higher field emergence than the control group.



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# GERMINATION AND VIGOUR

All it needs.



\*laboratory tests in 2020, n = 4 repetitions per test



# FIELD EMERGENCE WITH GRAINGUARD 2020: BAVARIAN STATE MINISTRY CONFIRMED EFFECTS

Results from field trials of the Bavarian State Ministry of Food, Agriculture and Forestry (StMELF),  
Münchberg Office for Food, Agriculture and Forestry

TREATMENT	FIELD EMERGENCE* [%]	PLANTS/M <sup>2</sup>
GRAINGUARD	84.2	363
Fludioxonil, Sedaxane, Tebuconazol	71.5	308
Untreated	79.6	343
Electronic seed treatment	85.6	369
Seed treatment containing mustard flour	75.9	327

- Location Rieglersreuth (Bavaria)
- Winter barley, variety SU Ellen
- Sowing date: 09/22/2020 with 440 grains/m<sup>2</sup>
- Counting field emergence: 10/09/2020

\* Field emergence as percentage of emerged plants from germinable seeds (per square meter),  
available online at : <https://www.aelf-bm.bayern.de/landwirtschaft/pflanzenbau/276170/index.php>

# FIELD EMERGENCE WITH GRAINGUARD 2019

Results of own field trials

CROP	TREATMENT	FIELD EMERGENCE* [%]	SEEDING RATE [grains/m <sup>2</sup> ]	LOCATION
WINTER WHEAT	chemical treatment (control)	74.4	420 grains / m <sup>2</sup>	Westerkappeln, strip trial
	<b>GRAINGUARD</b>	<b>88.2</b>		
	chemical treatment (control)	83.9	150 grains / m <sup>2</sup> (hybrid)	Cappeln, plot trial
	<b>GRAINGUARD</b> - without chemical treatment -	<b>87.8</b>		
	chemical treatment (control)	64.8	400 grains / m <sup>2</sup>	Westerkappeln, strip trial
	<b>GRAINGUARD</b>	<b>70.6</b>		
WINTER RYE	chemical treatment (control)	81.5	220 grains / m <sup>2</sup> (hybrid)	Cappeln, plot trial
	<b>GRAINGUARD</b> - without chemical treatment -	<b>98.8</b>		
WINTER BARLEY	chemical treatment (control)	61.2	330 grains / m <sup>2</sup>	Warendorf, strip trial
	<b>GRAINGUARD</b>	<b>89.8</b>		

\* Field emergence as percentage of emerged plants from germinable seeds (per square meter)



# 02 ROOT DEVELOPMENT WITH GRAINGUARD

- Due to the unique combination of active ingredients used, plants form more fine roots, allowing more nutrients and water to be absorbed.
- The resulting increase in root surface area creates additional habitat for microorganisms living on the root surface, which can further improve plant growth.
- From youth development to harvest, resources can thus be used more effectively for biomass production.
- In field trials (2018 - 2022), significantly more root mass was observed in plants treated with GRAINGUARD compared to the control group. Seed treatment with GRAINGUARD had a positive effect on root fresh mass right at the beginning of growth ([cf. p. 16](#)).
- The improved root performance had a positive effect on shoot fresh mass during further development (EC39) ([cf. p. 16](#)).

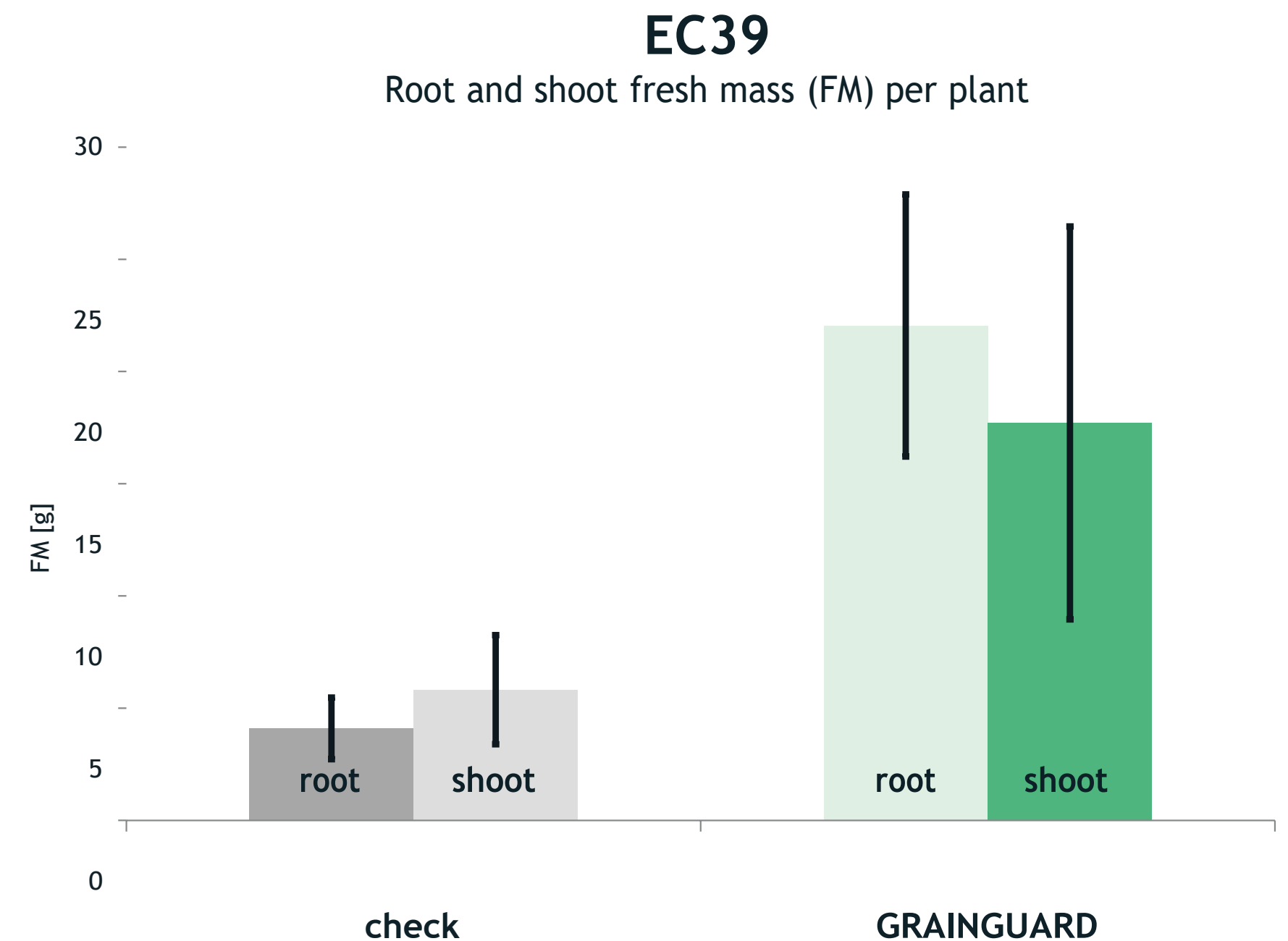
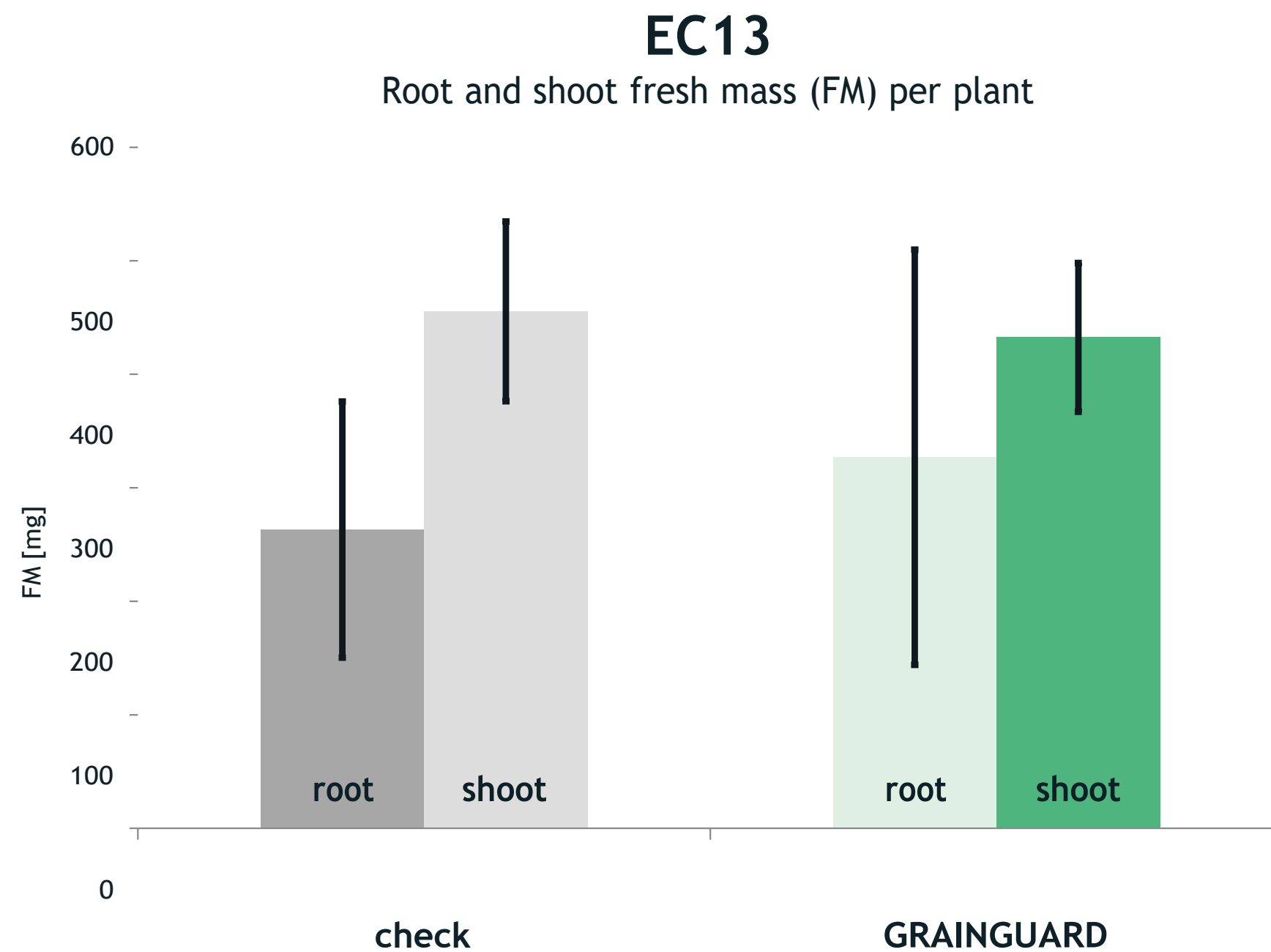


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# SHOOT AND ROOT DEVELOPMENT WITH GRAINGUARD

Winter barley, strip trial in North Rhine-Westphalia





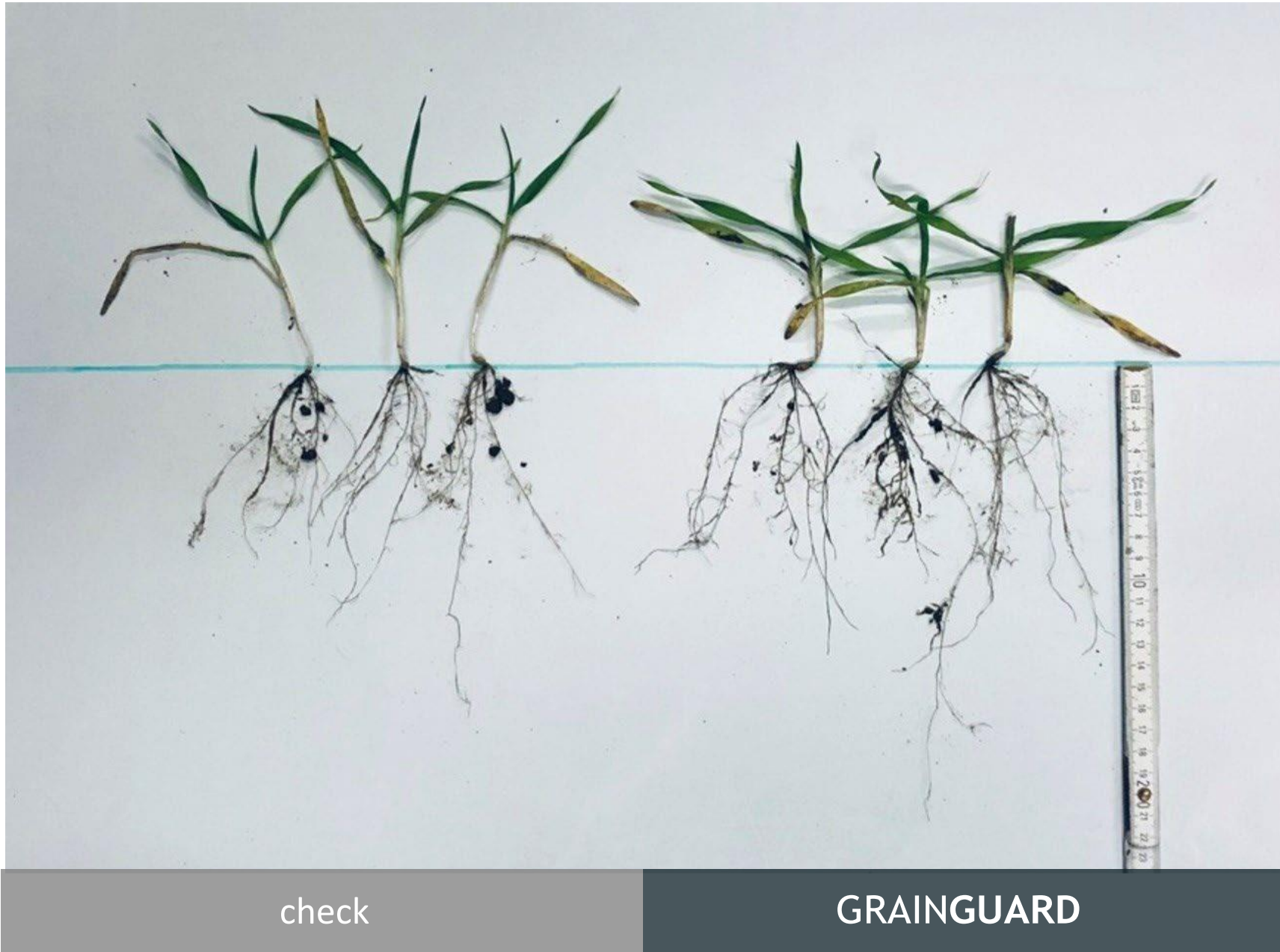
n = 5 repetitions per treatment  
Sassenberg (North Rhine-Westphalia), 2019



# ROOT DEVELOPMENT WITH GRAINGUARD

For a more efficient use of resources.

## WINTER BARLEY



## WINTER WHEAT



# ROOT DEVELOPMENT WITH GRAINGUARD

Winter barley, variety KWS Orbit, sowing date 09/26/2020, Greven (NRW)



# BECAUSE IT WORKS.

First performance analyses of GRAINGUARD confirm the functionality of the soil microbiome of the wheat rhizosphere



› **Significantly higher bacterial and fungal diversity** in the root zone of plants from field emergence until spring



› **Reduced fungal pathogens**



› **Earlier establishment and stabilization** of growth-enhancing microorganisms in the root zone and thus formation of the soil-microbiome.

# SIGNIFICANTLY HIGHER DIVERSITY

in the root zone of plants from field emergence to springtime

## Bacterial richness in the rhizosphere

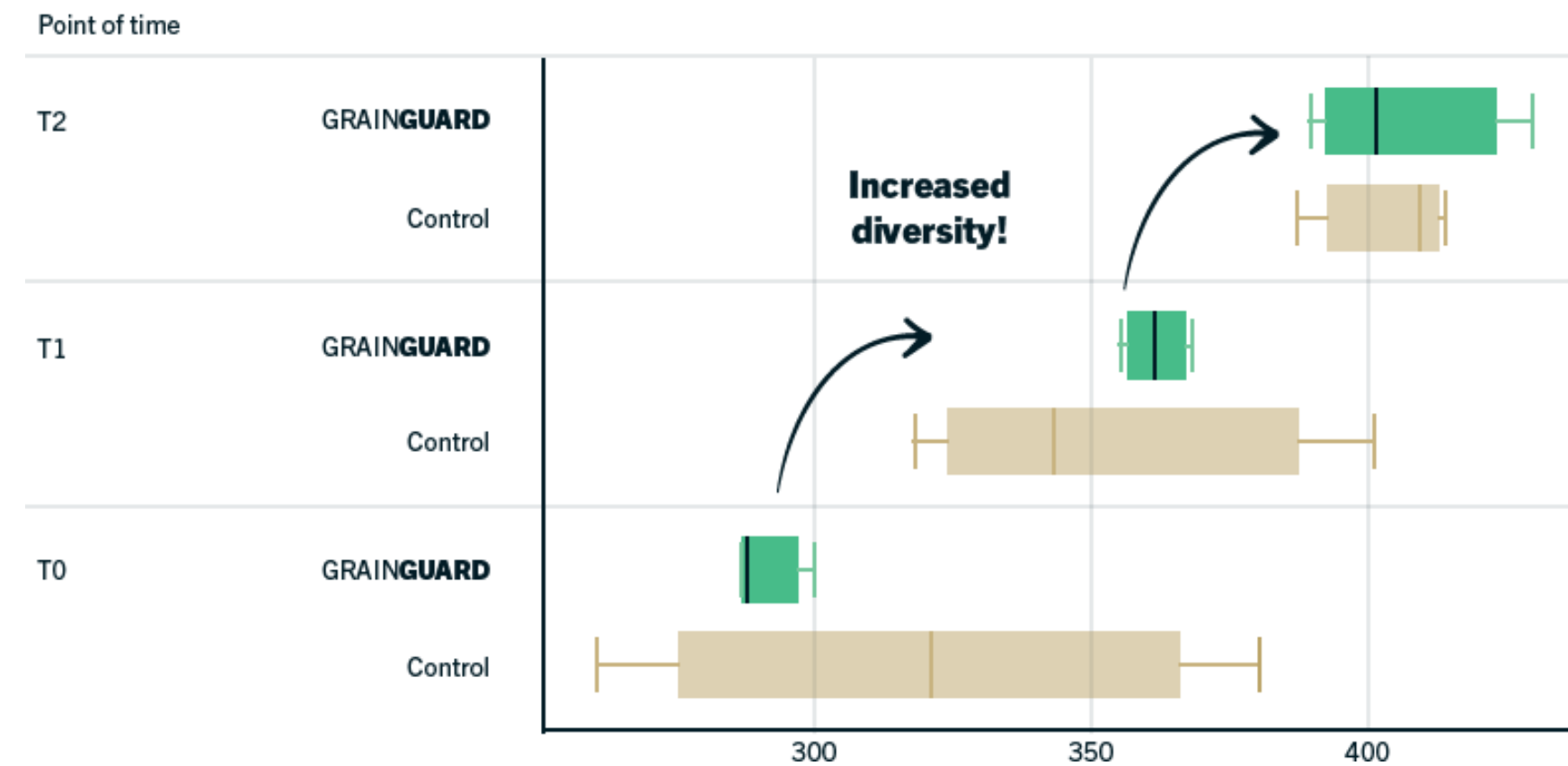


Fig. 1: Measured by the number of different species detected,  $\alpha$ -diversity, analysis shows that GRAINGUARD significantly increased bacterial richness in the rhizosphere from T0 to T1 and from T1 to T2.

## Fungal richness in the rhizosphere

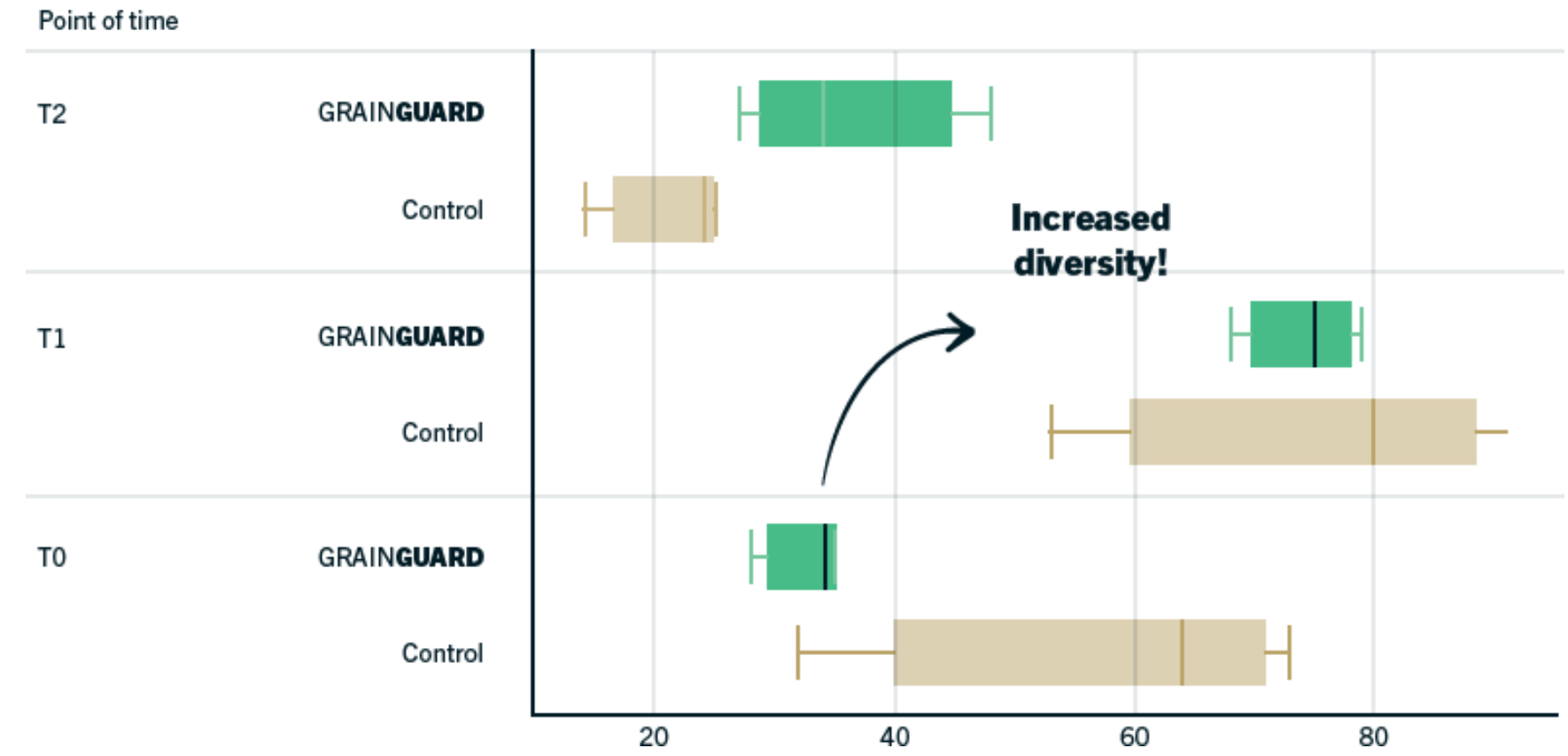


Fig. 2: Measured by the number of different fungal species detected,  $\alpha$ -diversity, analysis shows that GRAINGUARD significantly increased fungal richness in the rhizosphere from T0 to T1.

# EARLIER ESTABLISHMENT AND STABILIZATION

of growth-enhancing microorganisms in the root zone and thus formation of the soil-microbiome

## Stability of bacterial diversity in the rhizosphere

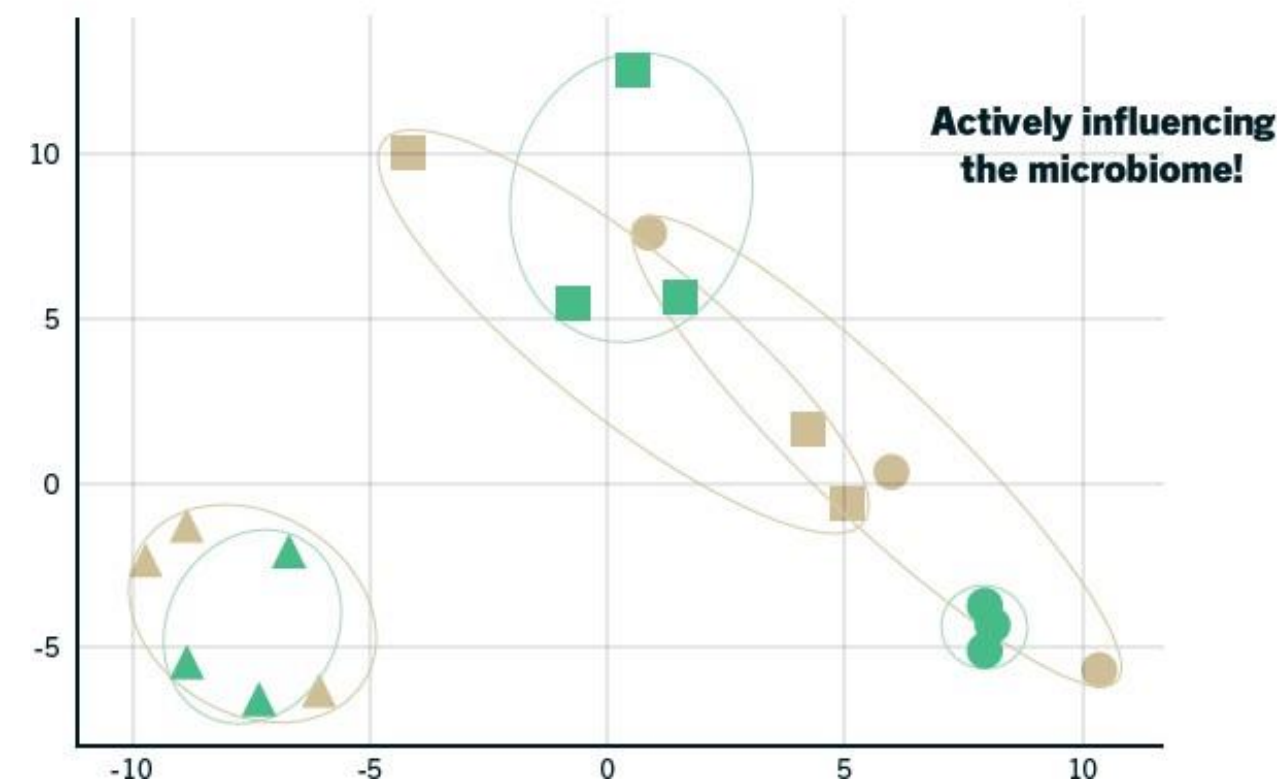


Fig. 3: The  $\beta$ -diversity analysis shows that the increase in bacterial richness by GRAINGUARD additionally correlates with a difference in the abundance profile from the plots. The smaller the distance between the points on these two axes, the more similar the samples are in their bacterial diversity. At all three points of time, all three sampling positions of GRAINGUARD show a higher microbial similarity compared to the untreated control

## Stability of fungal diversity in the rhizosphere

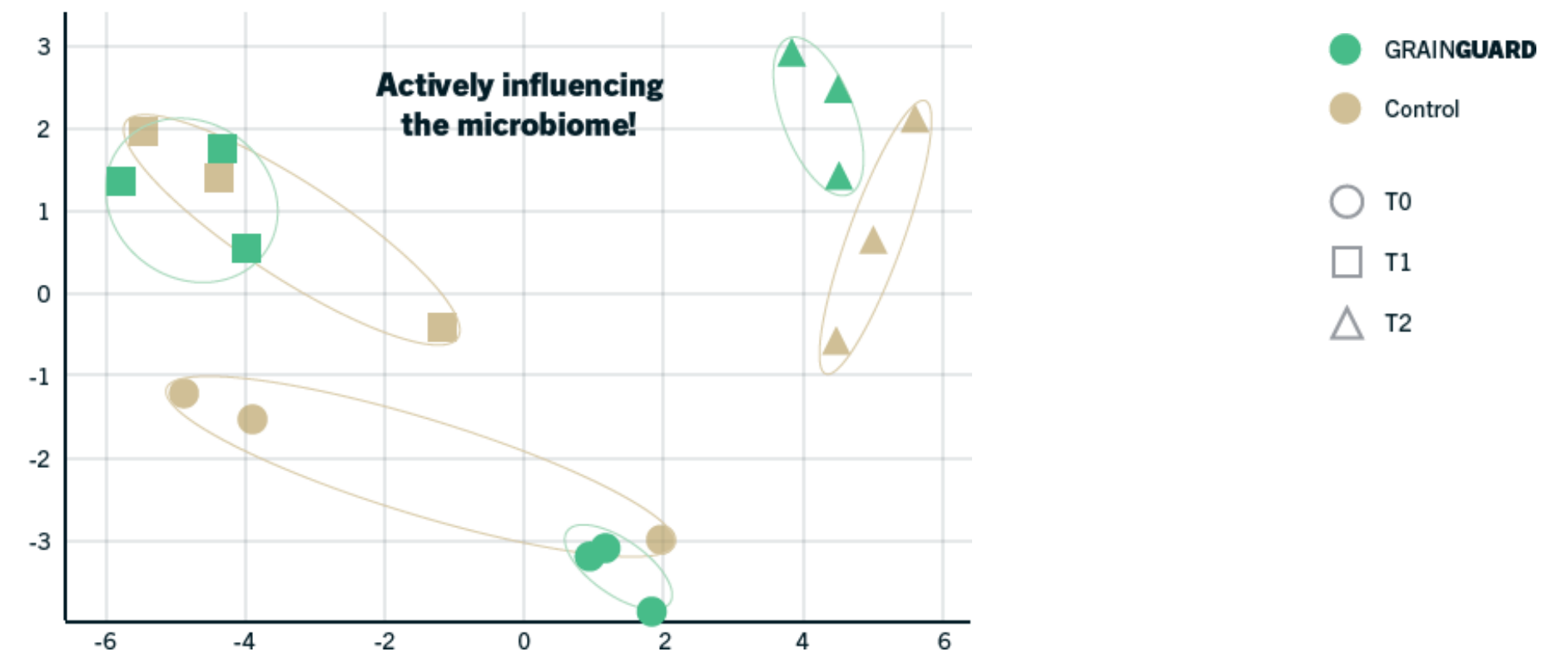


Fig. 4: The  $\beta$ -diversity analysis shows that the increase in fungal richness by GRAINGUARD additionally correlates with a difference in the abundance profile from the plots. The smaller the distance between the points on these two axes, the more similar the samples are in their fungal diversity. At all three points of time, all three sampling positions of GRAINGUARD show a higher microbial similarity compared to the untreated control

# 03 LEAF AREA AND TILLERING WITH GRAINGUARD

- Due to the improved root system and enhanced acquisition of nutrients and water, plants treated with GRAINGUARD form more leaf biomass and a larger leaf area. This effect is further enhanced by the interaction with biostimulances contained in GRAINGUARD.
- The formation of tillers depends, among other things, on the nutrient and water status of the plant: the improved nutrient uptake additionally enables the formation of more tillers.
- The higher production of above-ground biomass creates an overall larger area for the absorption or utilization of sunlight as a prerequisite for high photosynthetic performance.
- In field trials (2019 - 2022), plants treated with GRAINGUARD showed an increased leaf area index ([cf. p. 25](#)).

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# DEVELOPMENT OF LEAF AREA WITH GRAINGUARD

Greven 2020/2021

**WINTER BARLEY**  
(variety KWS Orbit, Greven)



**WINTER RYE**  
(variety SU Performer, Greven)



**WINTER BARLEY**  
(variety KWS Orbit, Greven)



# TILLERING WITH GRAINGUARD

Winter barley (KWS Orbit), Greven 2022



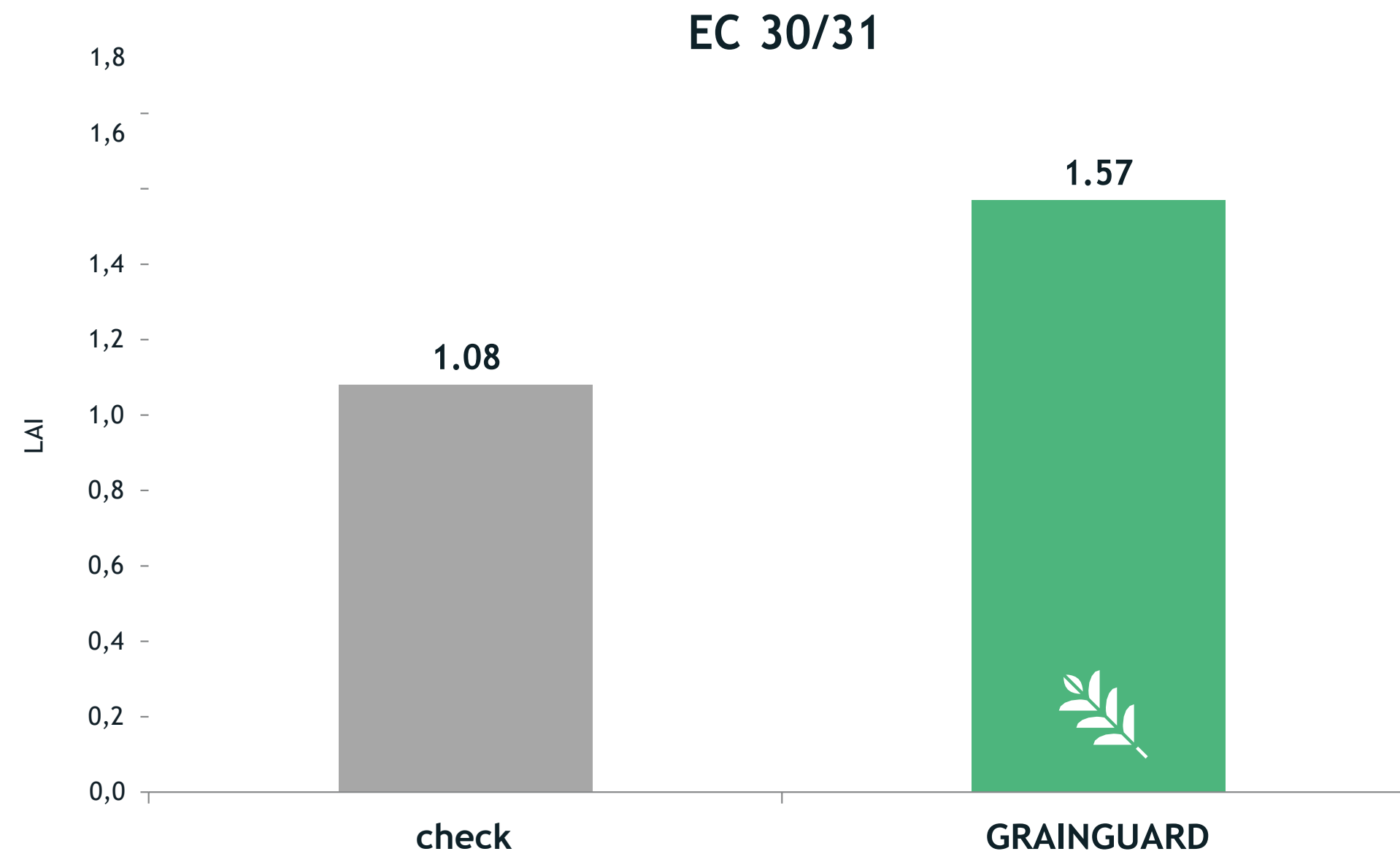
- Larger number of **tillers per plant** with **GRAINGUARD**
- Development of higher **root mass** with an increased proportion of **fine roots**



# LEAF AREA WITH GRAINGUARD

Winter wheat

Leaf Area Index (LAI) defined as Leaf Area [m<sup>2</sup>] / area [m<sup>2</sup>]





Westerkappeln (North Rhine-Westphalia), 2019/20

# LEAF AREA WITH GRAINGUARD

# DEVELOPMENT OF LEAF AREA WITH GRAINGUARD

Yield 2020

**WINTER BARLEY**  
(variety SY Galileo,  
Warendorf, NRW)



**HYBRID WHEAT**  
(variety SU Hymalaya,  
Cappeln, Lower Saxony)



**HYBRID WHEAT**  
(variety SU Hymalaya,  
Cappeln, Lower Saxony)



# 04 EAR DEVELOPMENT WITH GRAINGUARD

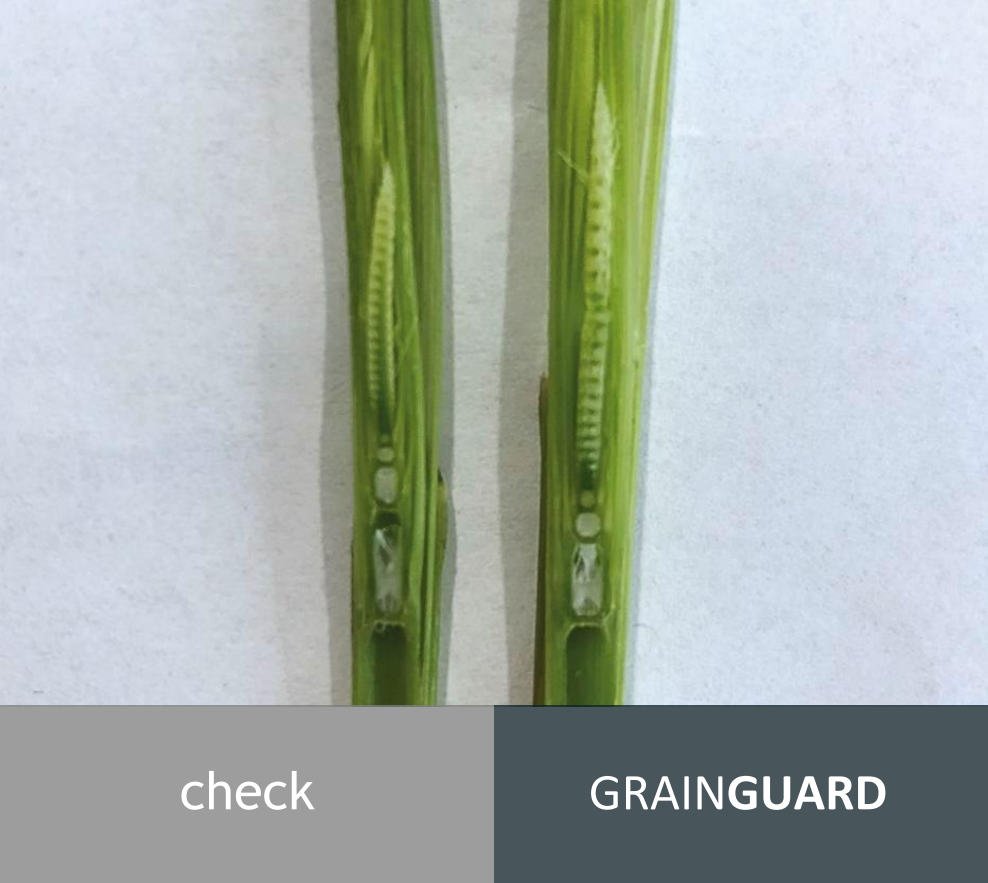
- Already during the tillering phase (beginning from EC25), formation of ears is initiated from the growing point.
- Competition for nutrients and water between the developing embryo and leaf apparatus can lead to a decrease of spikelets and florets under nutrient deficiency.
- In 2018 - 2022, plants treated with GRAINGUARD showed a better development of spikes. The available nutrients and water were utilized more efficient.
- This observation was also evident in further plant development. Tillers were better developed with GRAINGUARD compared to the check (cf. p. 28).



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# EAR DEVELOPMENT AT WITH GRAINGUARD

EAR DEVELOPMENT OF MAIN SHOOT WINTER WHEAT



EC 30/31

EAR DEVELOPMENT OF MAIN SHOOT AND TILLERS HYBRID RYE



EC 32/33

EAR DEVELOPMENT OF MAIN SHOOT AND TILLERS WINTER BARLEY



EC 39



# 05 CROP DEVELOPMENT WITH GRAINGUARD 2018 - 2022

- Higher germination capacity and seed vigour
- Up to 30% higher field emergence
- Improved radicle development and increased root growth (higher proportion of fine roots)
- Stronger tillering
- Higher surface coverage (%) and Leaf Area Index (LAI)
- Enhanced plant growth and ear development due to more efficient use of resources



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# 06 YIELD WITH GRAINGUARD 2018 - 2022

- The complex composition of **GRAINGUARD** ensures a more efficient resource utilization and more stress-resistant development in all growth phases, thus creating the best conditions for a high yield.
- On average (2018 - 2022), **GRAINGUARD** demonstrated a yield increase of 4% under different agricultural practices and environmental conditions.

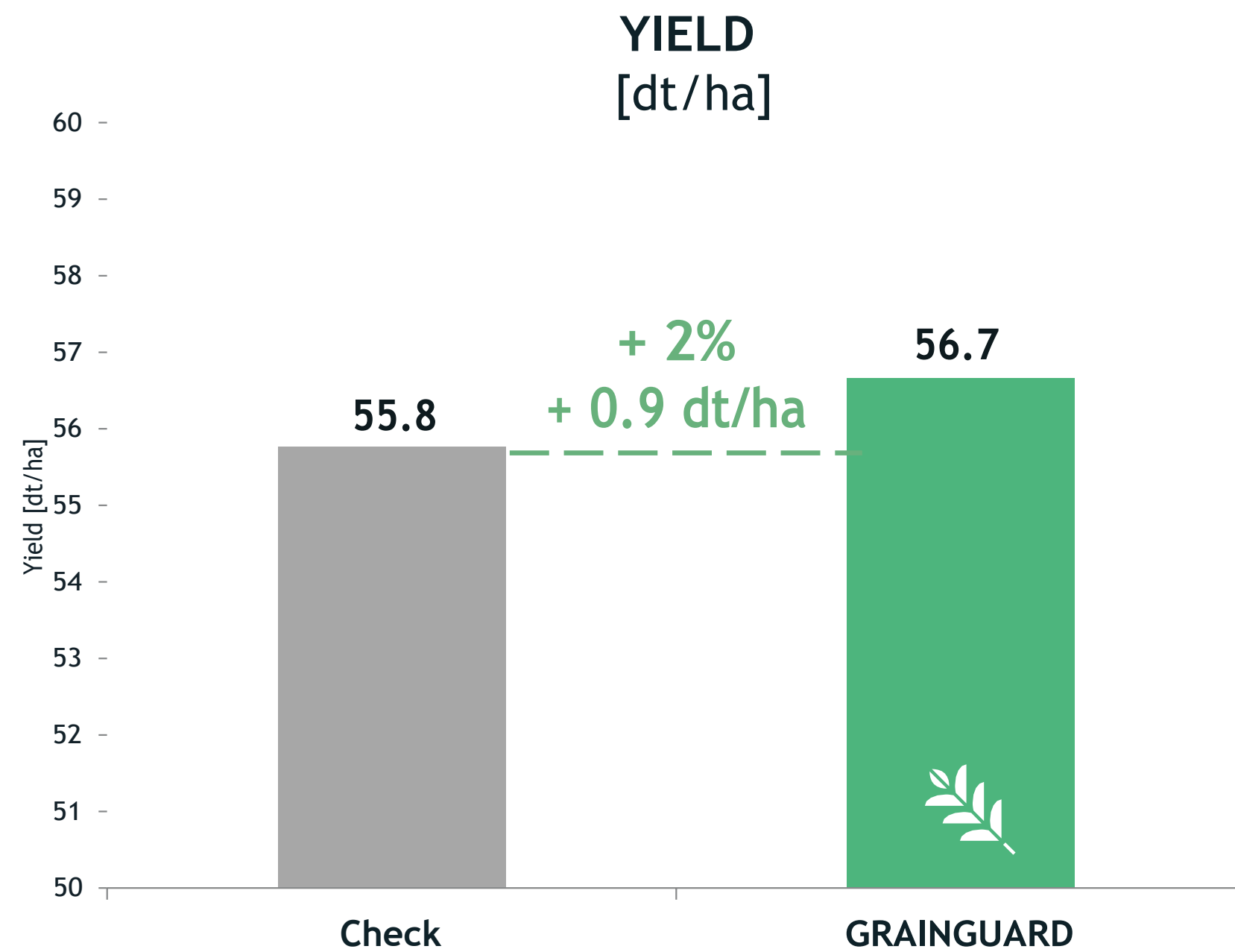


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# YIELD WITH GRAINGUARD 2022

Strip trial winter wheat in Austria



Variety: Arameus  
Strip trial  
Field trial manager: n.n.



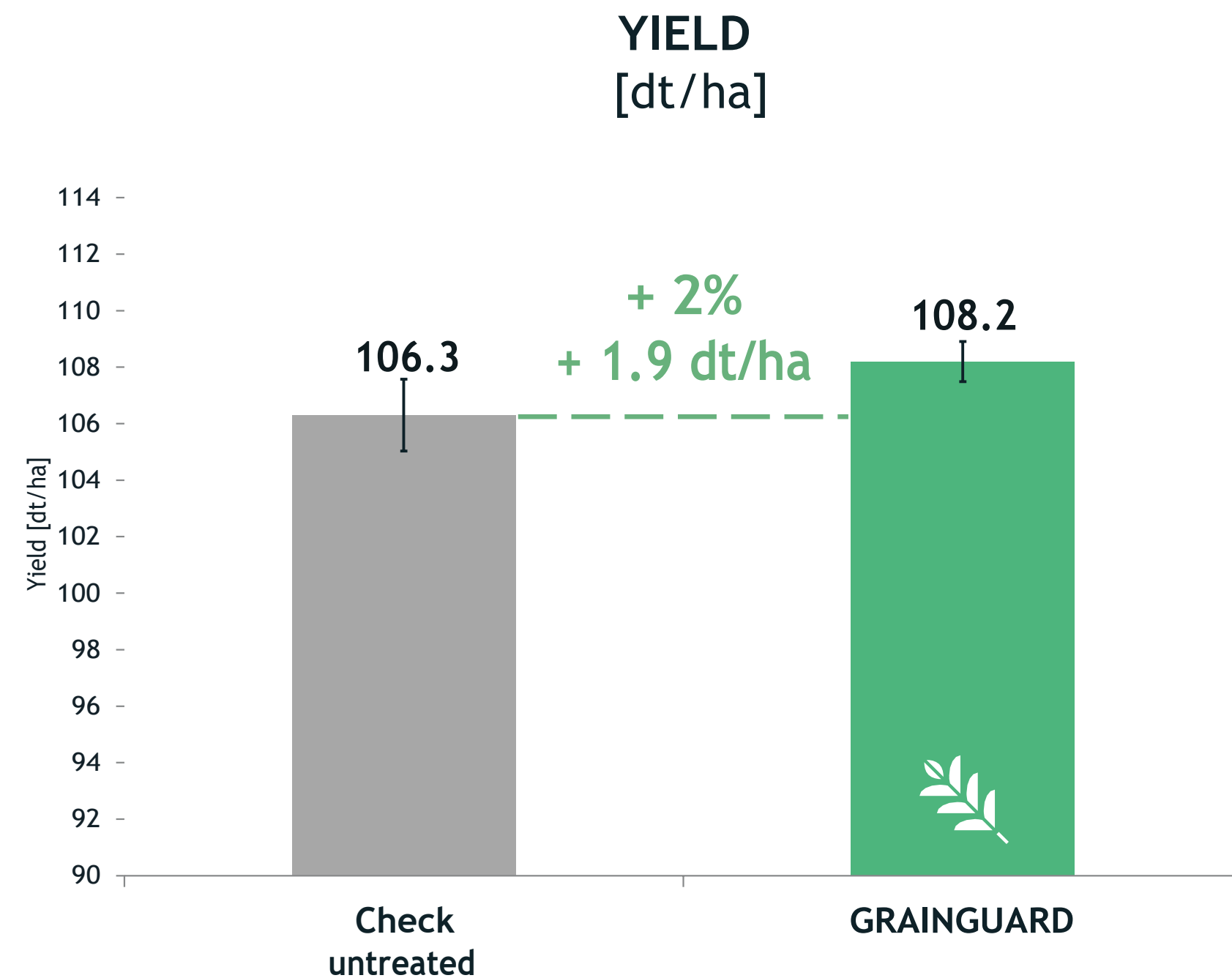
Austria

# YIELD WITH GRAINGUARD 2022

Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

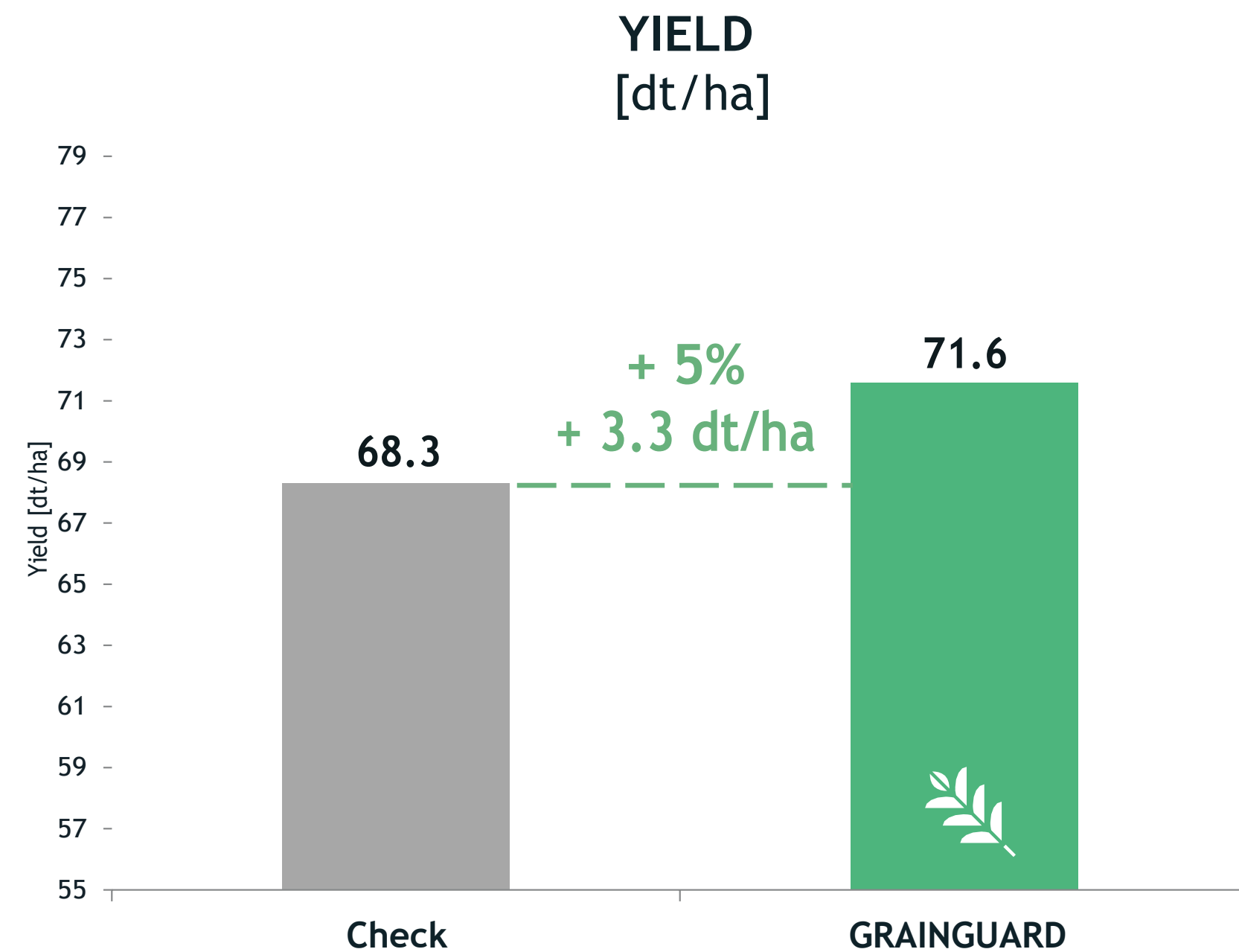
Strip trial winter barley in Mecklenburg-Western Pomerania



Variety: n.n.  
Lübs (Mecklenburg-Western Pomerania)  
Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

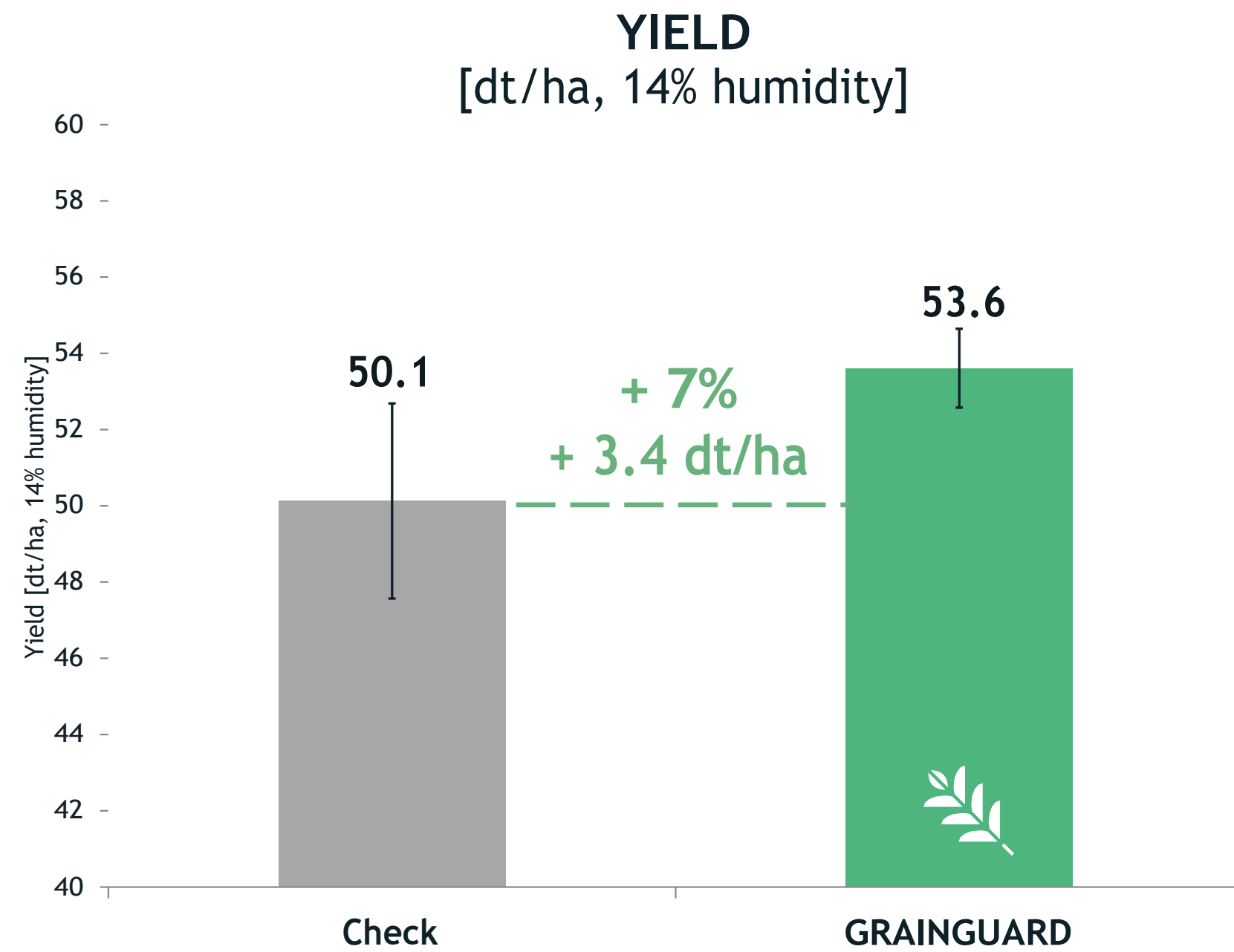
Strip trial winter wheat in Mecklenburg-Western Pomerania



Variety: n.n.  
Lübs (Mecklenburg-Western Pomerania)  
Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

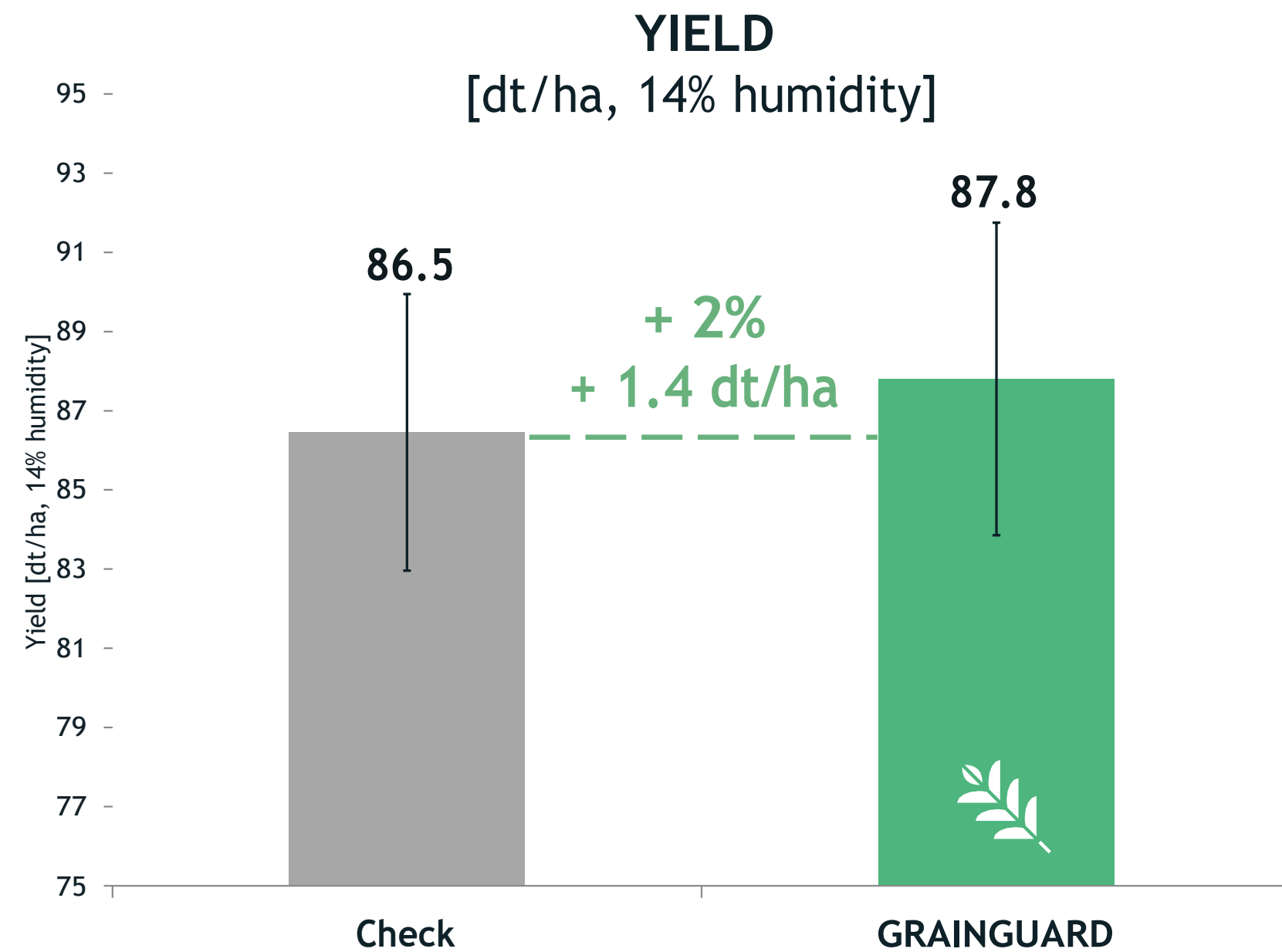
Plot trial winter wheat in the US



Variety: n.n.  
Lima (Ohio)  
Plot trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

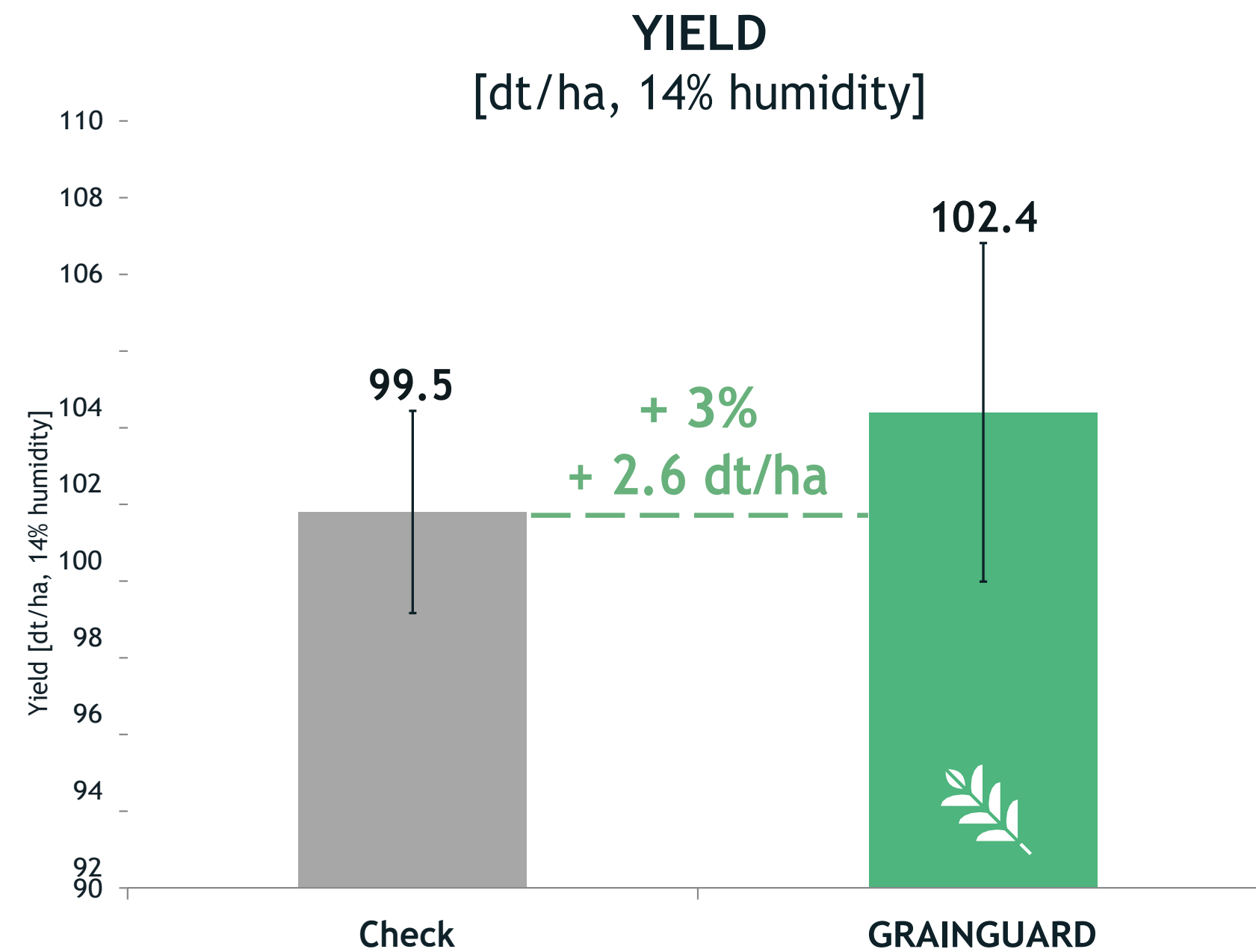
Plot trial winter wheat in Greven (North Rhine-Westphalia)



Variety: SU Himalaya  
Greven (North Rhine-Westphalia)  
Plot trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

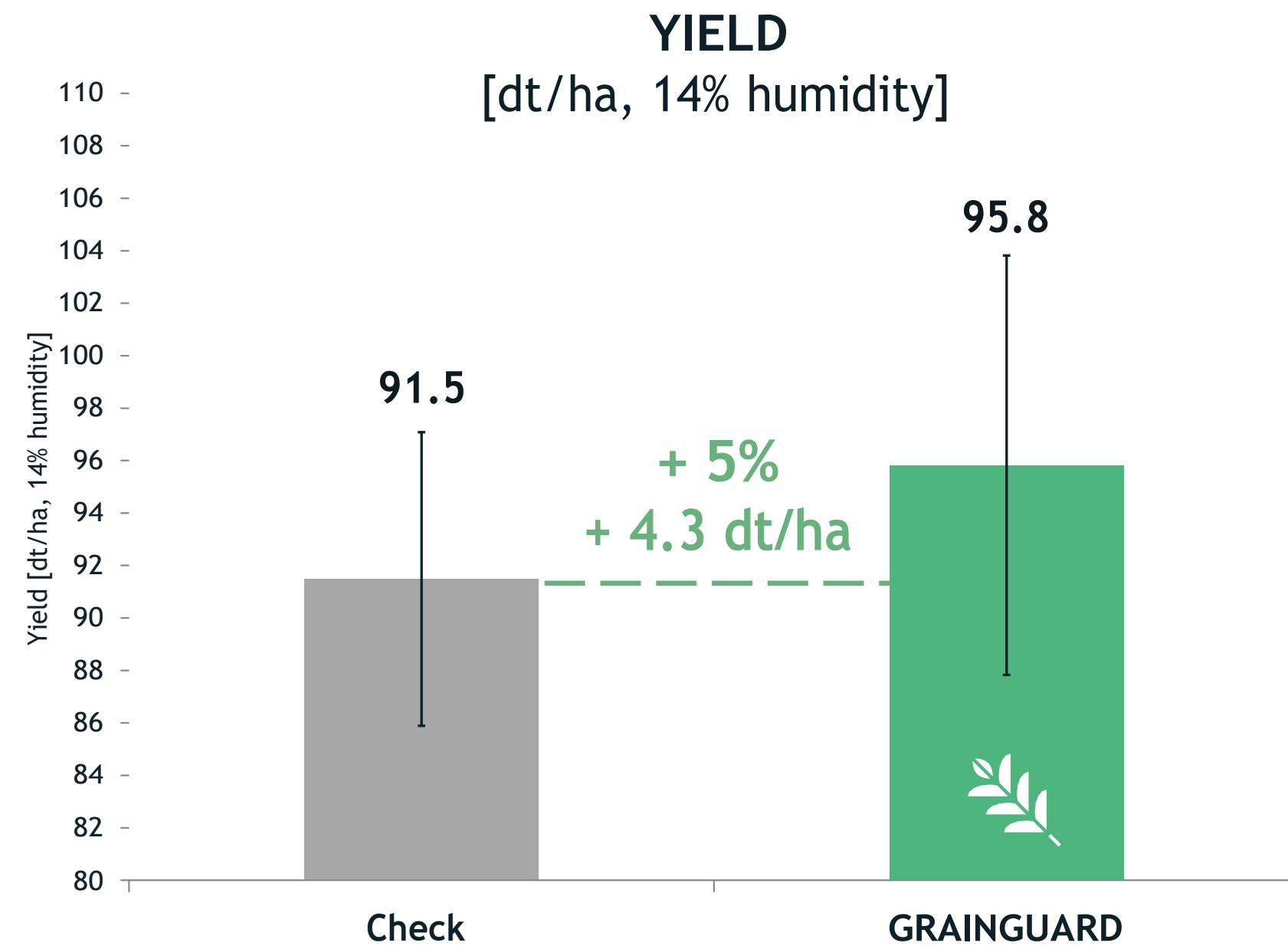
Plot trial winter barley in Huntlosen (Lower Saxony)



Variety: Bordeaux  
Huntlosen (Lower Saxony)  
Plot trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

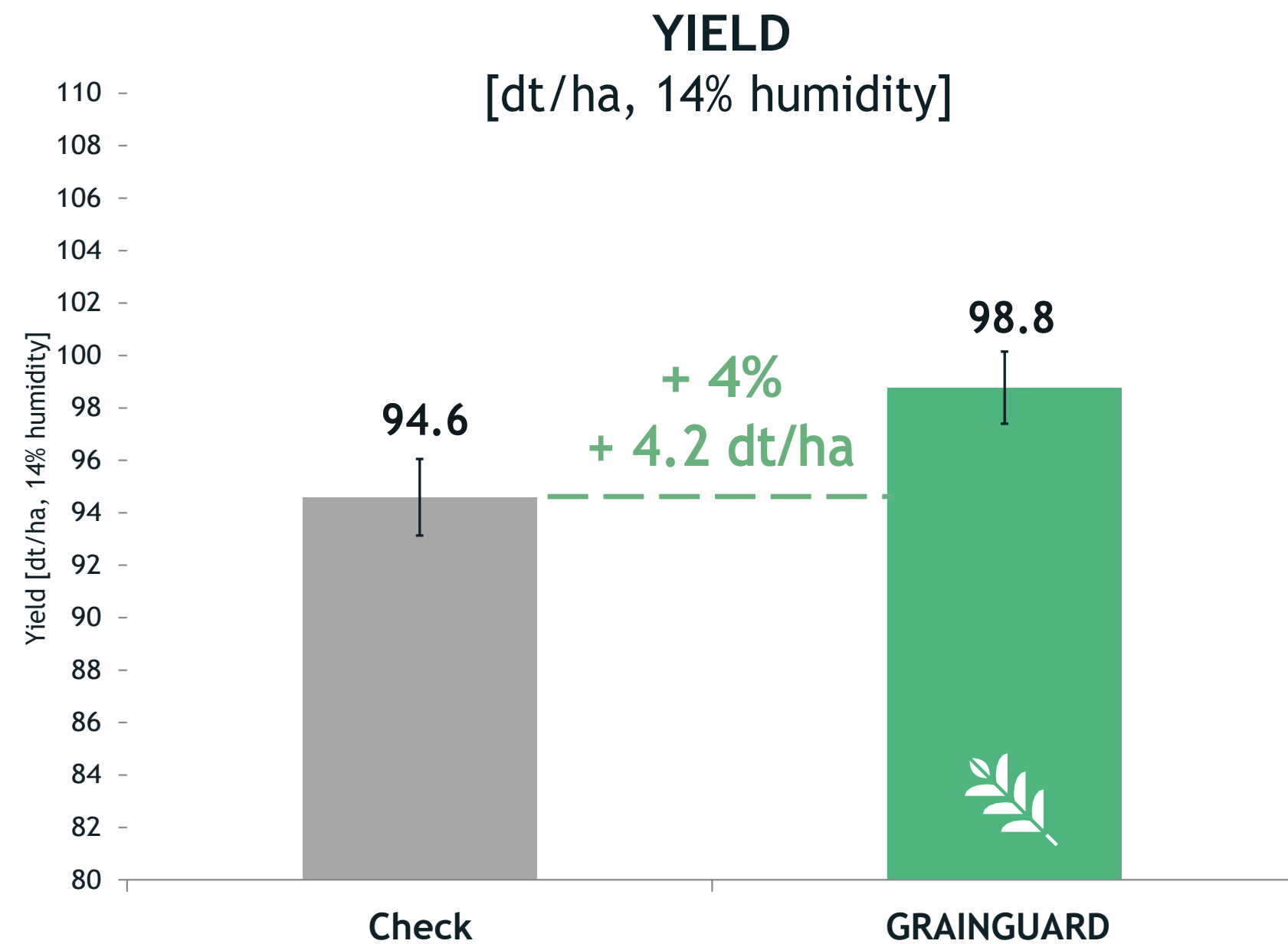
Plot trial winter wheat in Huntlosen (Lower Saxony)



Variety: Asory  
Huntlosen (Lower Saxony), 2021/22  
Plot trial  
Field trial manager: Planuts GbR

# YIELD WITH GRAINGUARD 2022

Plot trial winter barley in Dietingen (Baden-Württemberg)

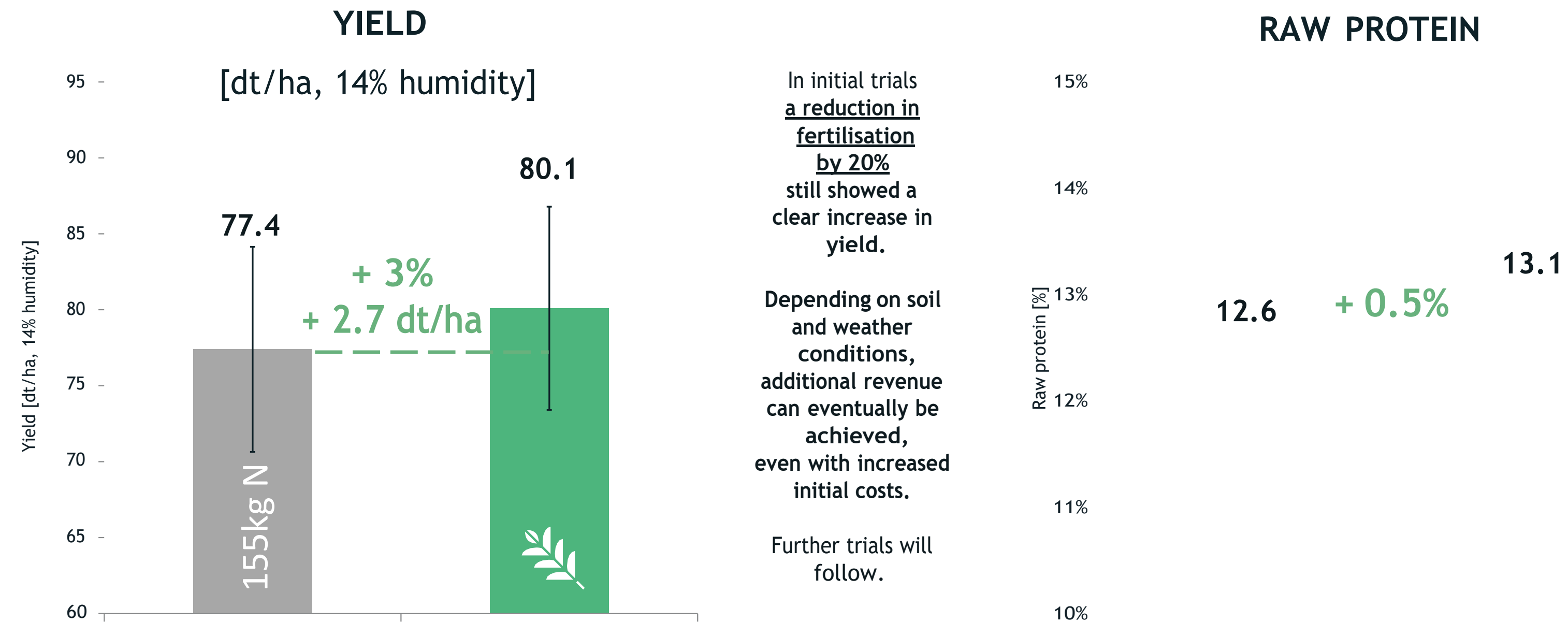


Variety: Valhalla  
Dietingen (Baden-Württemberg), 2021/22  
Plot trial  
Field trial manager: ABIP GbR



# YIELD WITH GRAINGUARD 2022

Fertilizer trial winter wheat in Dietingen (Baden-Württemberg)



Variety: Moschus  
Dietingen (Baden-Württemberg), 2021/22  
Plot trial  
Field trial manager: ABIP GbR

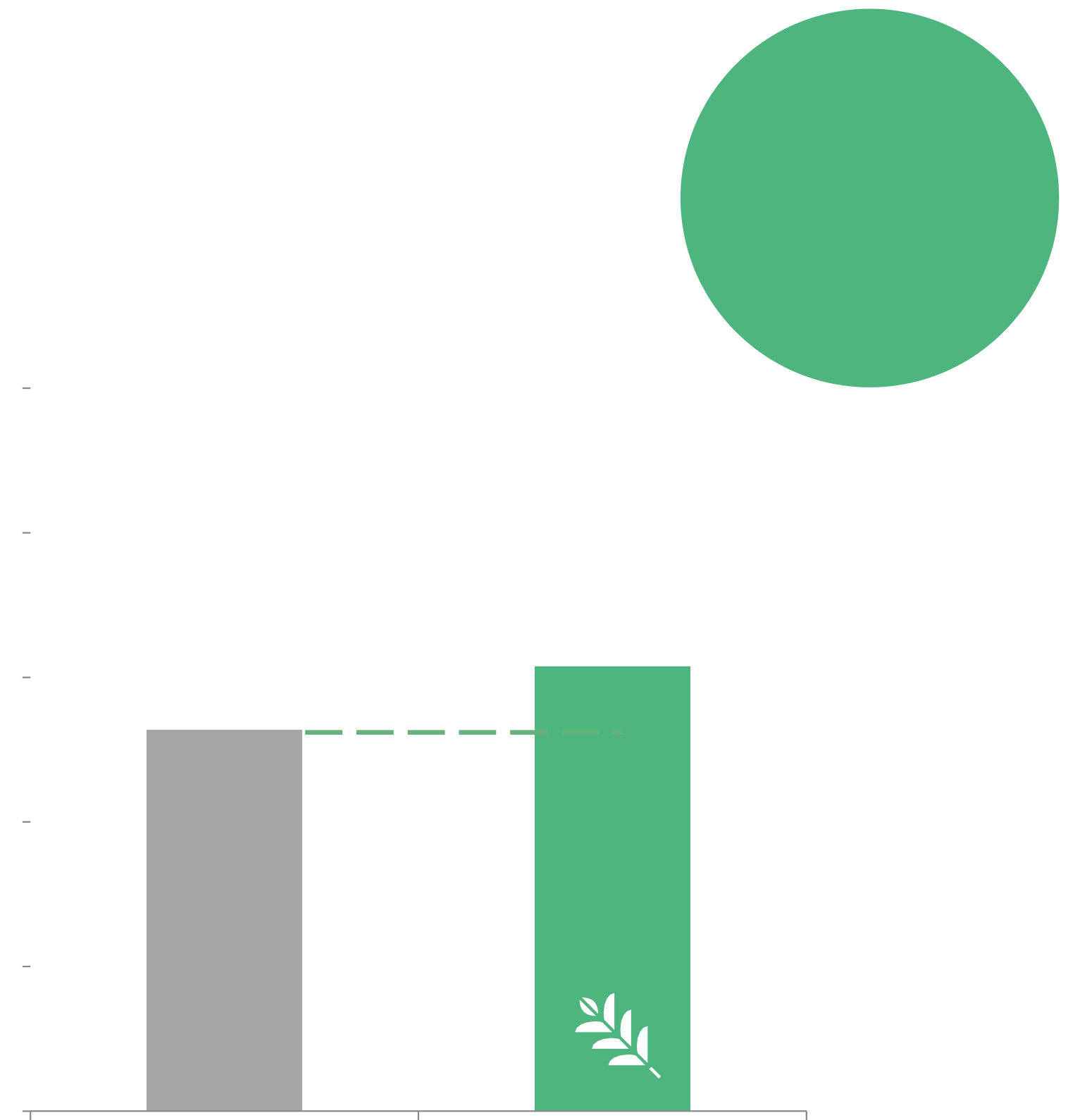
Check

GRAINGUARD

# YIELD WITH GRAINGUARD 2022

Check

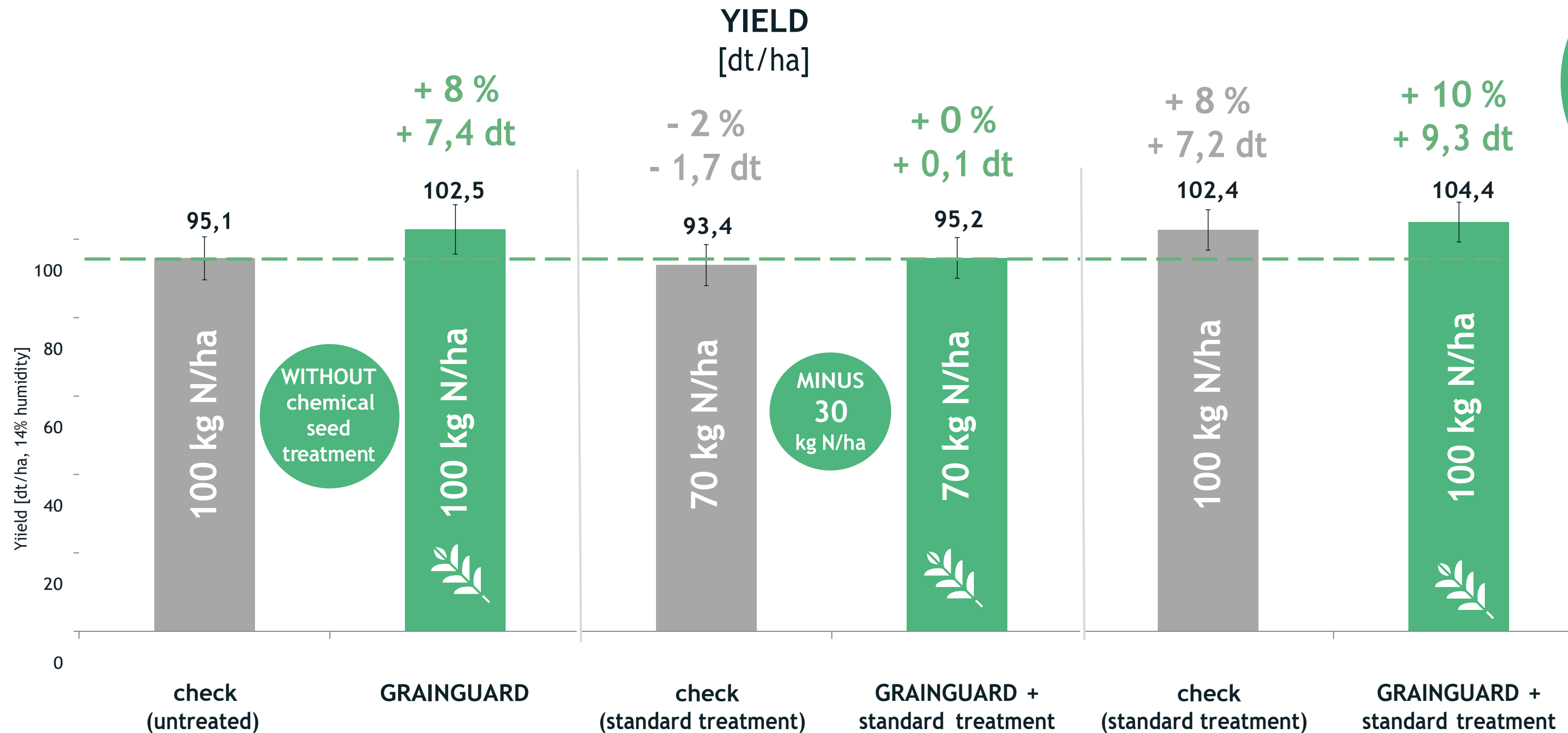
GRAINGUARD



Variety: Moschus  
Dietingen (Baden-Württemberg), 2021/22  
Plot trial  
Field trial manager: ABIP GbR

# YIELD WITH GRAINGUARD 2022

Fertilizer trial in spring barley | malting barley (Lower Saxony)



Huntlosen (Lower Saxony), 2022  
Plot trial, n = 4 repetitions per treatment  
Field trial management: plantus GbR

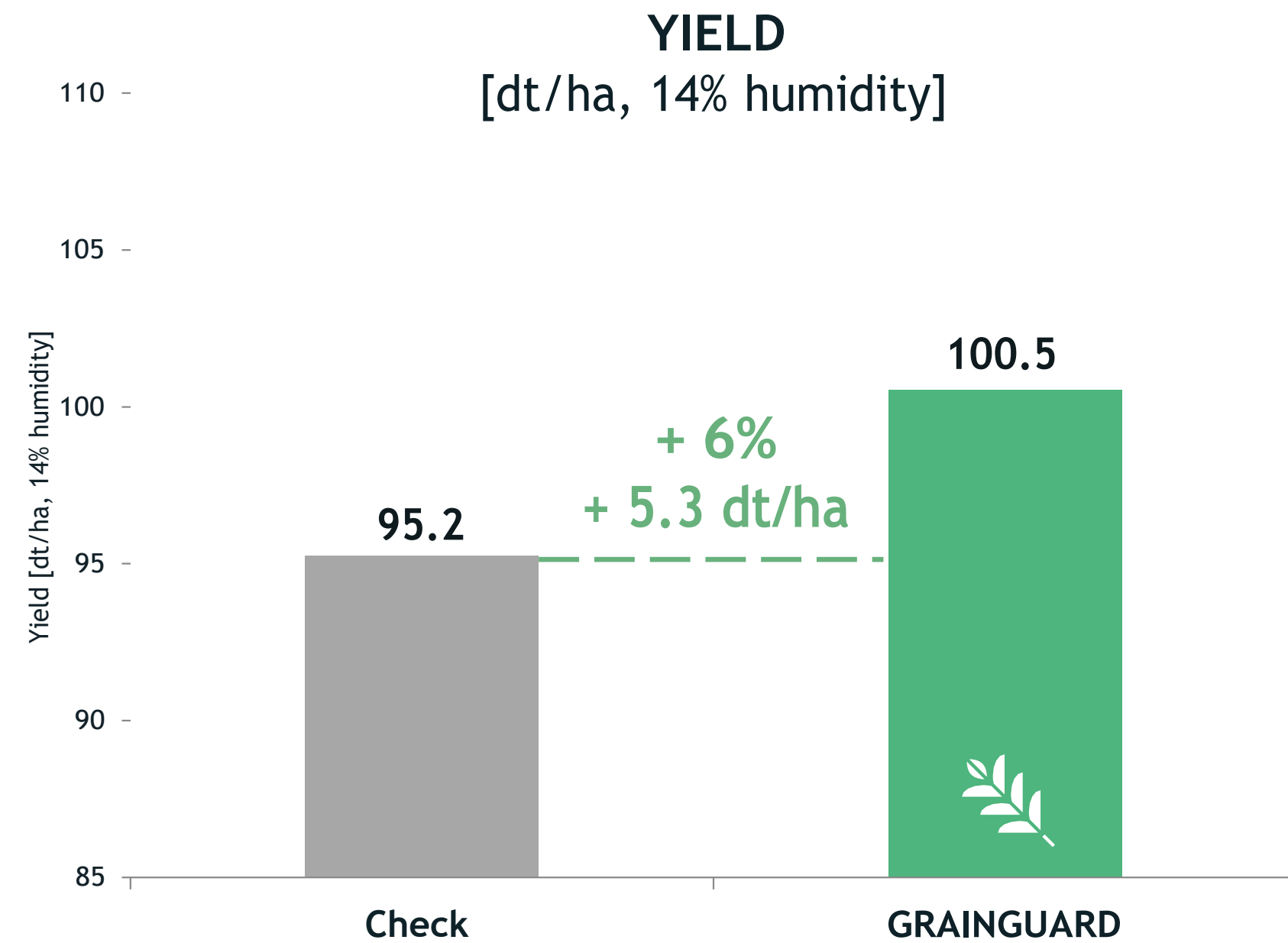
Variety: RGT Planet

# YIELD WITH GRAINGUARD 2022

Huntlosen (Lower Saxony), 2022  
Plot trial, n = 4 repetitions per treatment  
Field trial management: plantus GbR

# YIELD WITH GRAINGUARD 2022

Plot trial winter barley in Boxberg (Baden-Württemberg)



Variety: Exquise  
Plot trials  
Field trial manager: n.n.

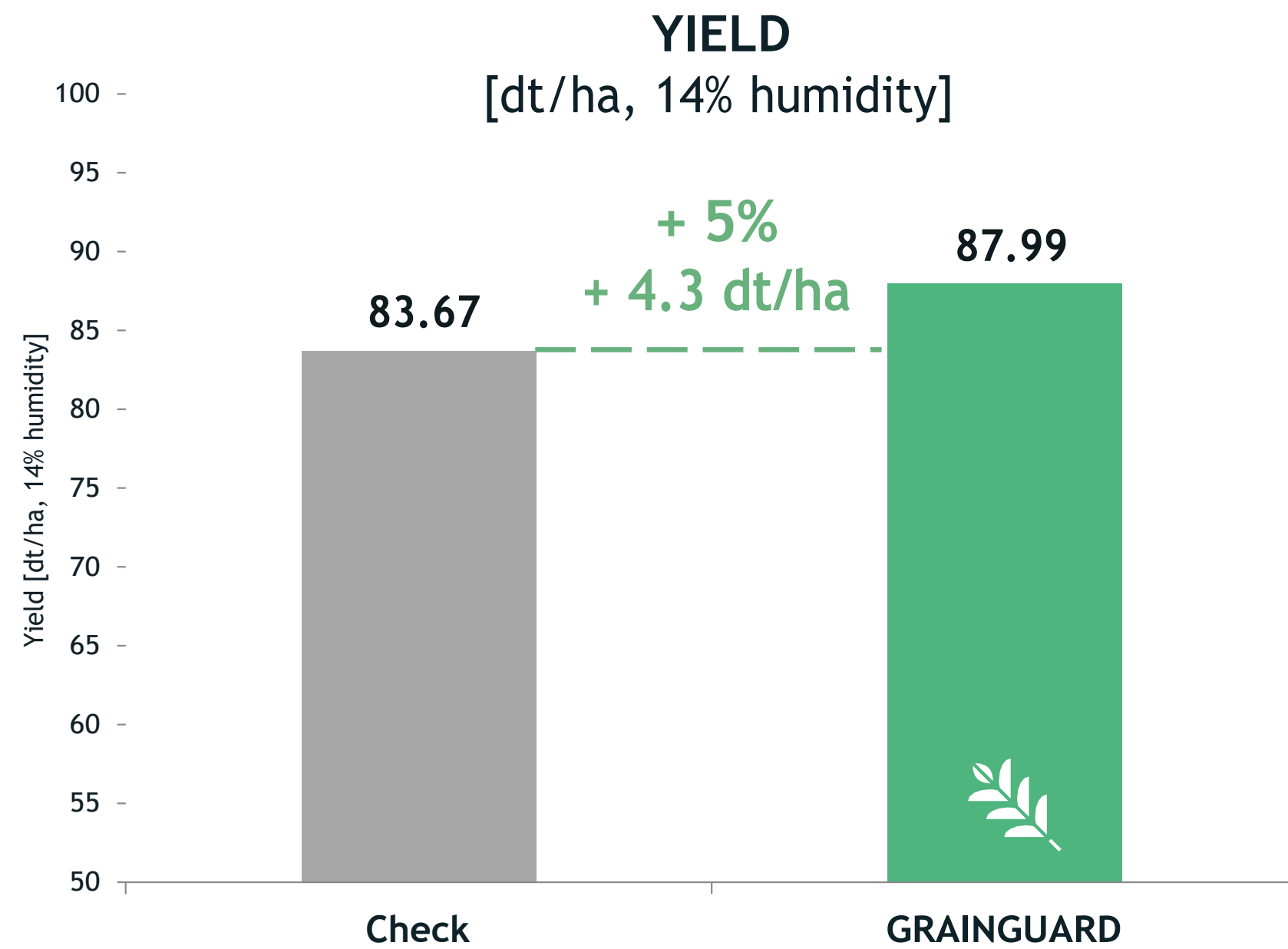
Boxberg (Baden-Württemberg), 2021/22

# YIELD WITH GRAINGUARD 2022

Plot trials  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

Plot trial oats in Huntlosen (Lower Saxony)



Variety: Apollon

Plot trial

Field trial manager: Plantus GbR

Huntlosen (Lower Saxony), 2022

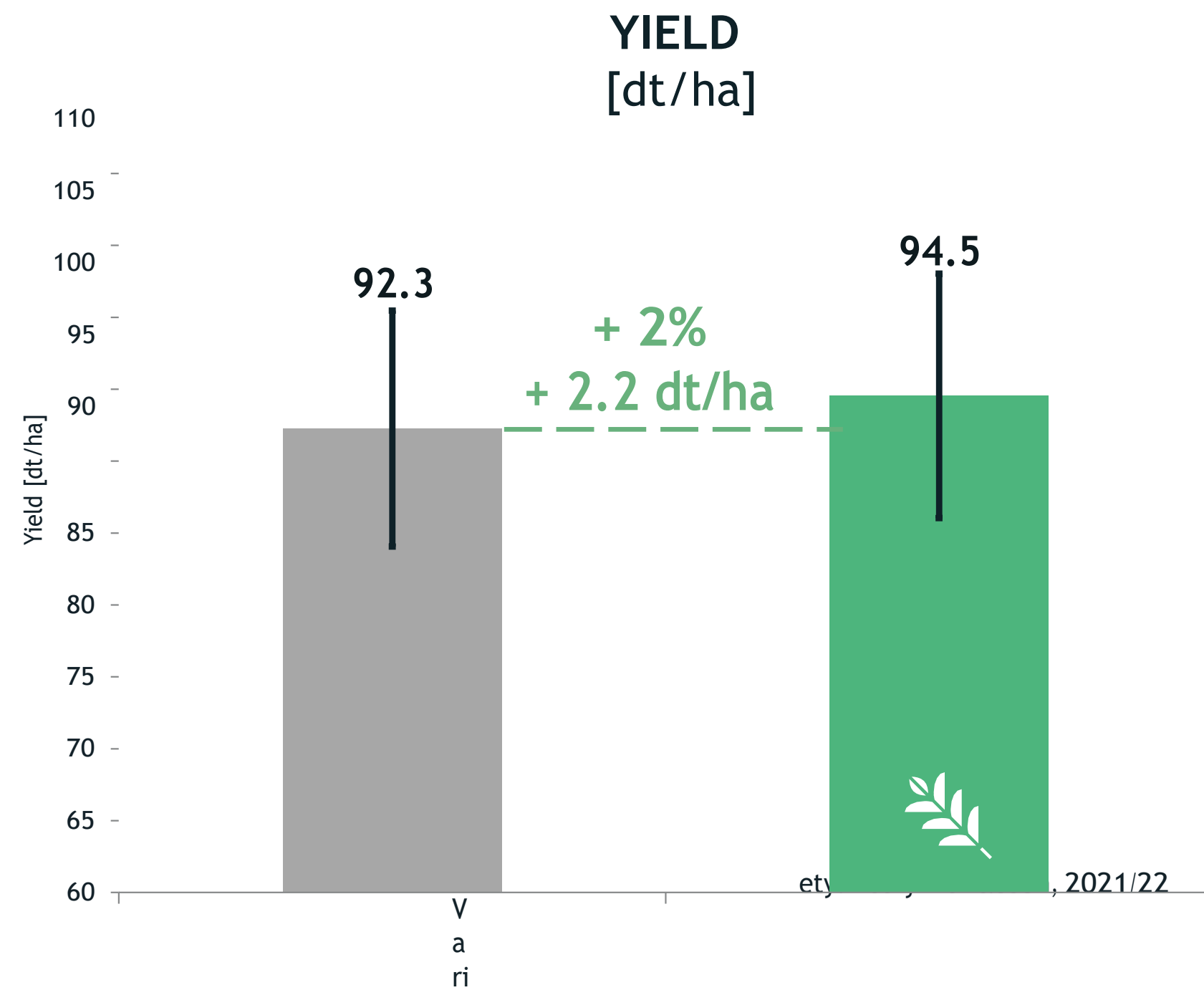
# YIELD WITH GRAINGUARD 2022

Plot trial  
Field trial manager: Plantus GbR



# YIELD WITH GRAINGUARD 2022

Plot trial winter wheat in Huntlosen (Lower Saxony)



Plot trial  
Field trial manager: Plantus GbR

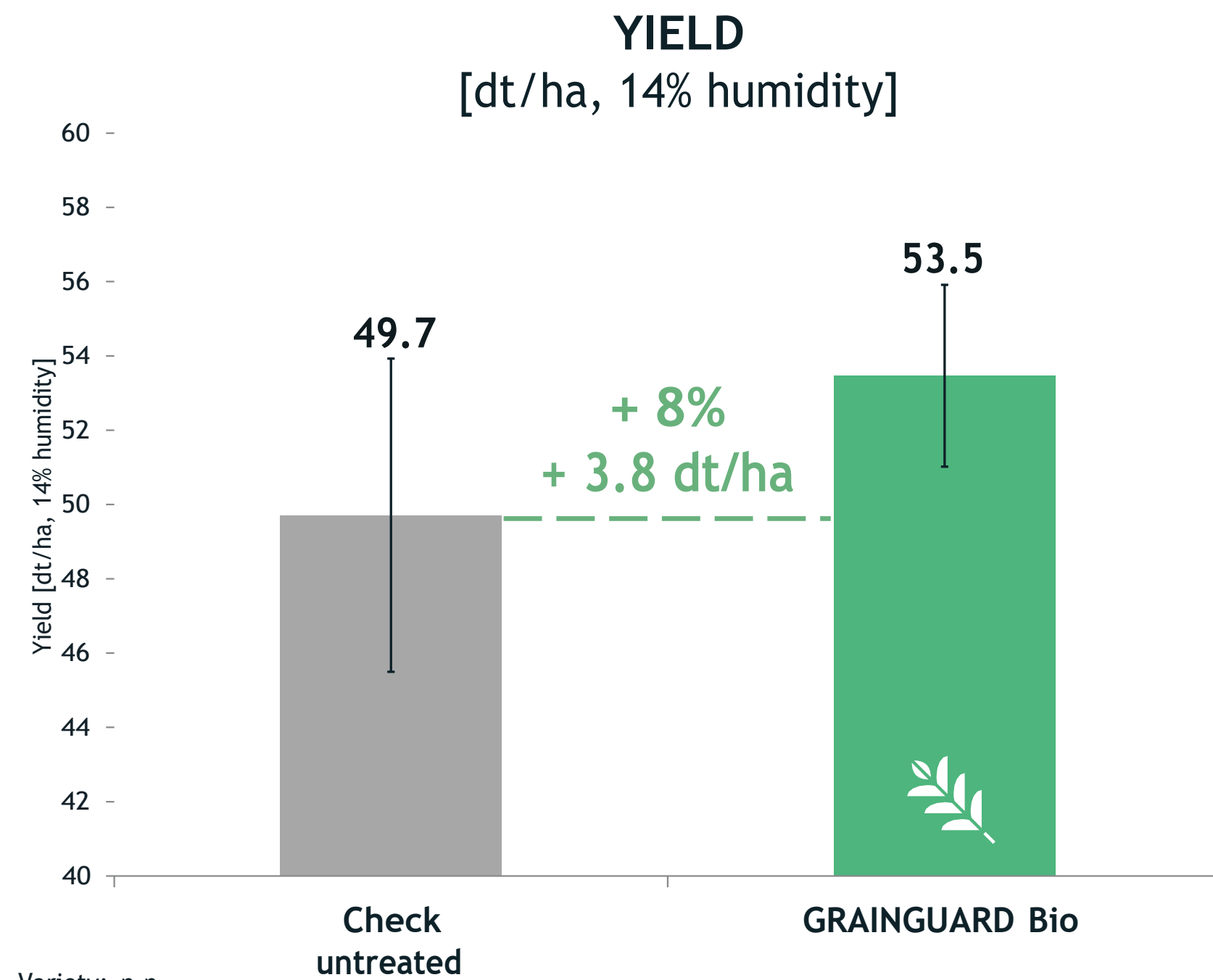
Check untreated

# YIELD WITH GRAINGUARD 2022

G  
R  
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# YIELD WITH GRAINGUARD 2022

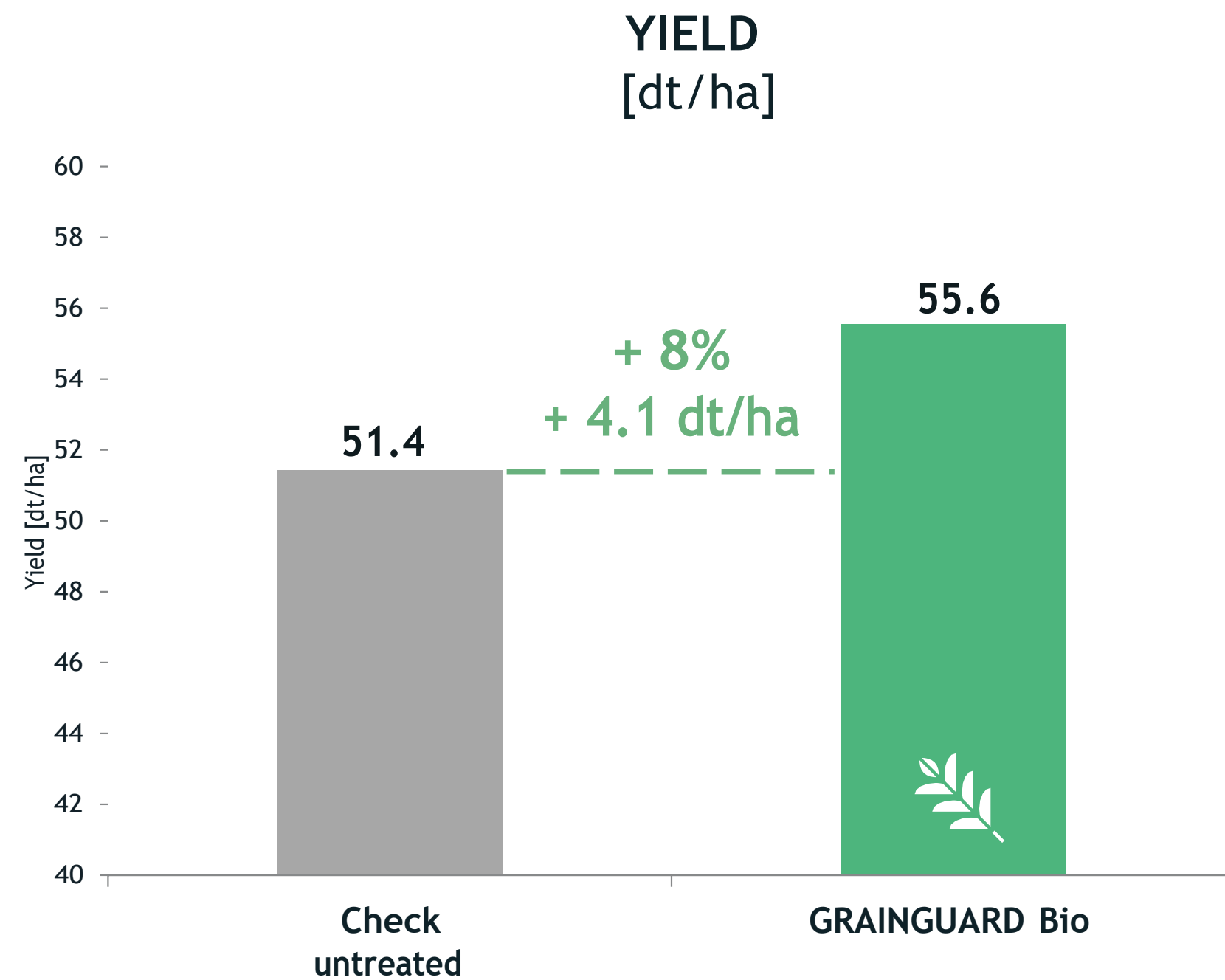
Plot trial winter wheat in the US



Variety: n.n.  
Lima (Ohio)  
Plot trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

Strip trial winter wheat in Austria



Variety: Tobias

Mannersdorf (Austria)

Field trial manager: n.n.

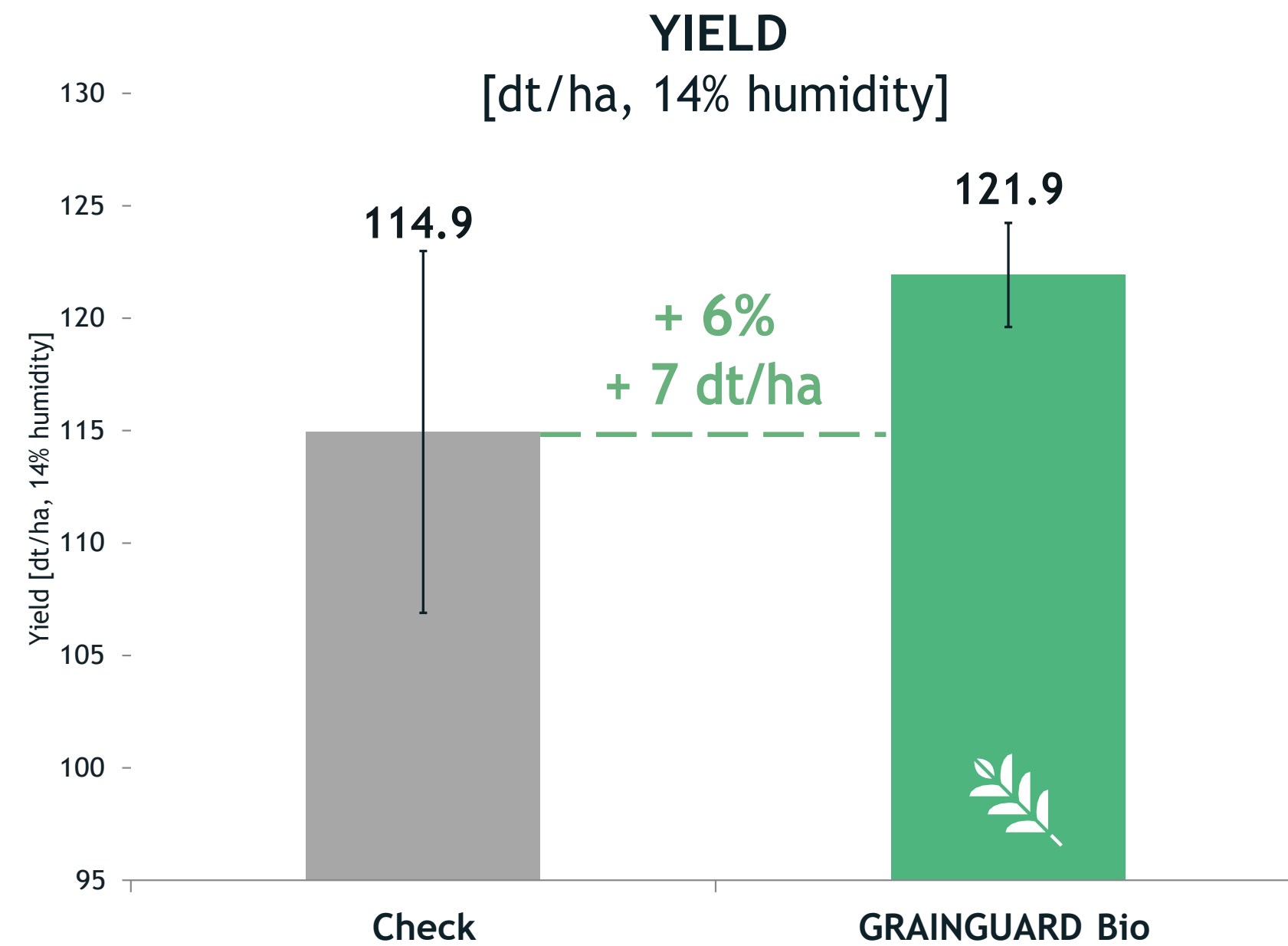
Strip trial

# YIELD WITH GRAINGUARD 2022

Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

Plot trial winter barley in Hamm (North Rhine-Westphalia)



Variety: Hetti

Hamm (Nordrhein-Westfalen), 2021/22

Field trial manager: n.n.

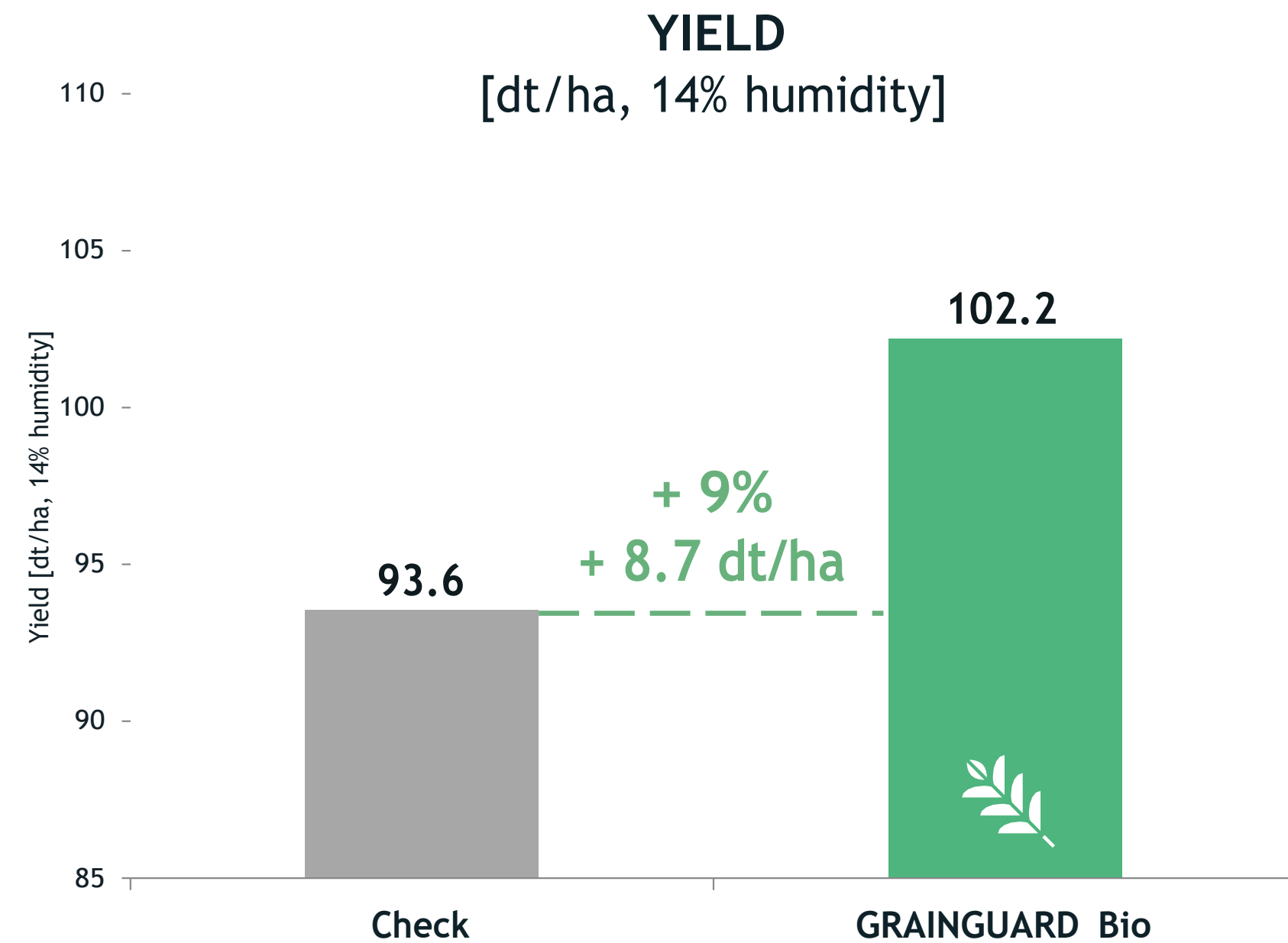
Plot trial

# YIELD WITH GRAINGUARD 2022

Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2022

Plot trial winter barley in Boxberg (Baden-Württemberg)

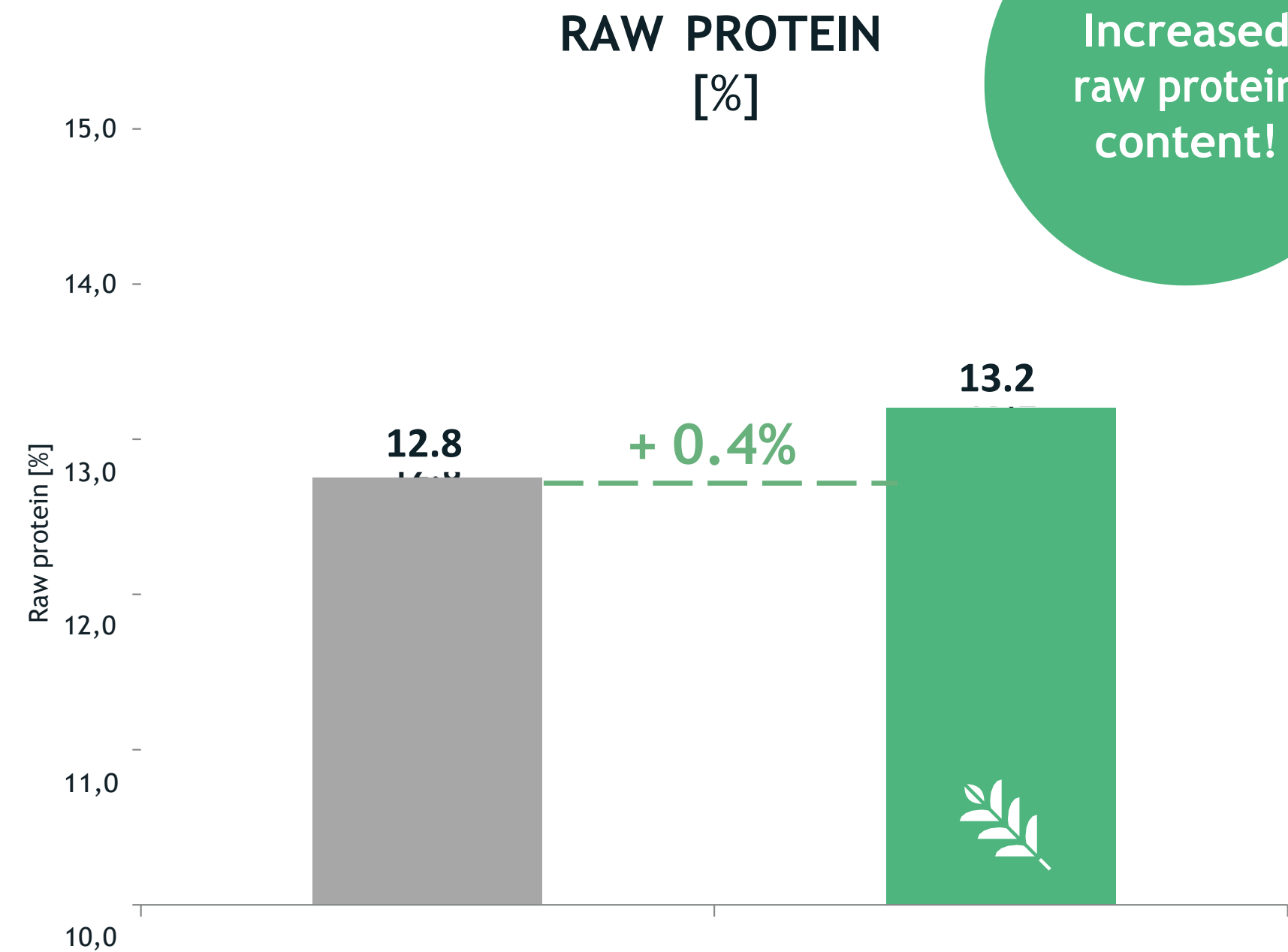
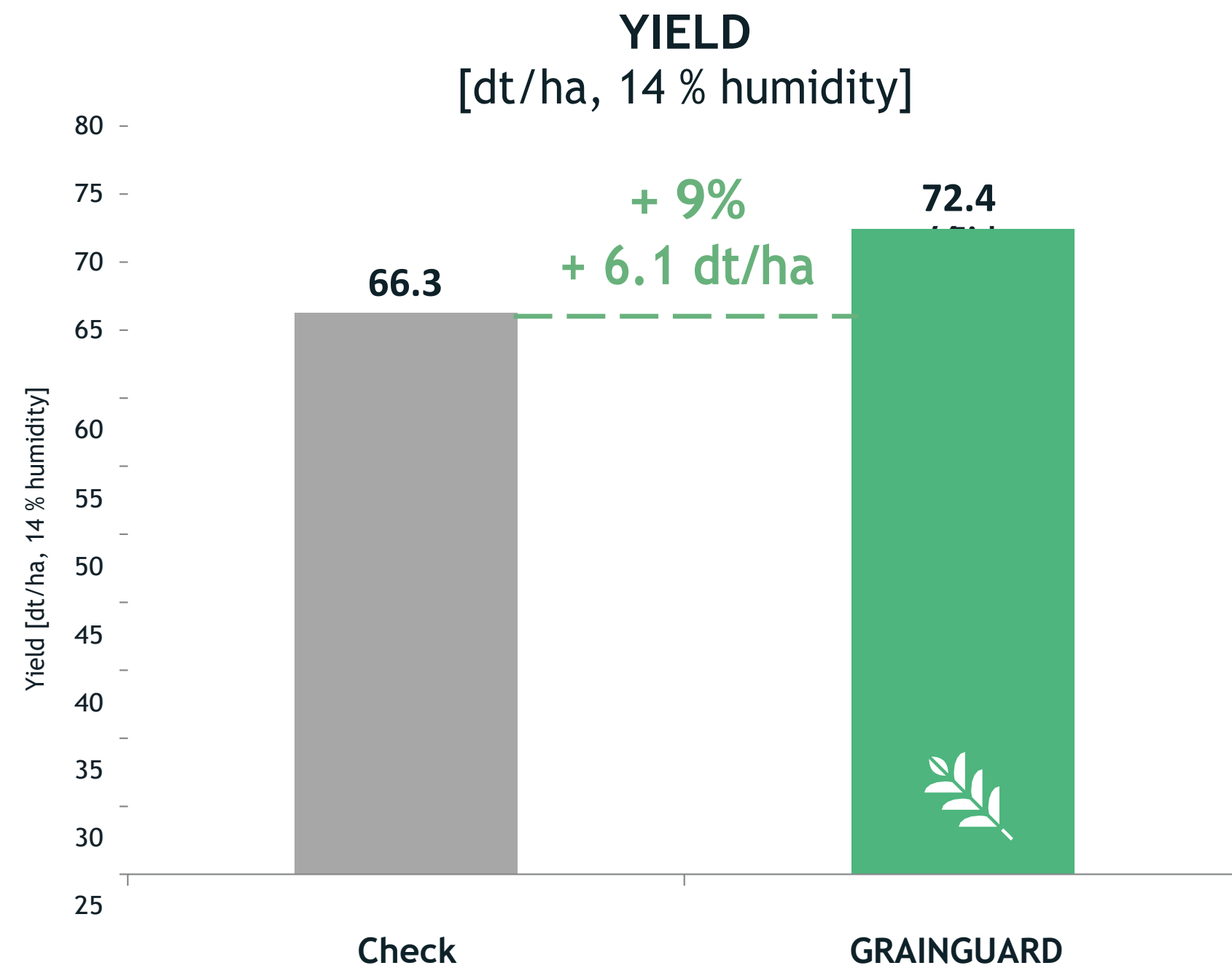


Variety: Hetti  
Boxberg (Baden-Württemberg), 2021/22  
Plot trial  
Field trial manager: n.n.



# YIELD WITH GRAINGUARD 2021

Field trial winter barley in Querfurt (Saxony-Anhalt)



Variety: LG California  
Querfurt (Saxony-Anhalt), 2020/21  
Field trial  
Field trial manager: n.n.

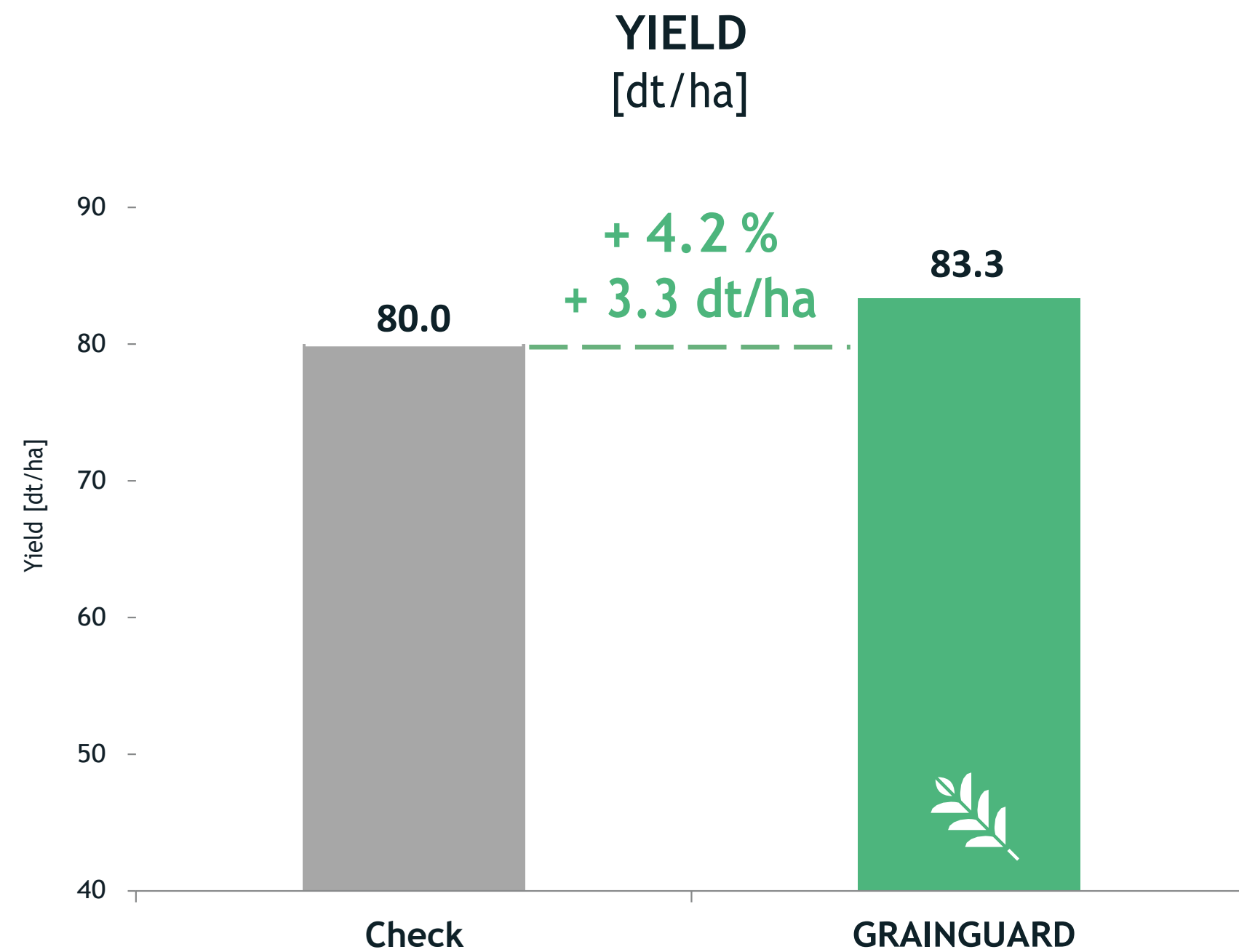
Check

GRAINGUARD  
**YIELD WITH GRAINGUARD 2021**

Variety: LG California  
Querfurt (Saxony-Anhalt), 2020/21  
Field trial  
Field trial manager: n.n.

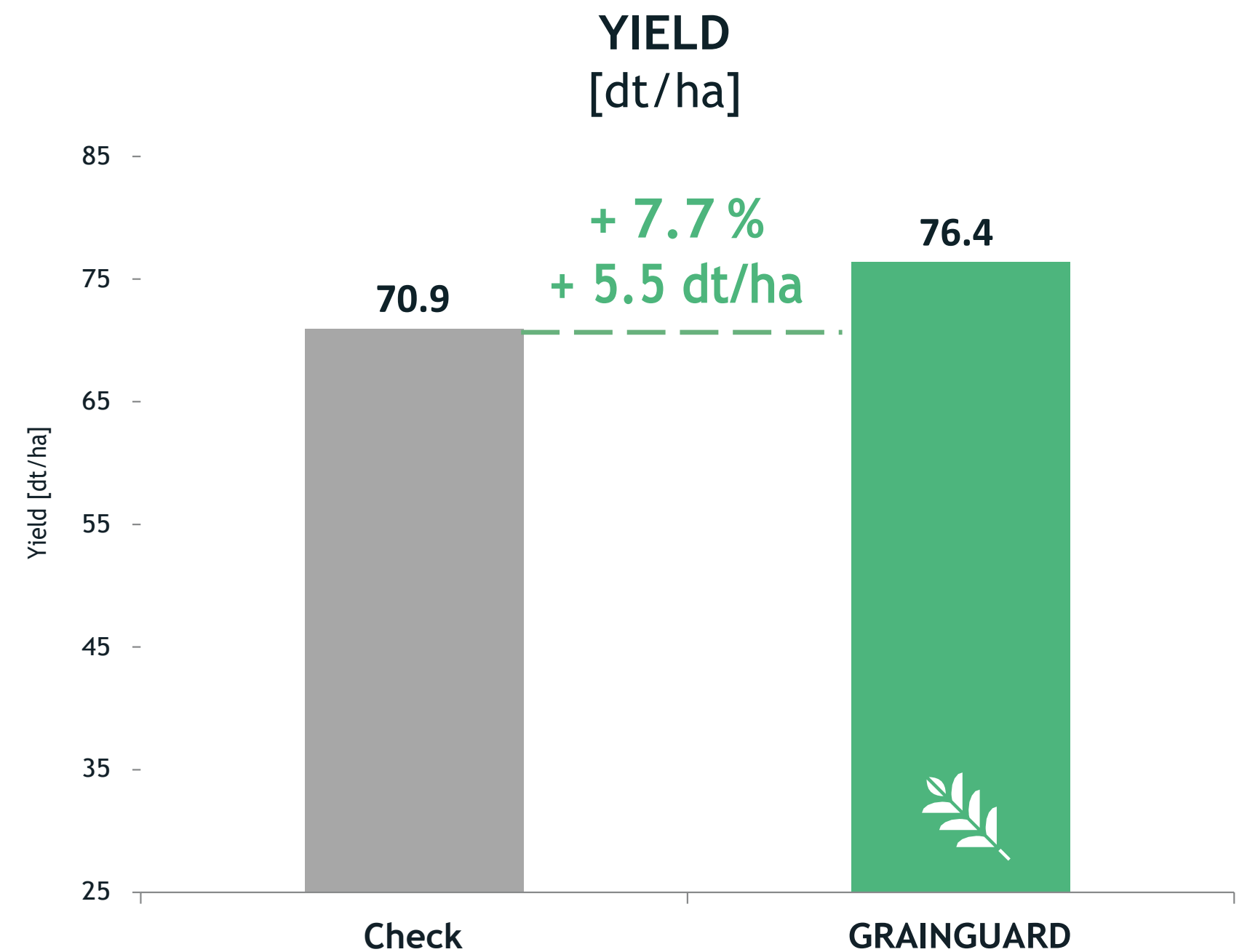
# YIELD WITH GRAINGUARD 2021

Strip trial winter barley in Lingen (Lower Saxony)



Variety: California

Strip trial  
Field trial manager: n.n.



Lingen, Lower Saxony (Emsland), 2020/21

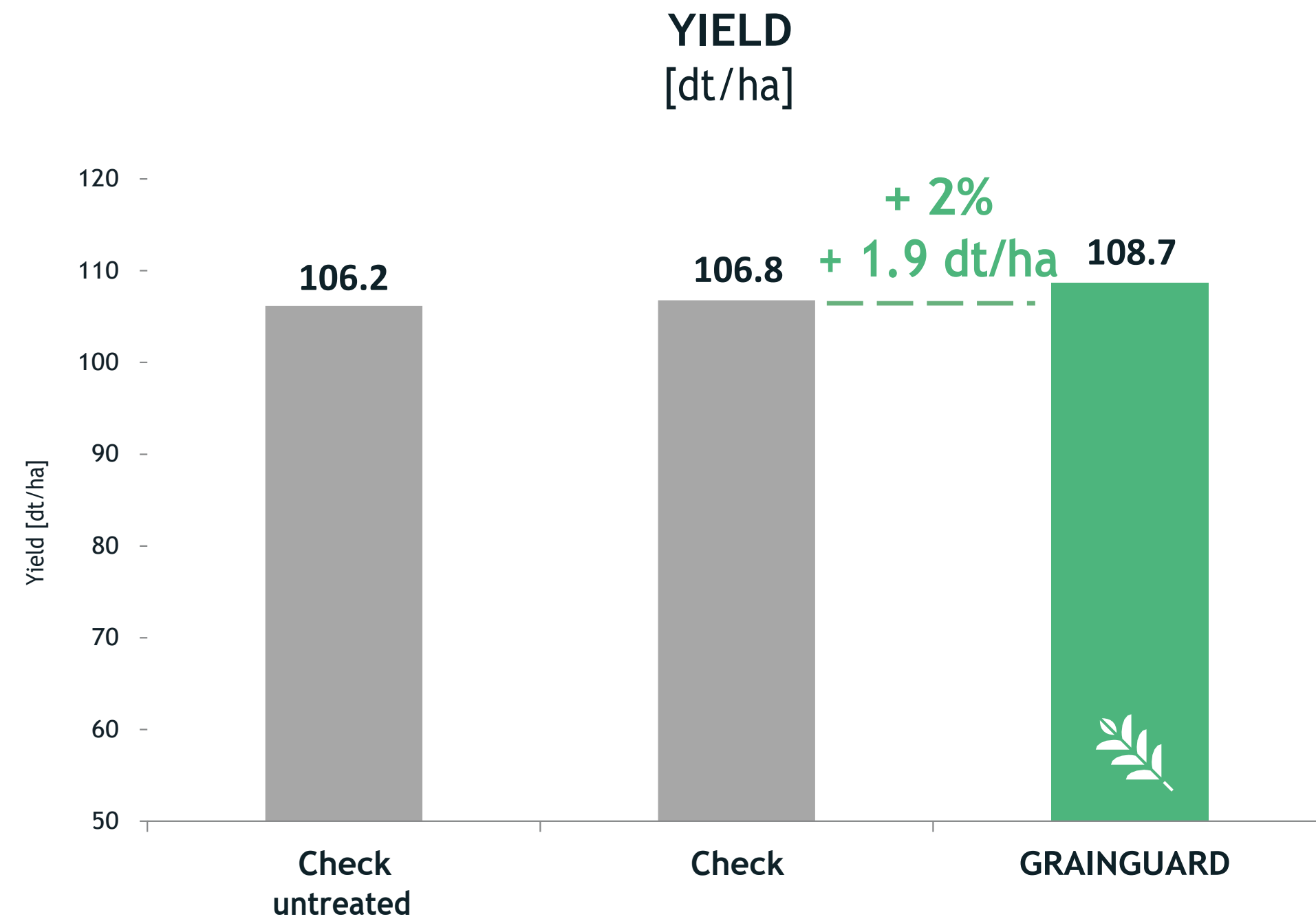
# YIELD WITH GRAINGUARD 2021

Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2021

Strip trial winter barley in Gommern (Saxony-Anhalt)

Even on higher yield level - additional surplus with GRAINGUARD



## RUST INFESTATION



**10 %**  
check  
untreated



**2 %**  
Check



**0 %**  
with  
GRAINGUARD

Variety: Galileo

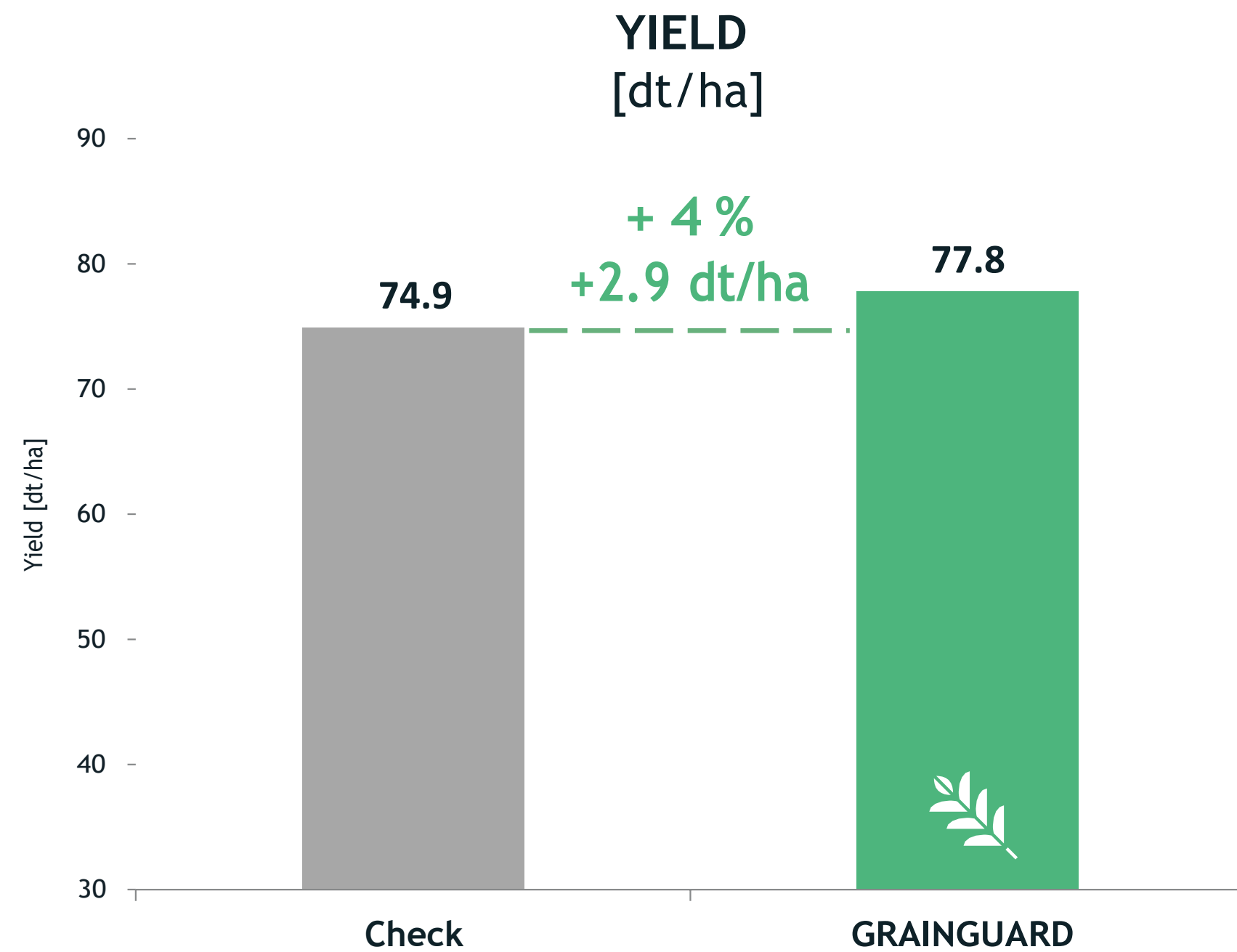
Strip trial  
Field trial manager: n.n.

Gommern (Saxony-Anhalt, 2020/21

Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2021

Strip trial winter wheat in Prießnitz (Saxony-Anhalt)



Variety: Asory

Strip trial  
Field trial manager: n.n.

Prießnitz (Saxony-Anhalt), 2020/21

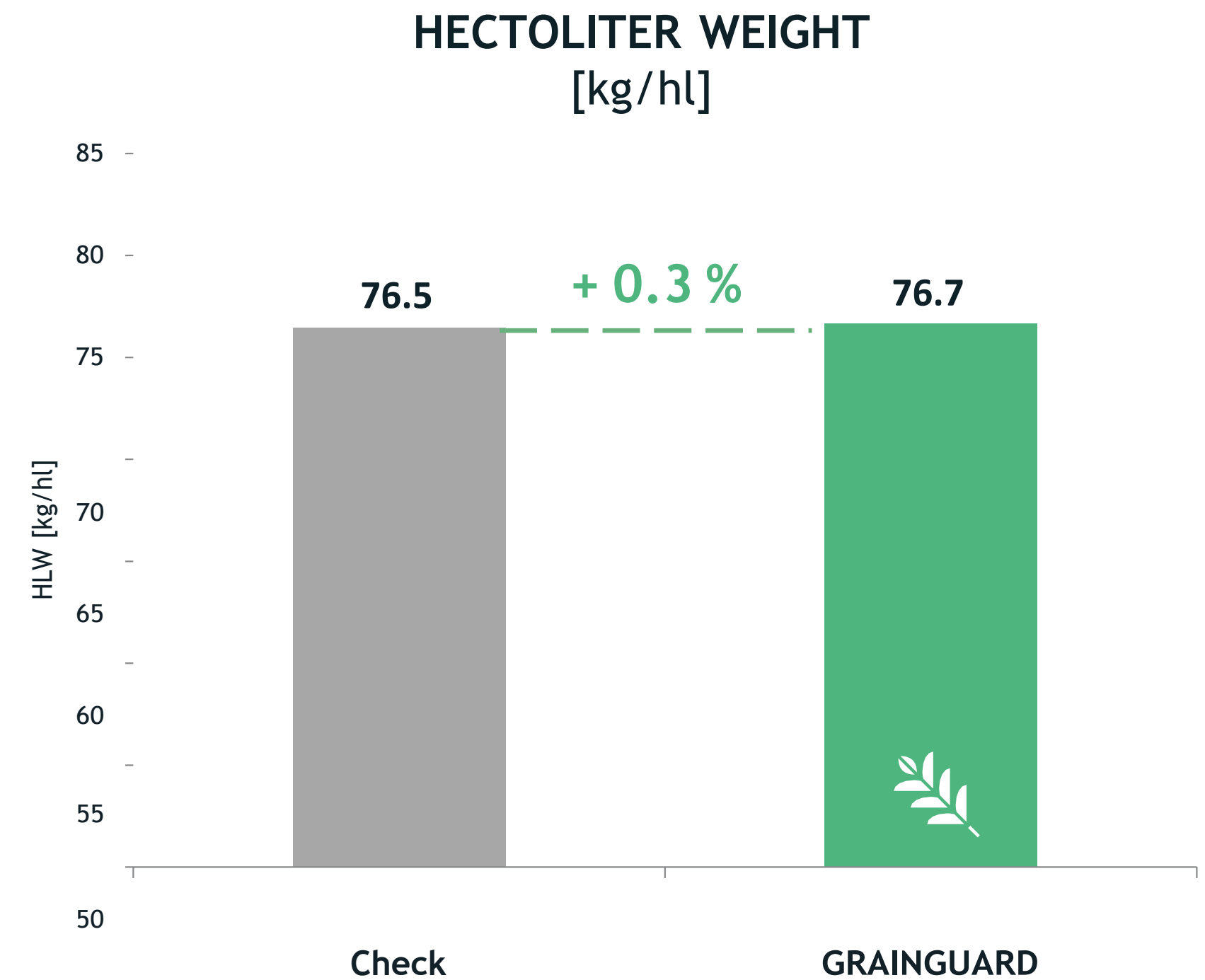
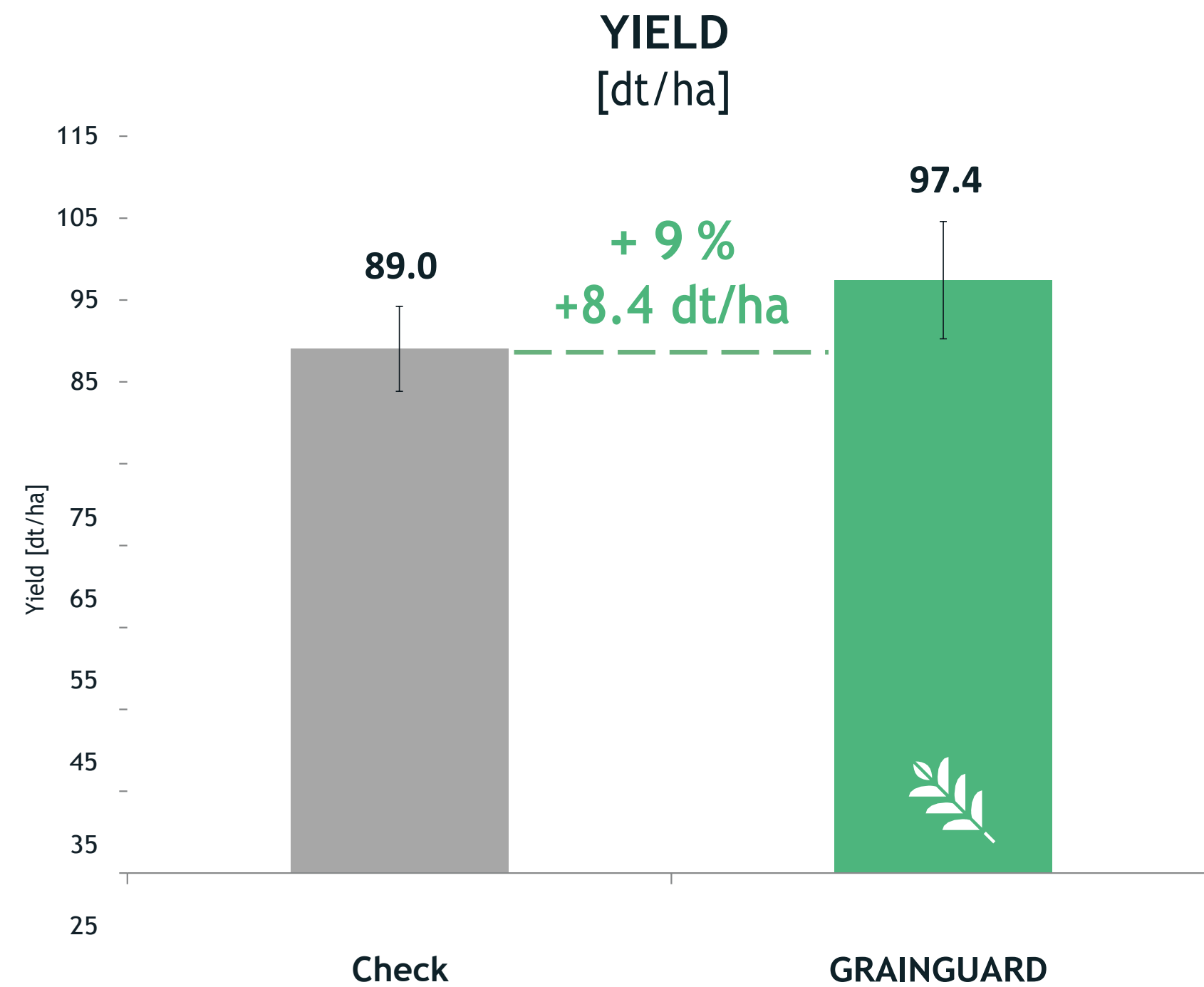
# YIELD WITH GRAINGUARD 2021

Strip trial  
Field trial manager: n.n.



# YIELD WITH GRAINGUARD 2021

Plot trial winter wheat in Boxberg (Saxony)



Variety: Informer

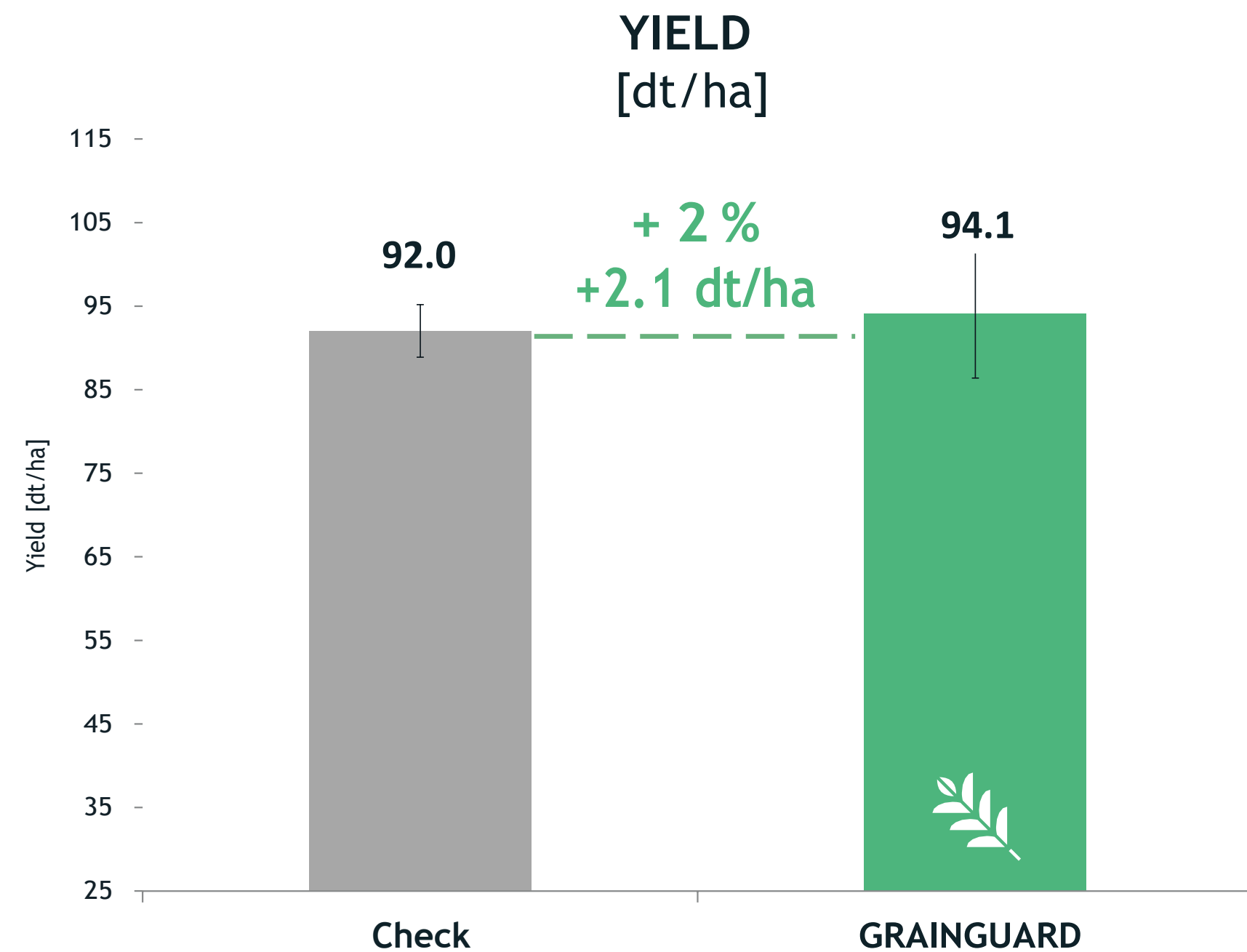
Boxberg (Saxony), 2020/21  
Plot trial

Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD 2021

Plot trial winter wheat in Greven (North Rhine-Westphalia)



Variety: KWS Donovan

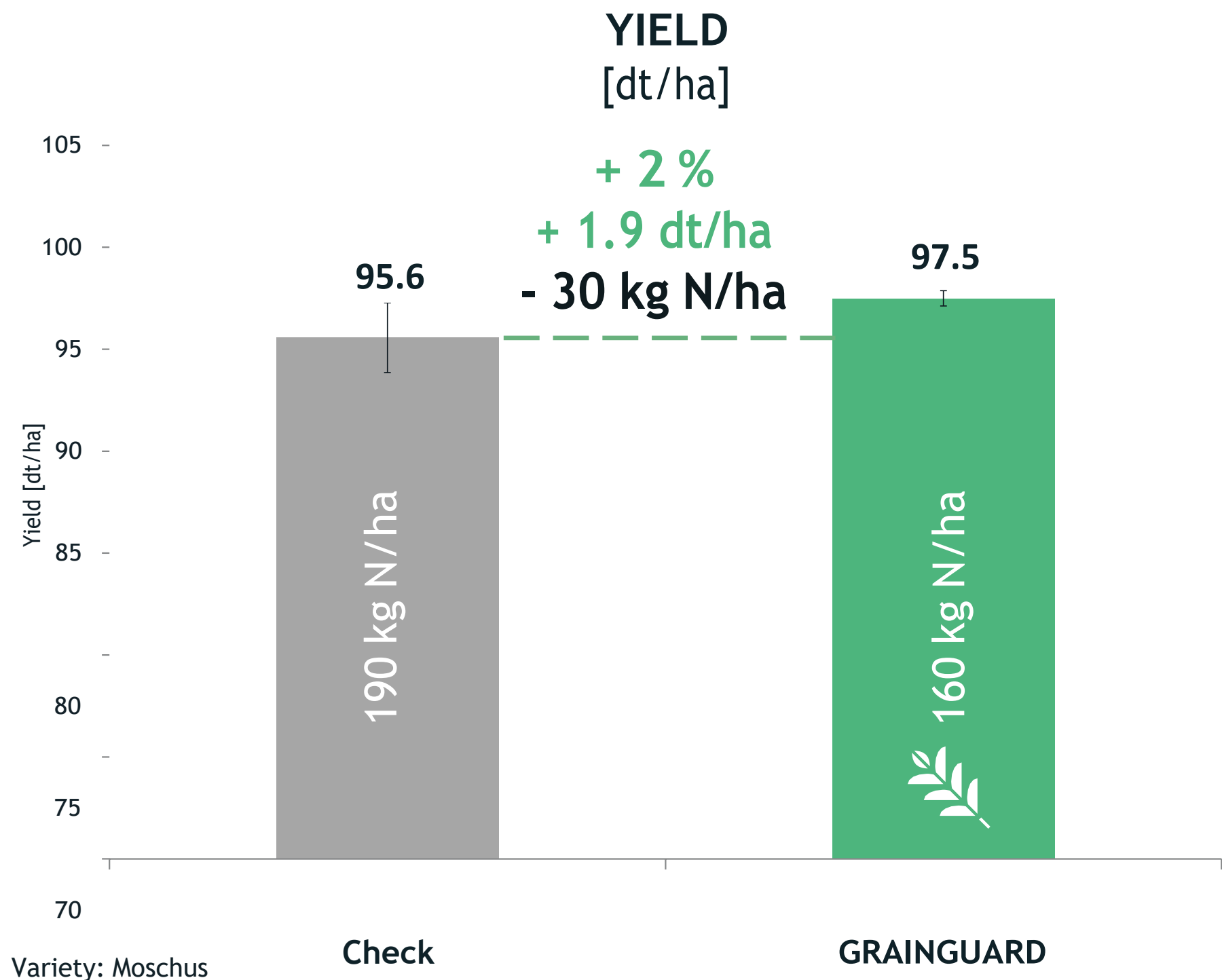
Greven (North Rhine-Westphalia), 2020/21

Plot trial

Field trial manager: SeedForward GmbH

# YIELD WITH GRAINGUARD 2021

Plot trial winter wheat in Dietingen (Baden-Württemberg)



## SAVING FERTILIZER WITH GRAINGUARD

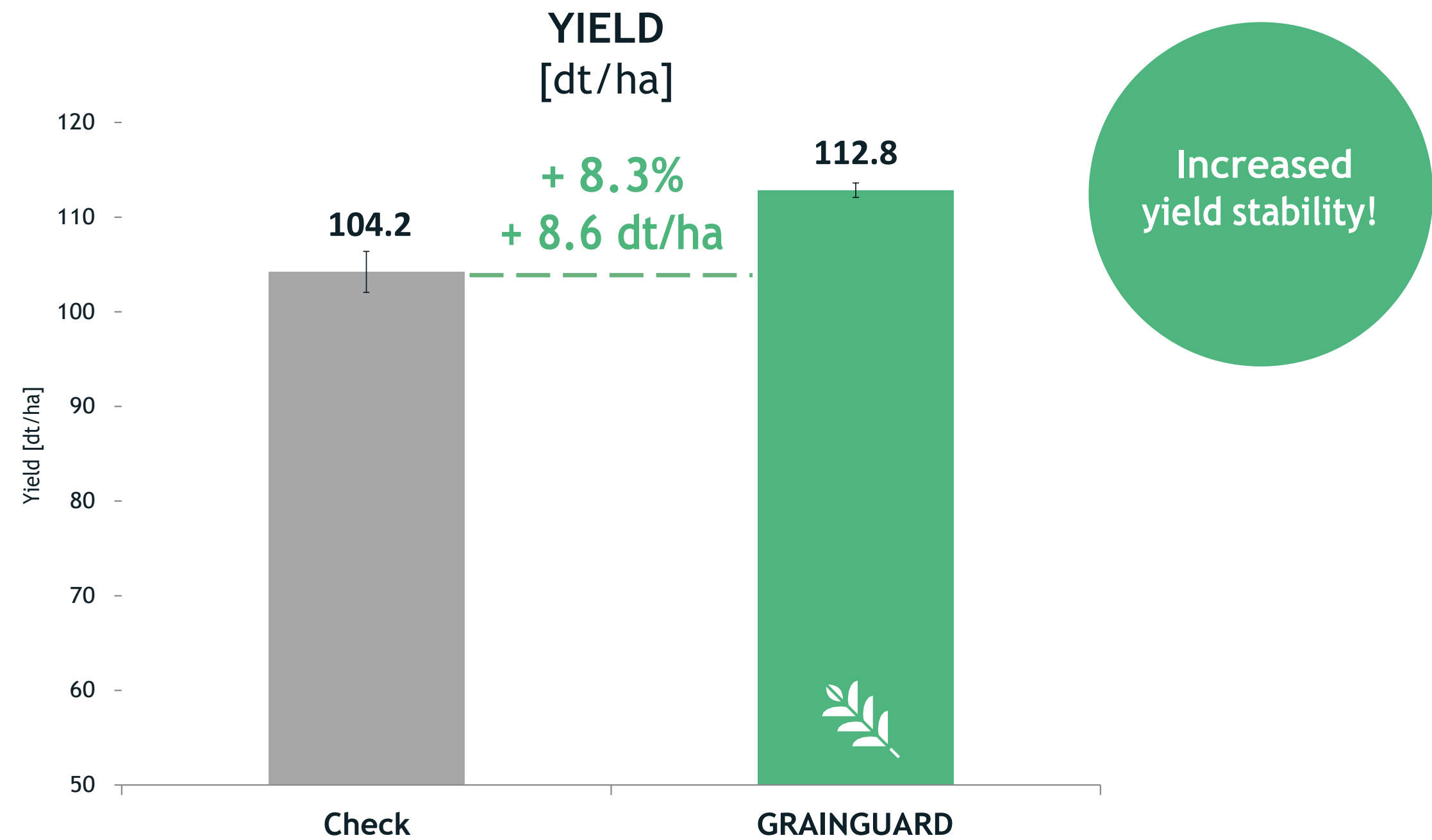
An additional yield of 2% was generated with **GRAINGUARD** by simultaneously saving 30 kg N/ha. This leads to an **economic surplus of 52 Euro/ha**.

Dietingen (Baden-Württemberg), 2020/21  
Plot trial, fertilizer: Piagran Pro

# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD 2021

Plot trial winter barley in Haigerloch (Baden-Württemberg)



Variety: Bordeaux

Haigerloch (Baden-Württemberg), 2020/21

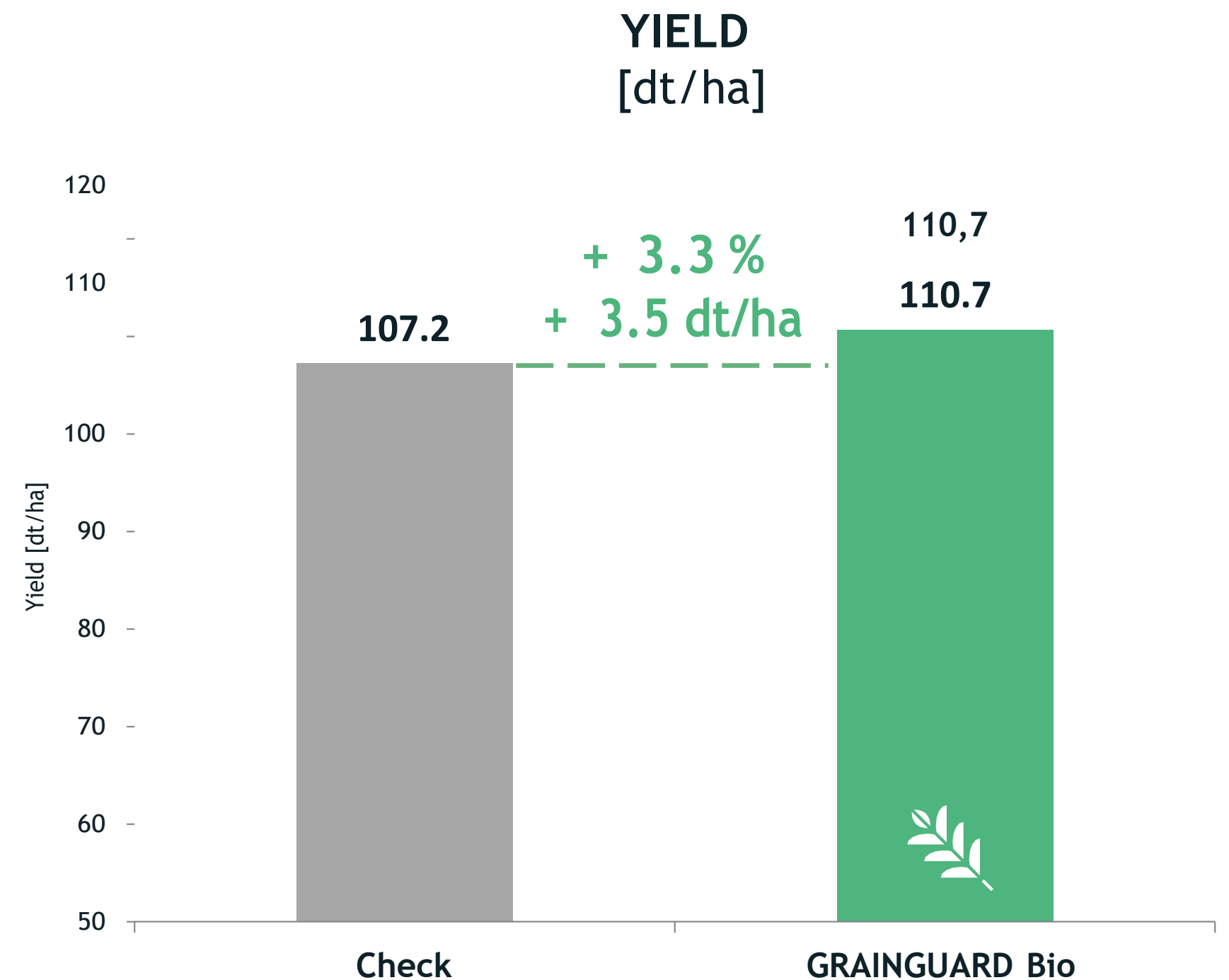
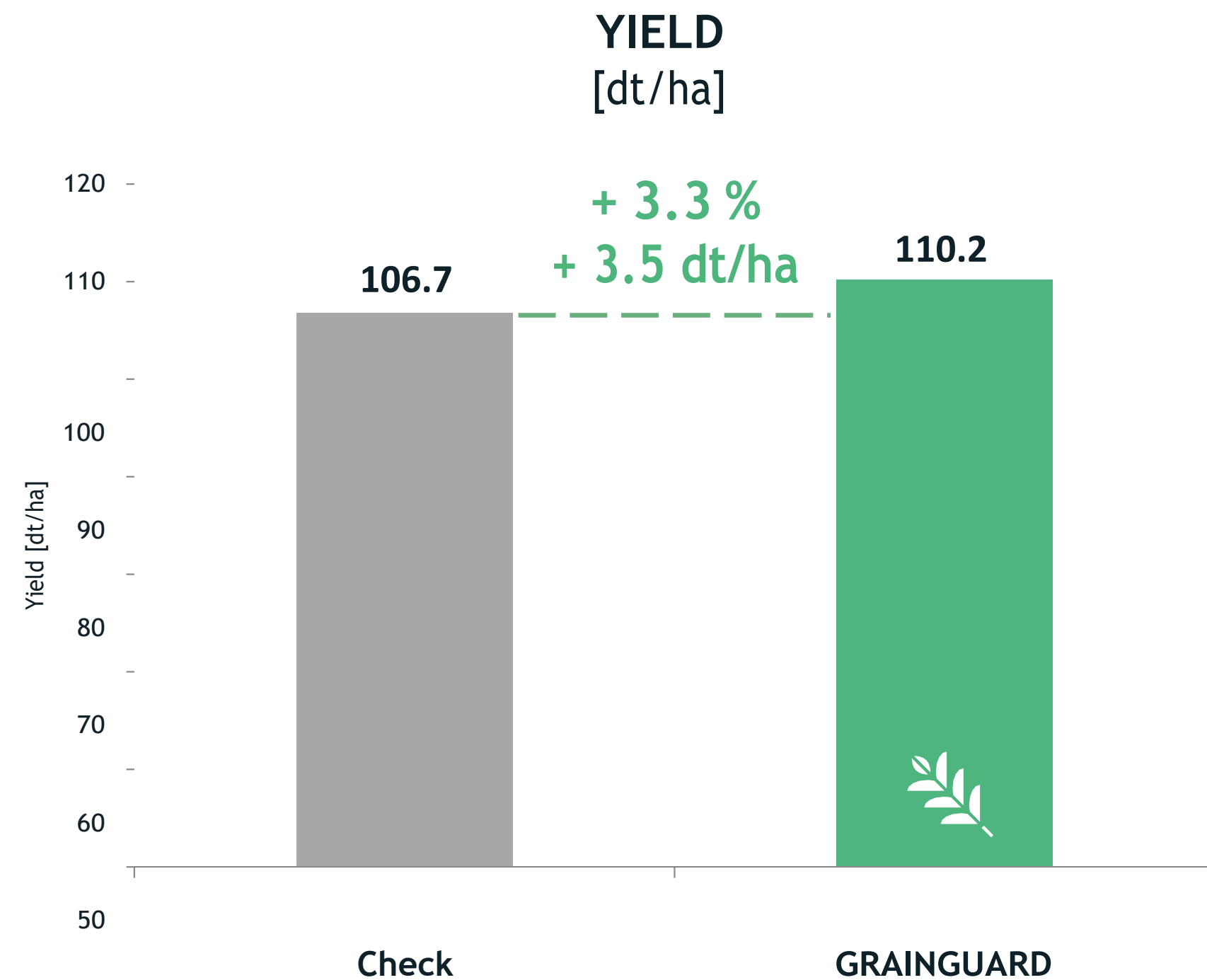
Field trial manager: ABIP GbR

Plot trial

# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD 2021

Plot trial winter rye in Großenkneten (Lower Saxony)



Variety: KWS Tayo

Großenkneten (Lower Saxony), 2020/21  
Plot trial

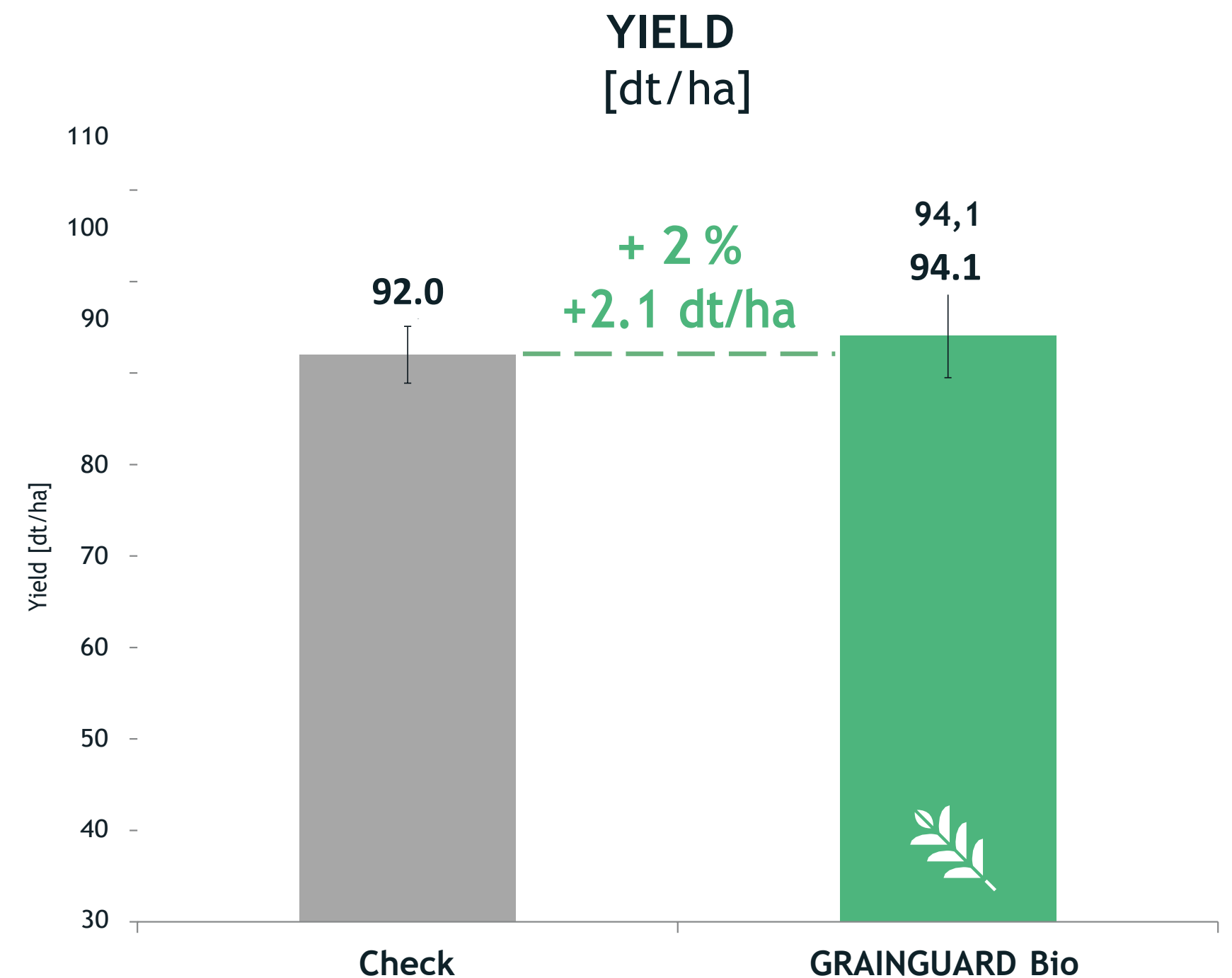
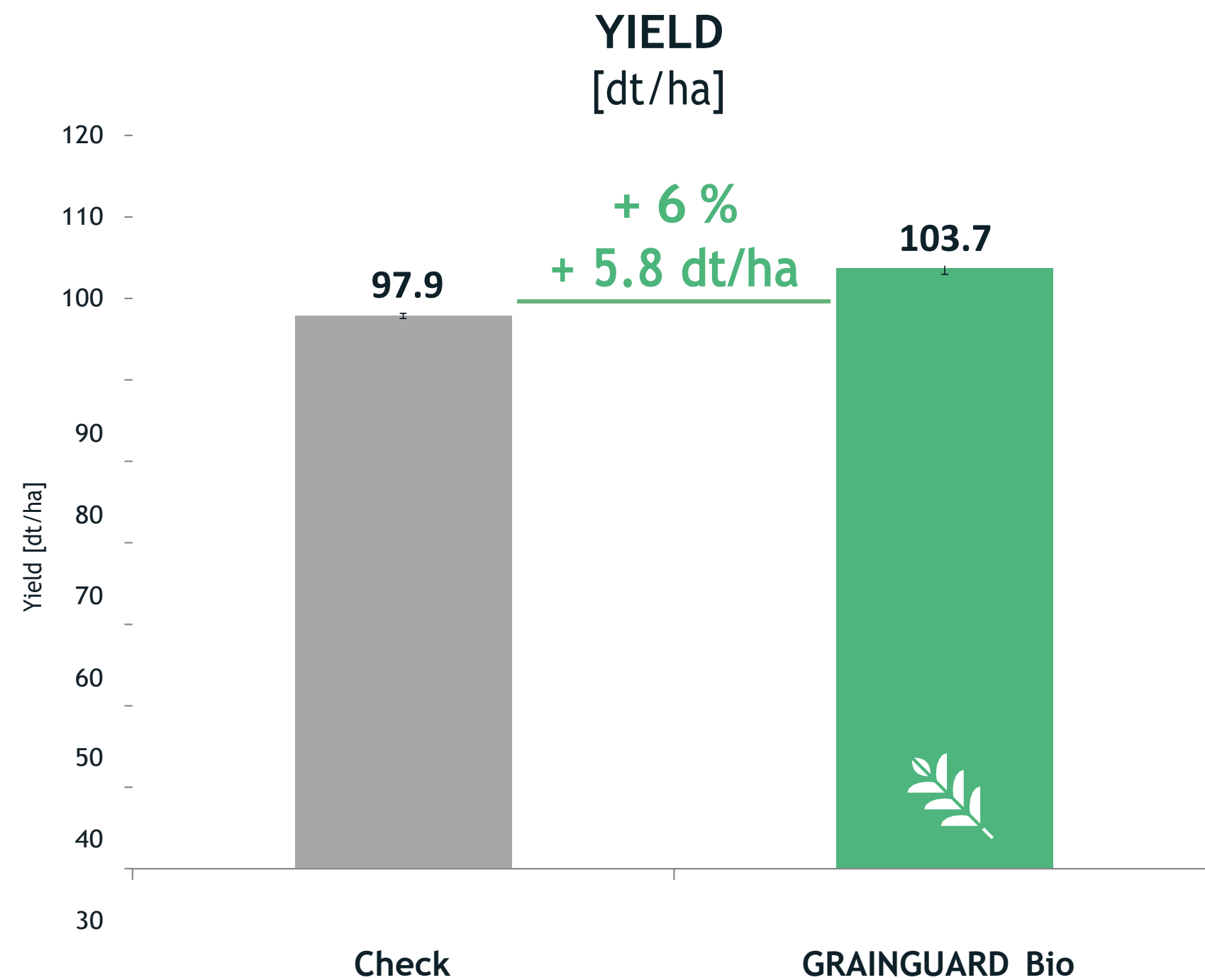


Field trial manager: Plantus GbR

# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD 2021

Plot trial winter grain in Greven (North Rhine-Westphalia)



Variety: SU Performer (winter rye)  
Greven (North Rhine-Westphalia), 2020/21  
Plot trial

Field trial manager: SeedForward GmbH

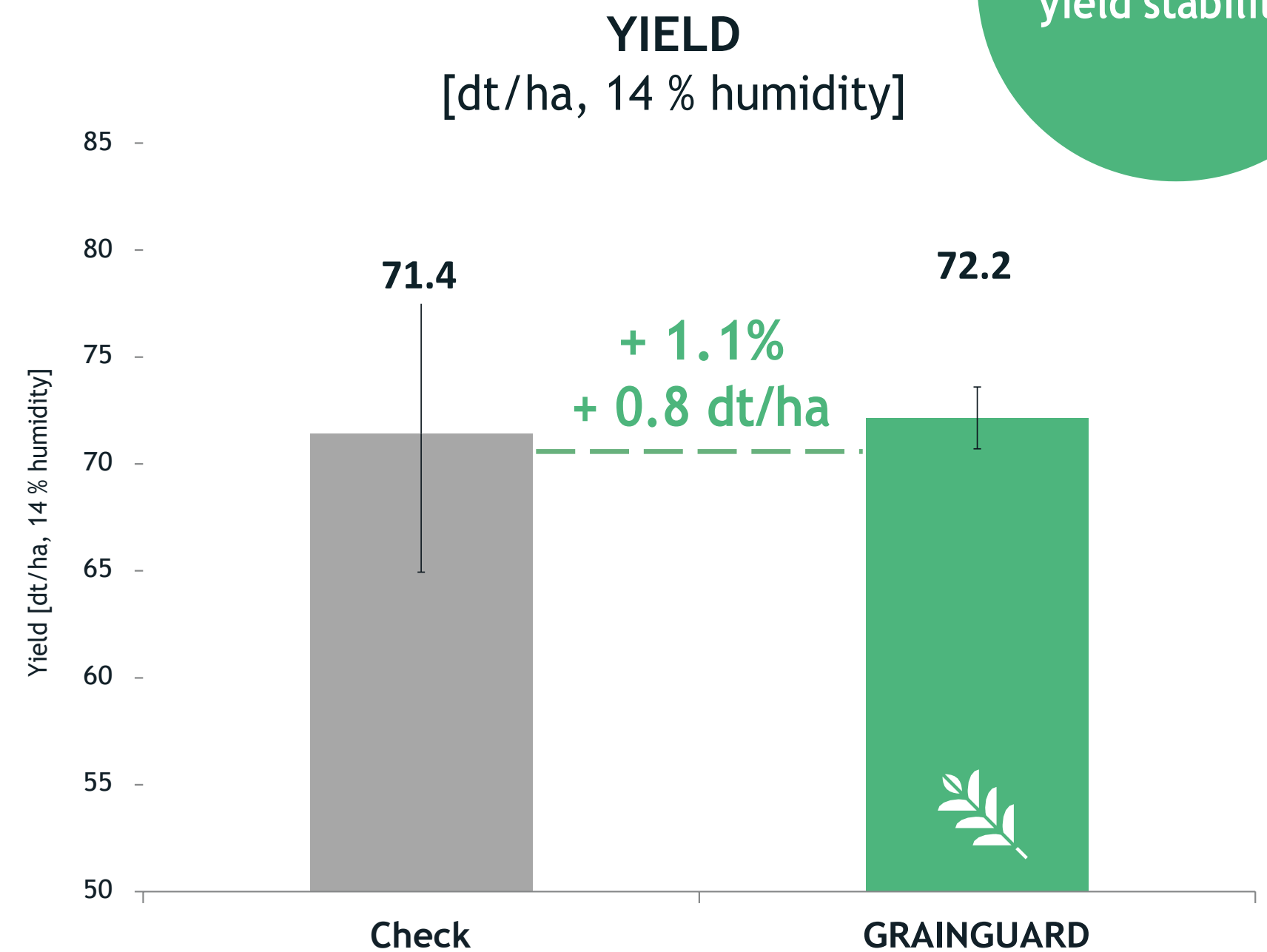
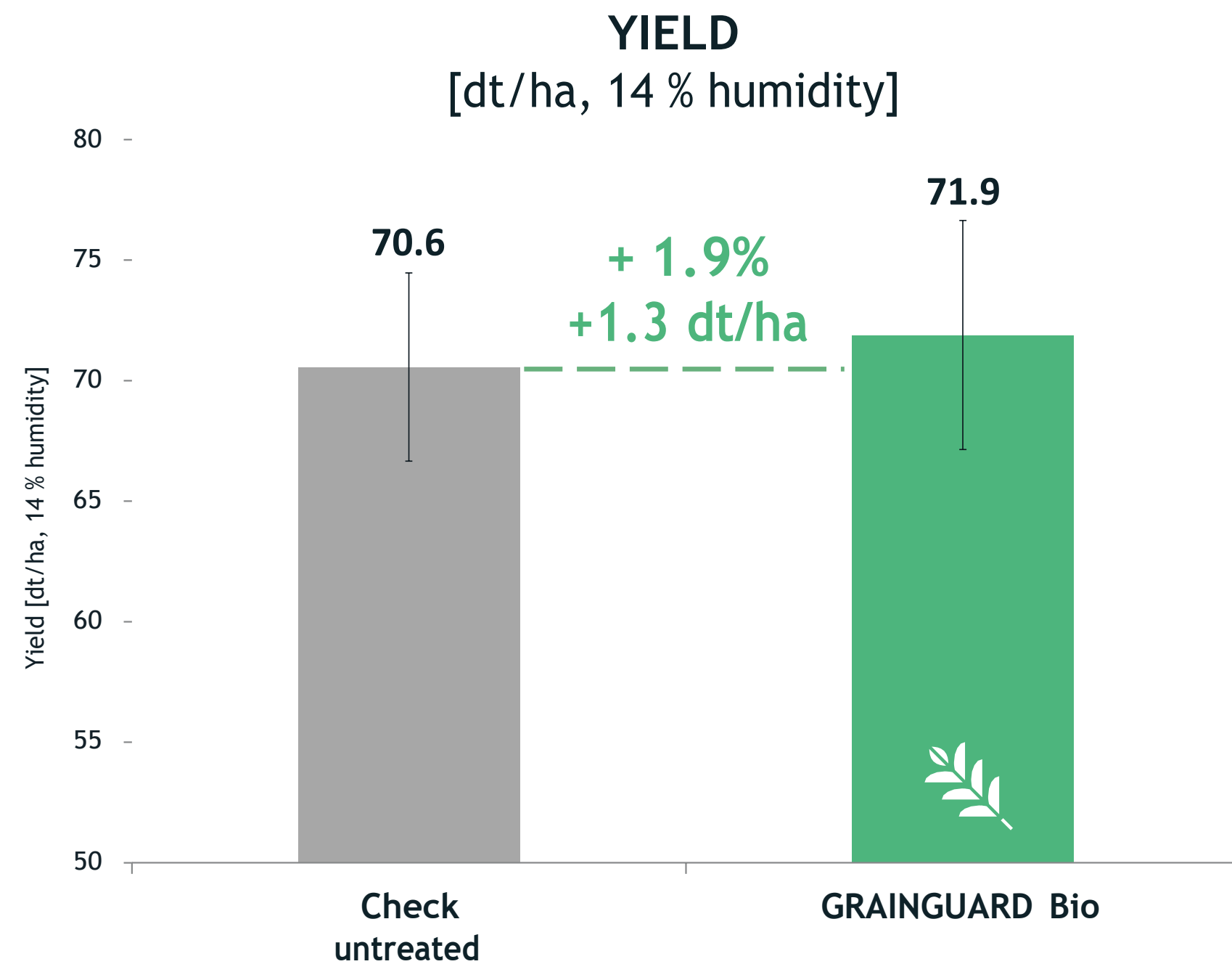
Rhine-Westphalia), 2020/21 Plot trial  
Field trial manager: SeedForward GmbH

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# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD 2021

Plot trial winter wheat in Bluffton (Indiana, USA)



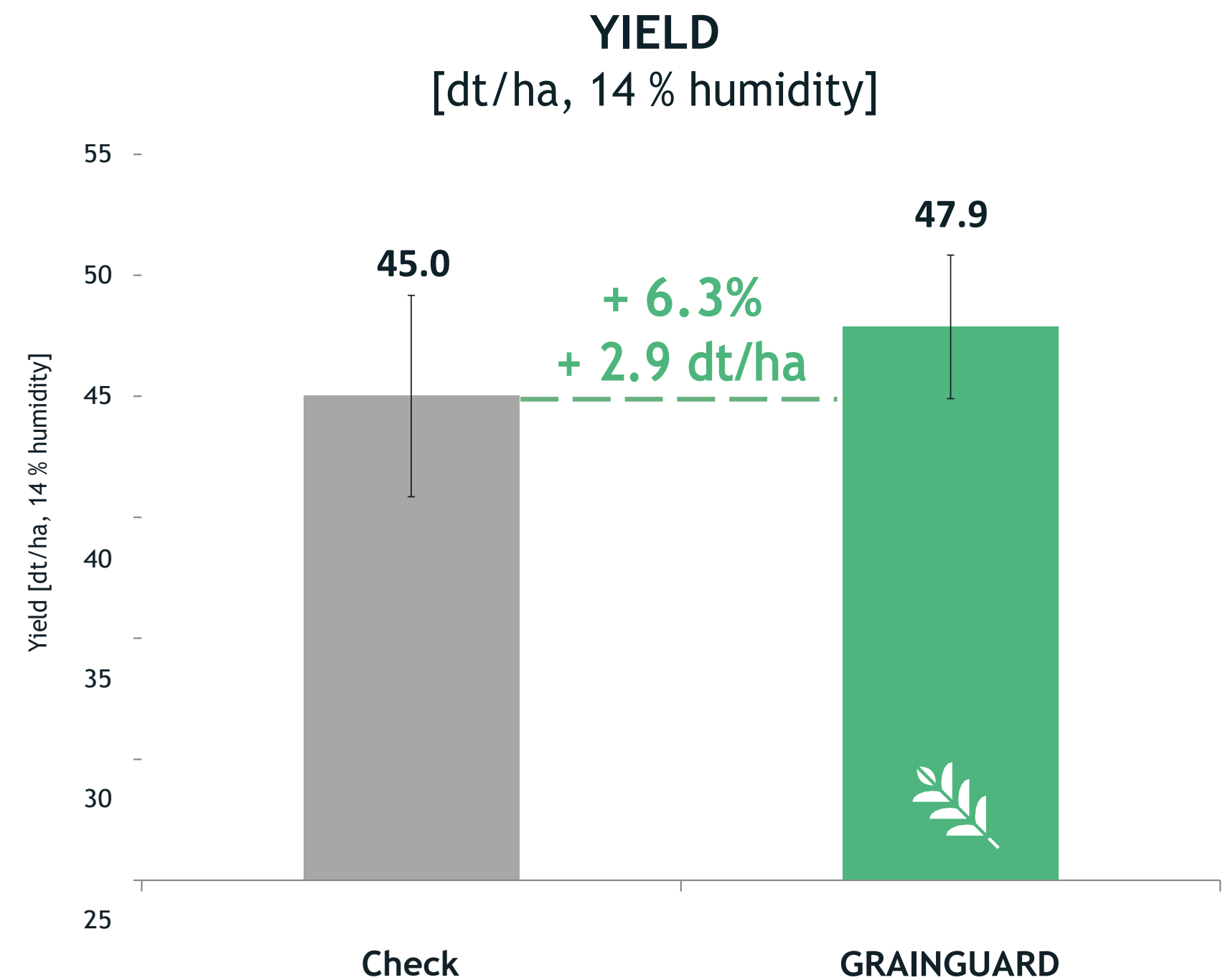
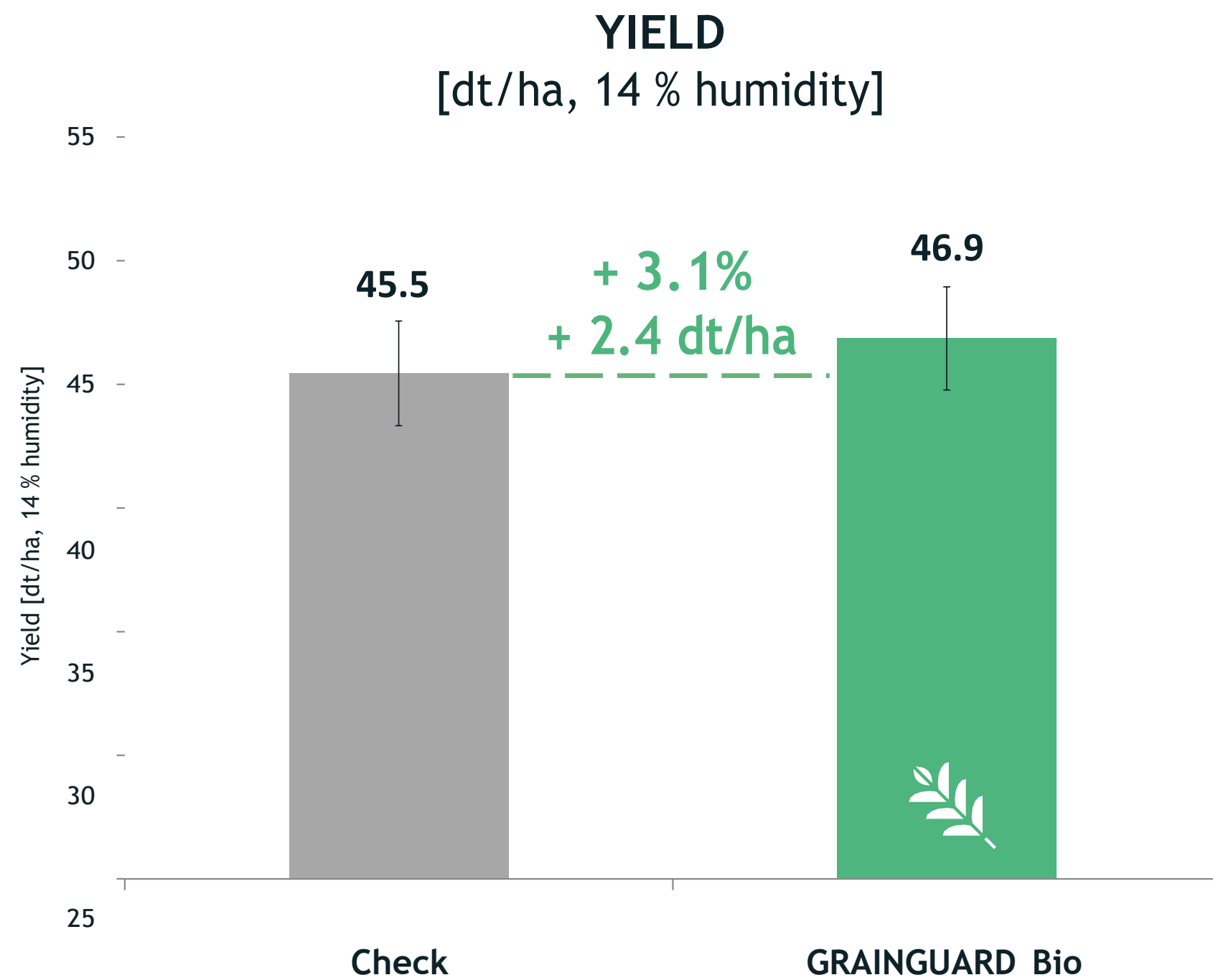
Increased yield stability!

Variety: Pioneer 9203

USA, Indiana, Bluffton, 2020/21  
Plot trial, n = 5 repetitions per treatment  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2021

Plot trial winter wheat in Salem (Illinois, USA)



Variety: Pioneer 9203

USA, Illinois, Salem, 2020/21

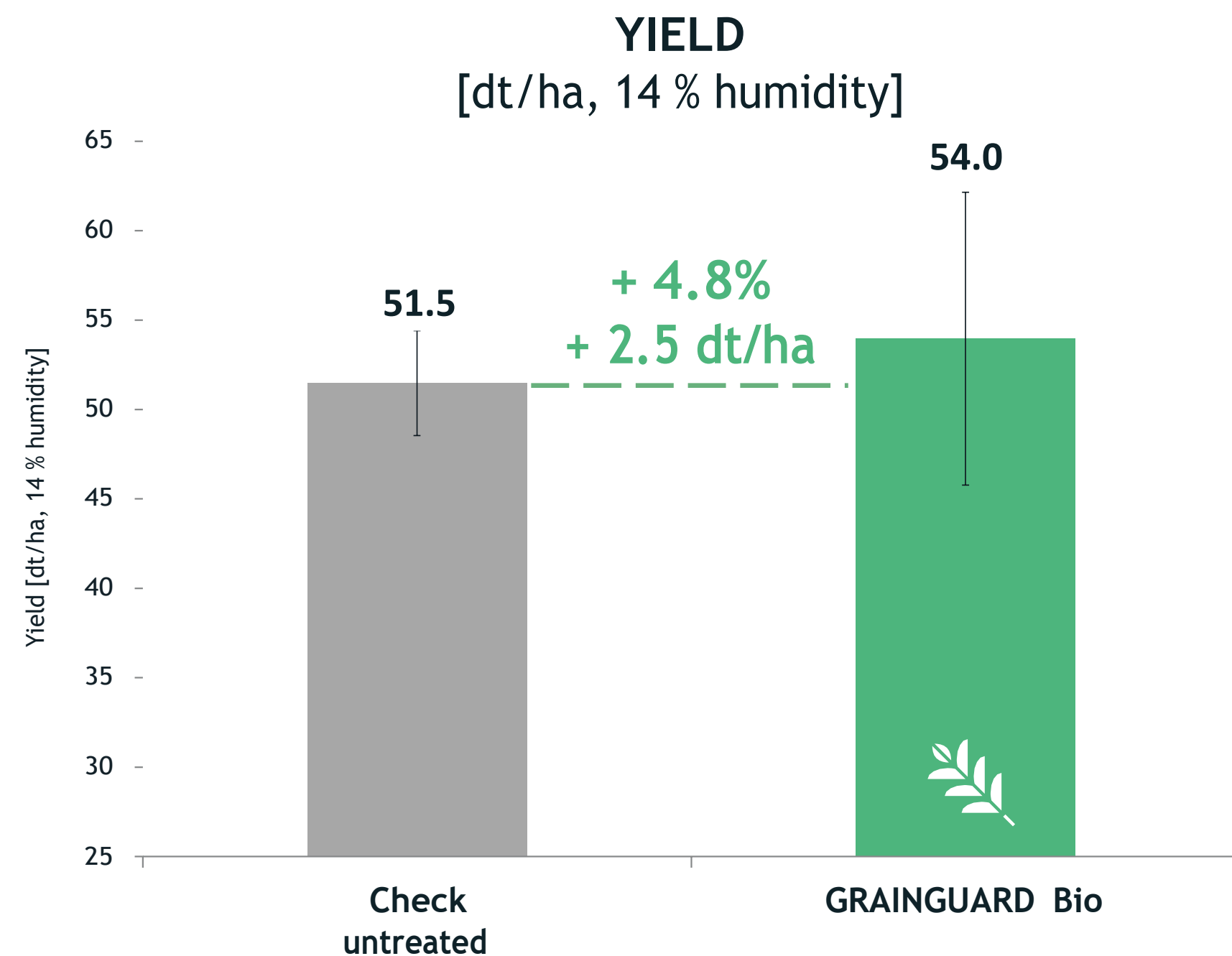
Plot trial, n = 5 repetitions per treatment

Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2021

# YIELD WITH GRAINGUARD Bio 2021

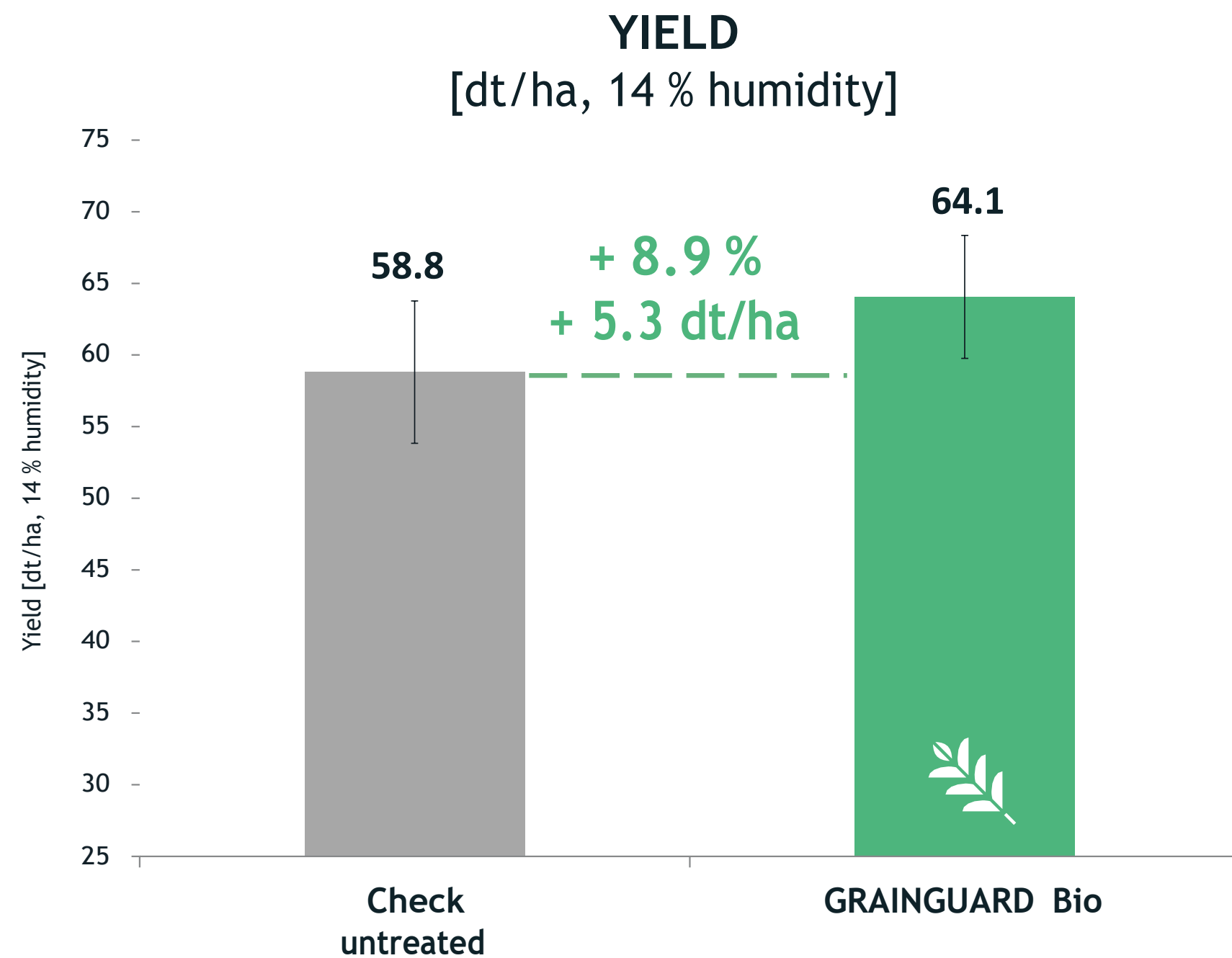
Plot trial winter wheat in Mexico (Missouri, USA)



Variety : Pioneer 9203  
USA, Missouri, Mexico, 2020/21  
Plot trial, n = 5 repetitions per treatment  
Field trial manager: n.n.)

# YIELD WITH GRAINGUARD Bio 2021

Plot trial winter wheat in Tiffin (Ohio, USA)

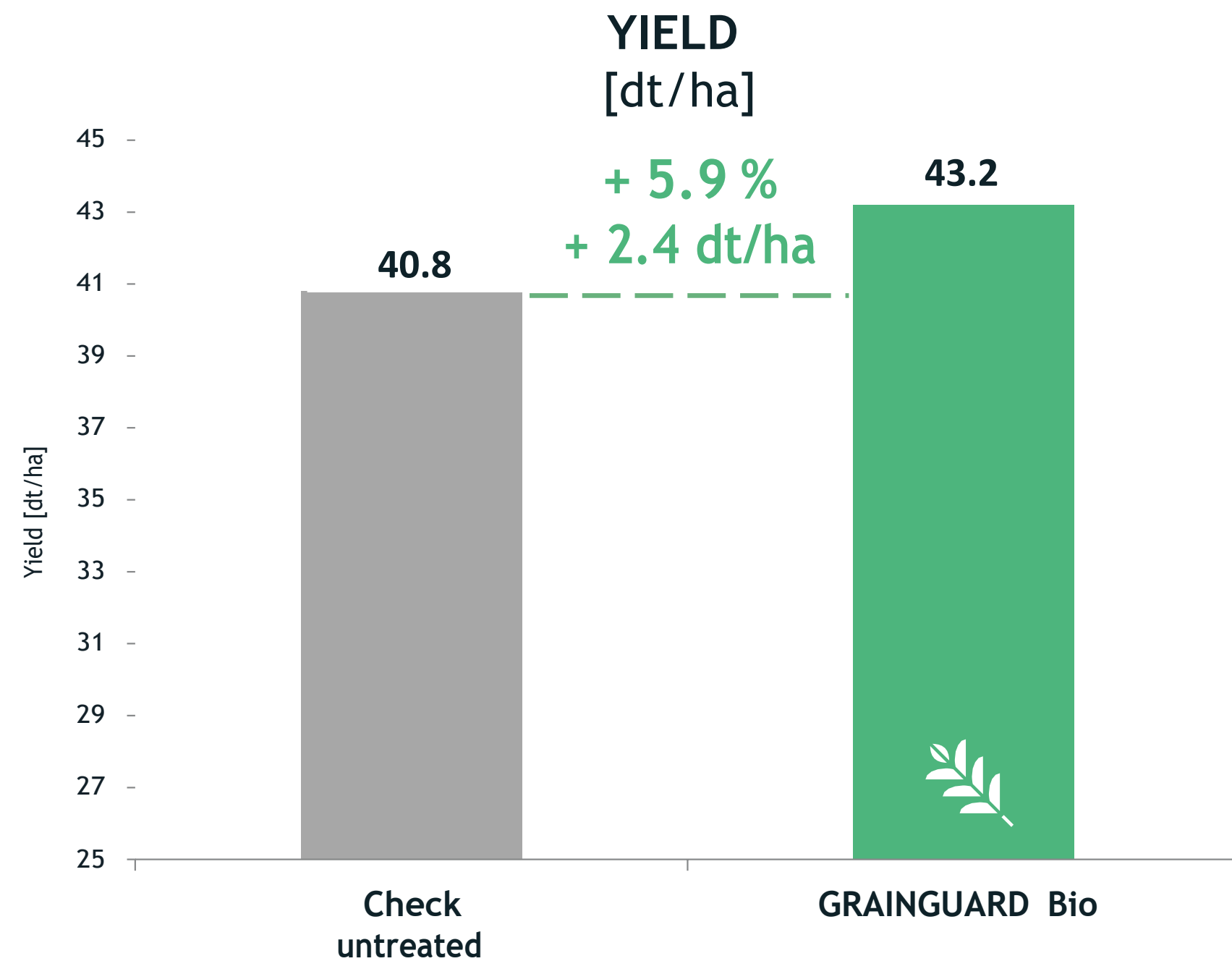


Variety: Pioneer 9203  
USA, Ohio, Tiffin, 2020/21  
Plot trial, n = 5 repetitions per treatment  
Field trial manager: n.n.



# YIELD WITH GRAINGUARD 2021

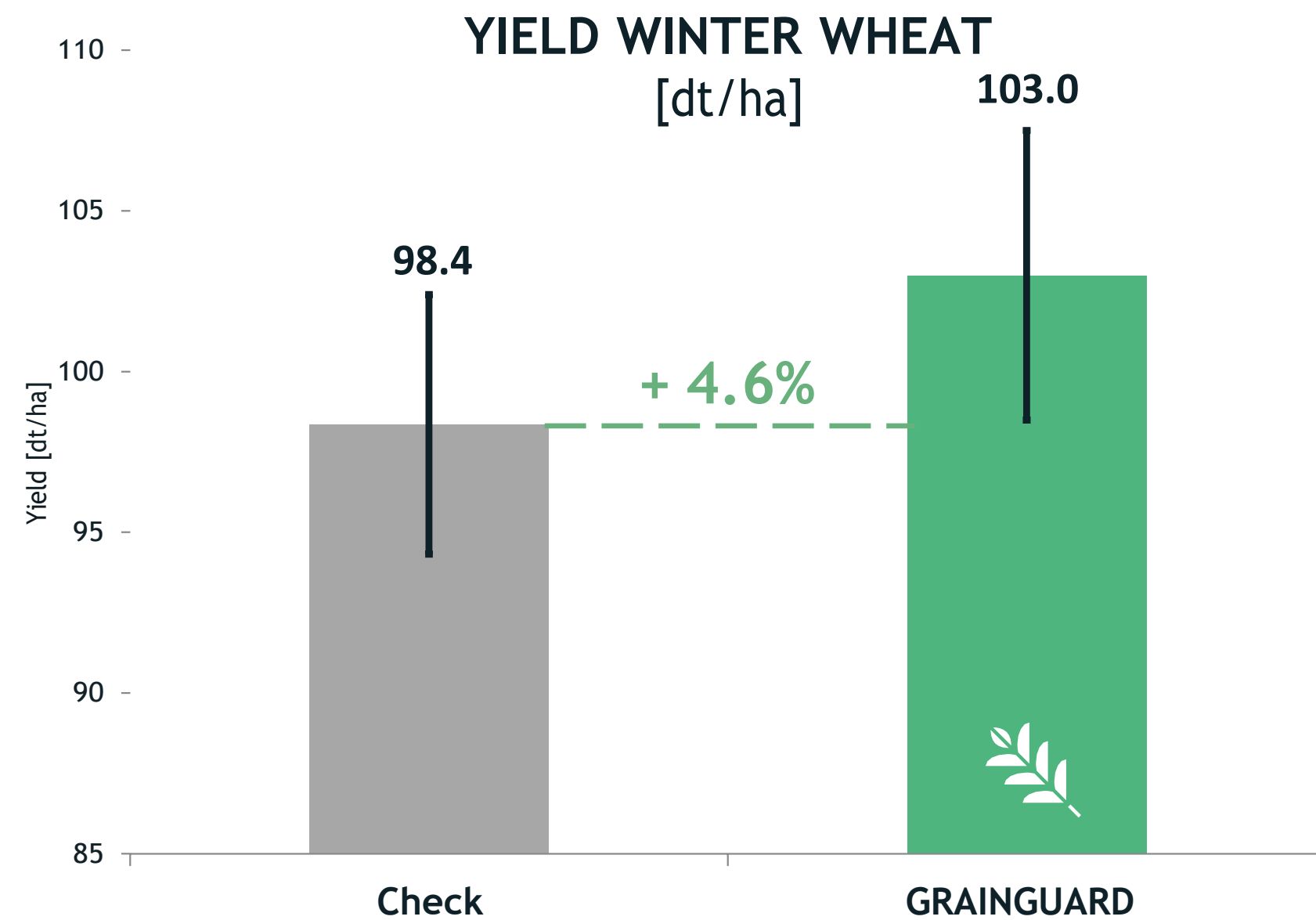
Strip trial winter wheat in Westerkappeln (North Rhine-Westphalia)



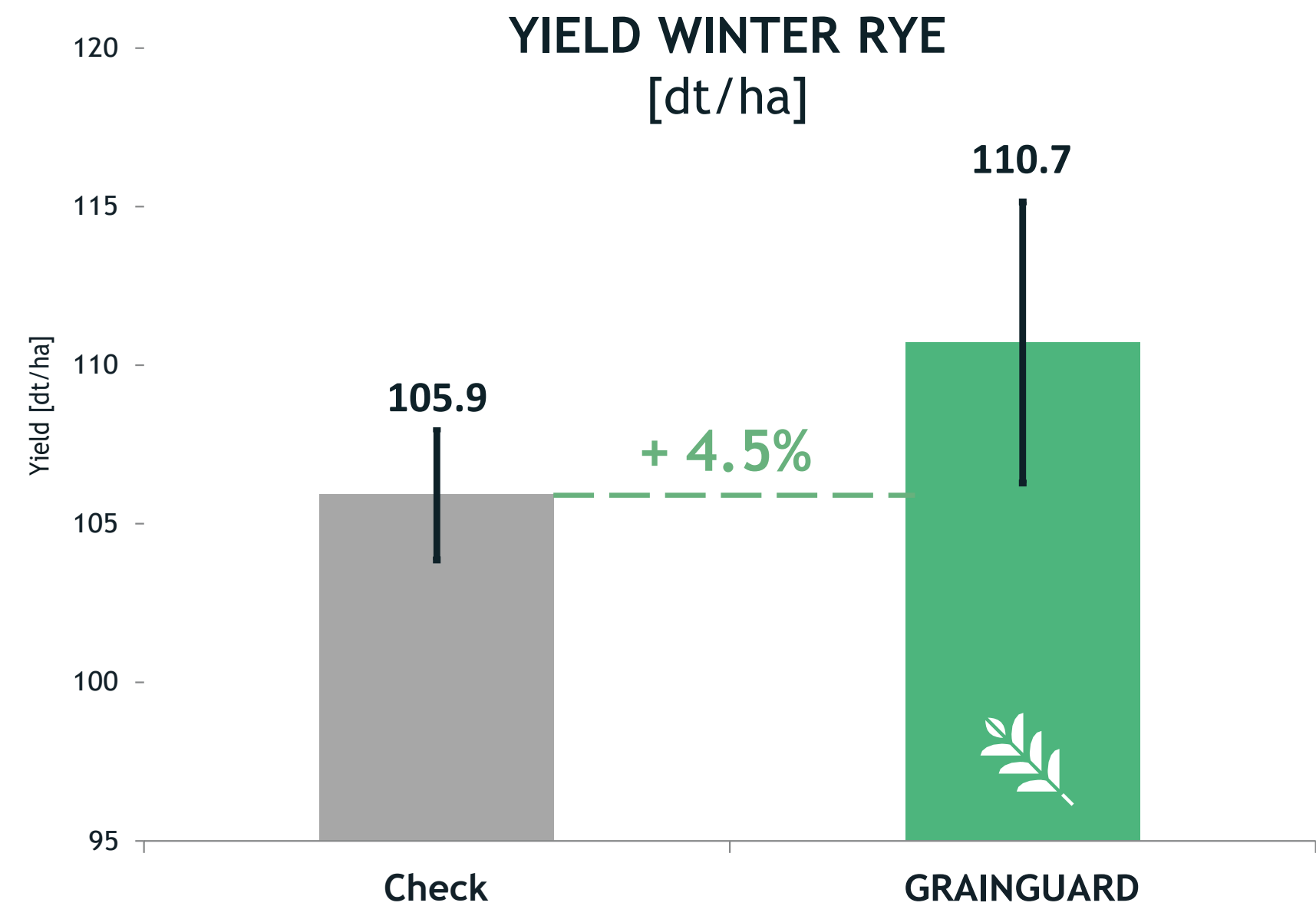
Variety:  
Westerkappeln (North Rhine-Westphalia), 2020/21  
Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2019/20

Plot trials in Cappeln (Lower Saxony)



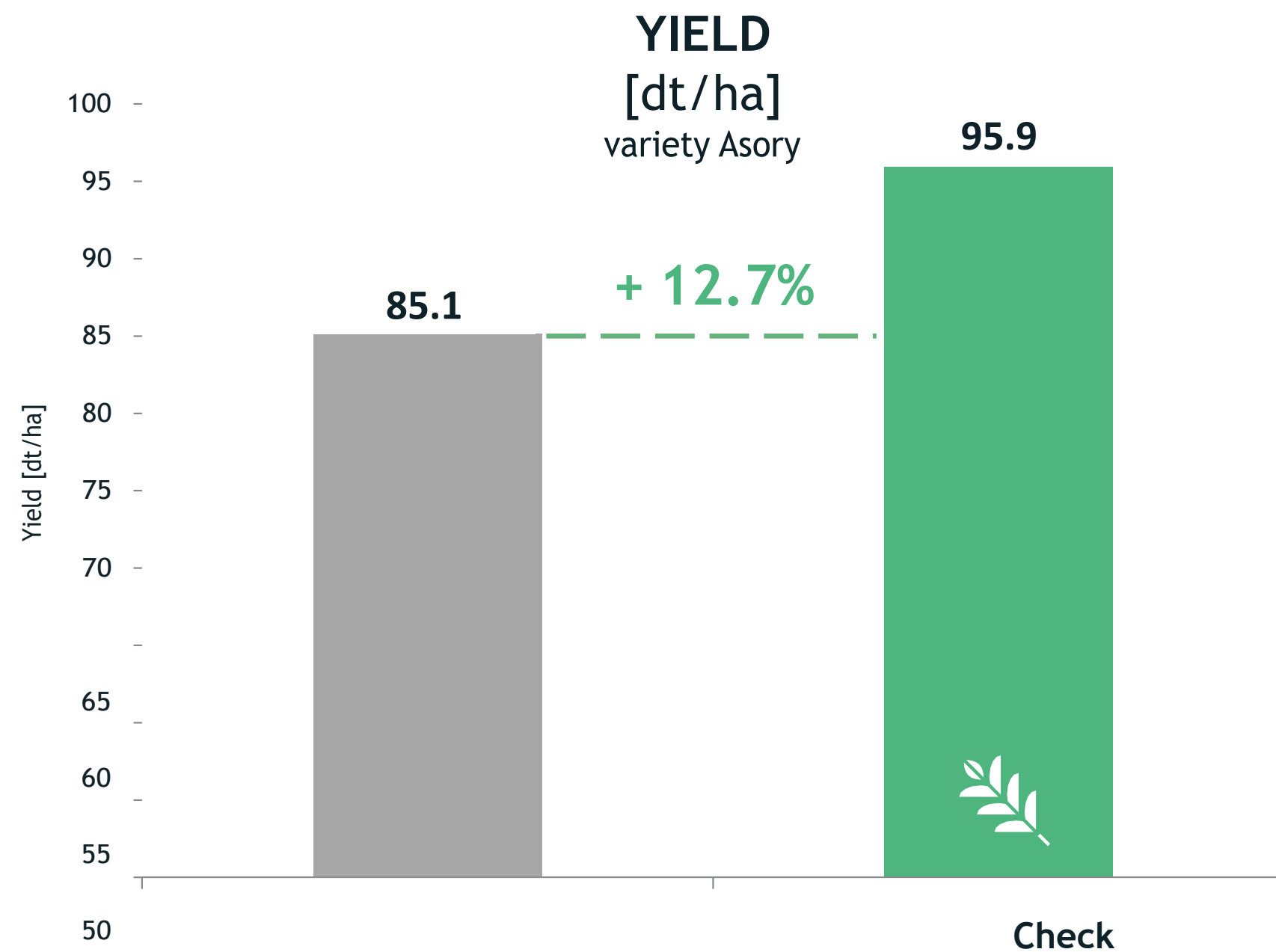
Variety: SU Hymalaya (Hybrid)  
Cappeln (Lower Saxony), 2019  
Plot trial, n = 5 repetitions per treatment  
Field trial manager: field trial services Homann



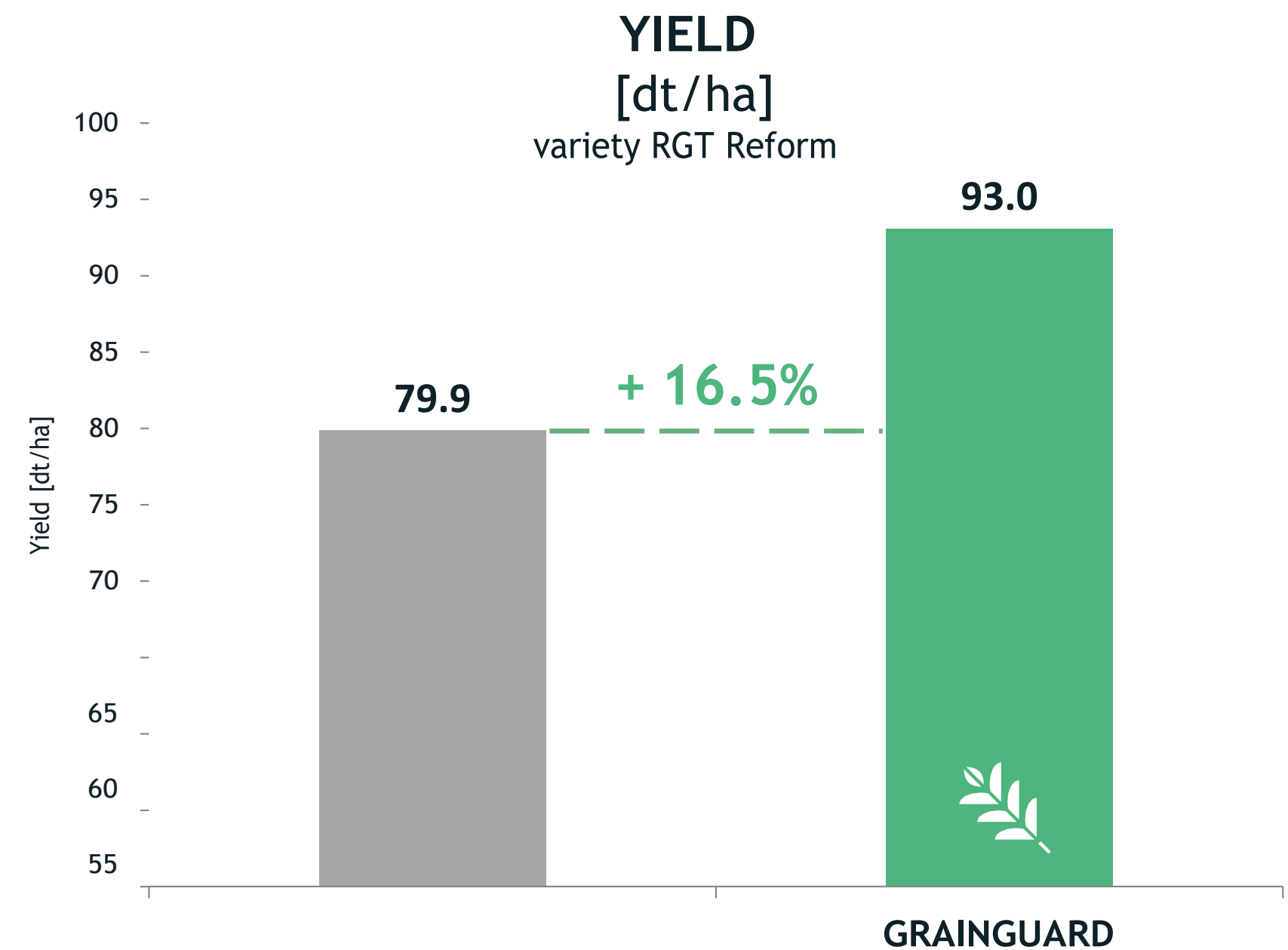
Variety: SU Performer (Hybrid)  
Cappeln (Lower Saxony)  
Plot trial, n = 5 repetitions per treatment, 2019  
Field trial manager: field trial services Homann

# YIELD WITH GRAINGUARD 2019/20

Strip trial winter wheat in Westerkappeln (NRW), high temperatures and low precipitation 2020



Variety: Asory  
Westerkappeln (North Rhine-Westphalia), 2019/20  
Strip trial  
Field trial manager: n.n.



Variety: RGT Reform  
Westerkappeln (North Rhine-Westphalia), 2019/20  
Strip trial  
Field trial manager: n.n.

Check

GRAINGUARD

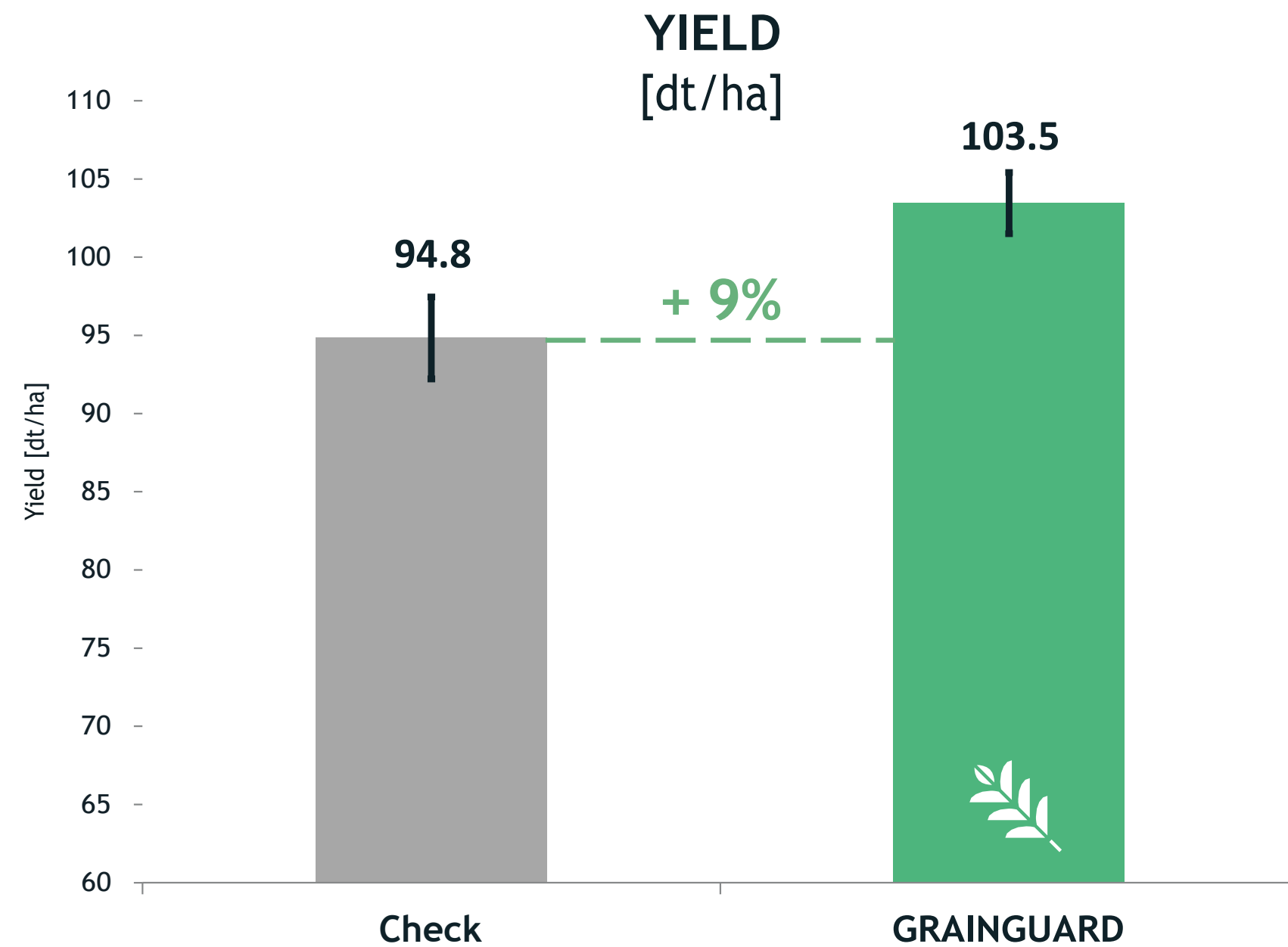
# YIELD WITH GRAINGUARD 2019/20

Variety: Asory  
Westerkappeln (North Rhine-Westphalia), 2019/20  
Strip trial  
Field trial manager: n.n.

Variety: RGT Reform  
Westerkappeln (North Rhine-Westphalia), 2019/20  
Strip trial  
Field trial manager: n.n.

# YIELD WITH GRAINGUARD 2019/20

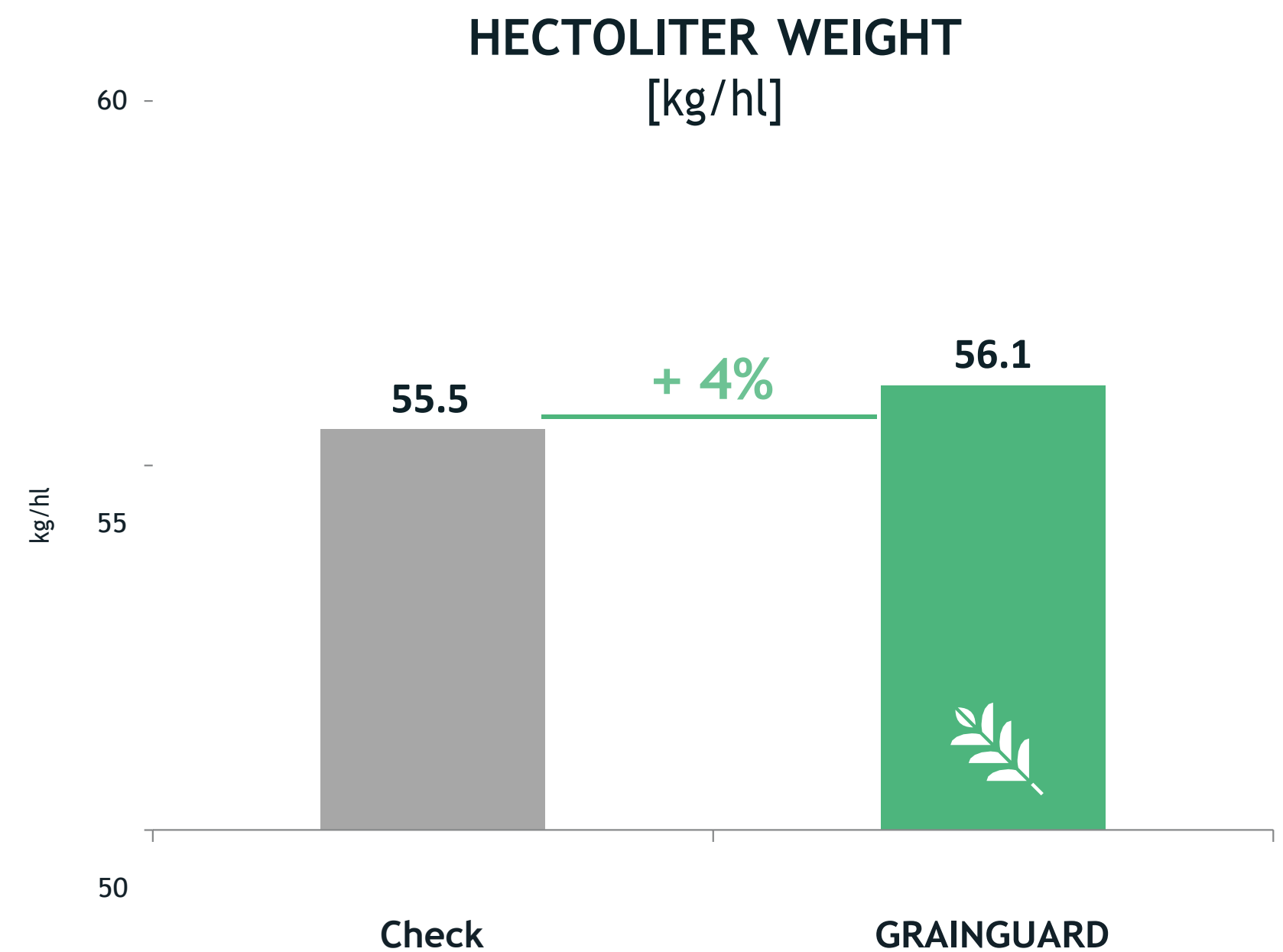
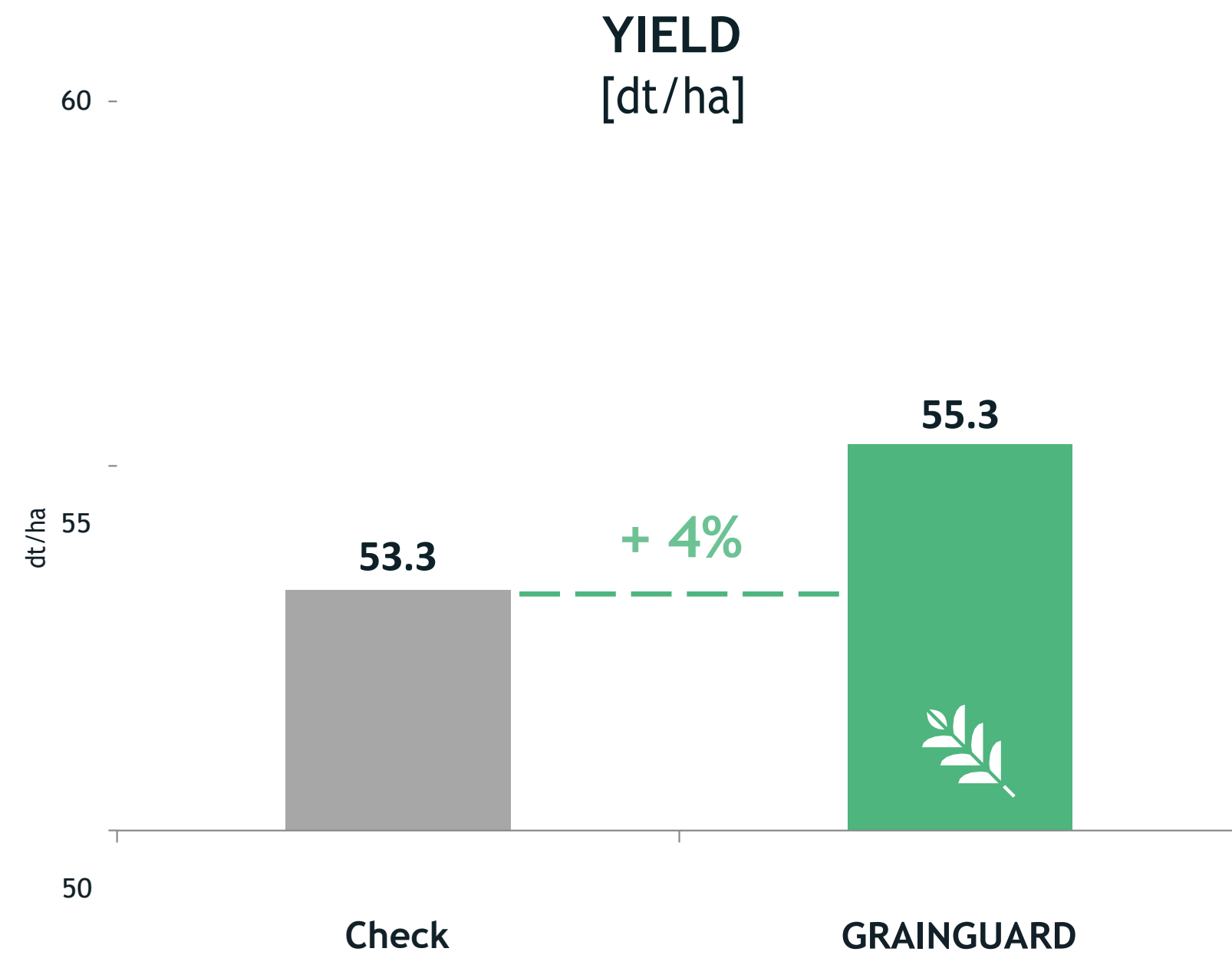
Plot trial winter rye in Cappeln (Lower Saxony)



Variety: SU Performer  
Cappeln (Lower Saxony), 2019/20  
Plot trial, n = 5 repetitions per treatment, 220 grains/m<sup>2</sup>  
Field trial manager: field trial services Homann

# YIELD WITH GRAINGUARD 2019/20

Plot trial winter barley in Klein Berßen (Lower Saxony)



Variety: California

Klein Berßen (Lower Saxony), 2020

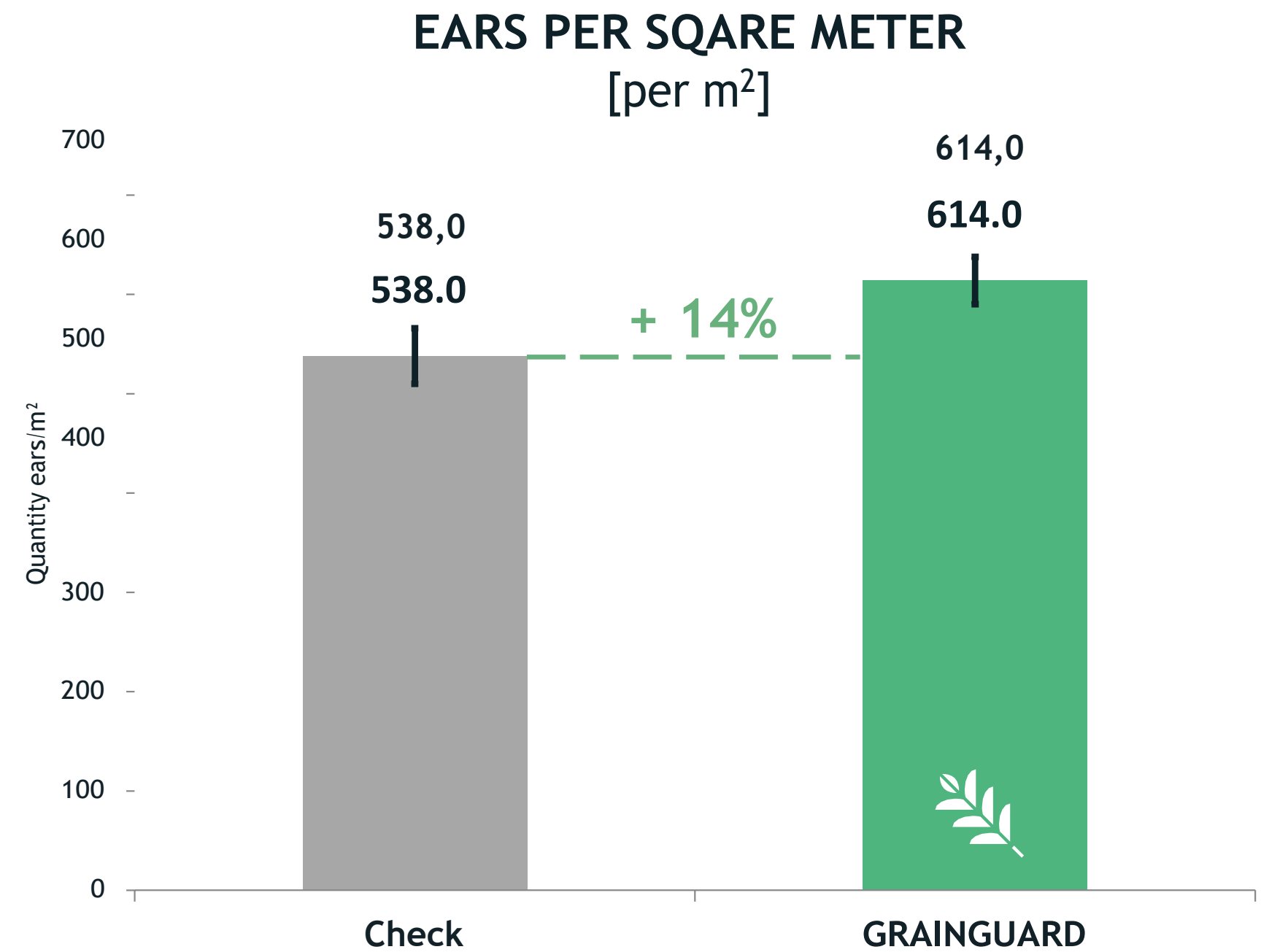
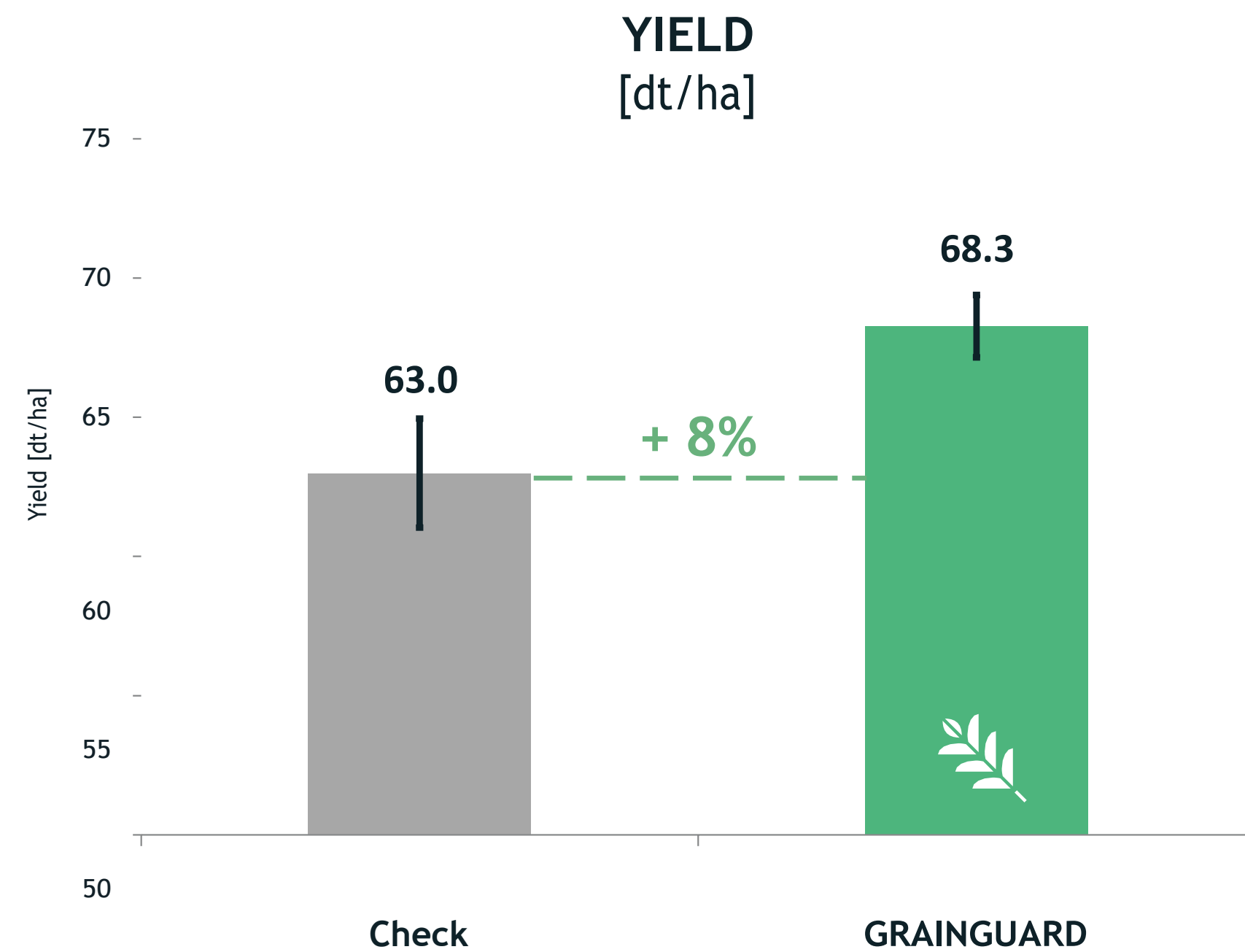
Plot trial, n = 5 repetitions per treatment, sowing: 10/09/2019, 350 grains/m<sup>2</sup>

# YIELD WITH GRAINGUARD 2019/20



# YIELD WITH GRAINGUARD 2020

Plot trial spring barley in Cappeln (Lower Saxony)





Variety: RGT Planet  
Cappeln (Lower Saxony), 2020  
Plot trial, n = 4 repetitions per treatment

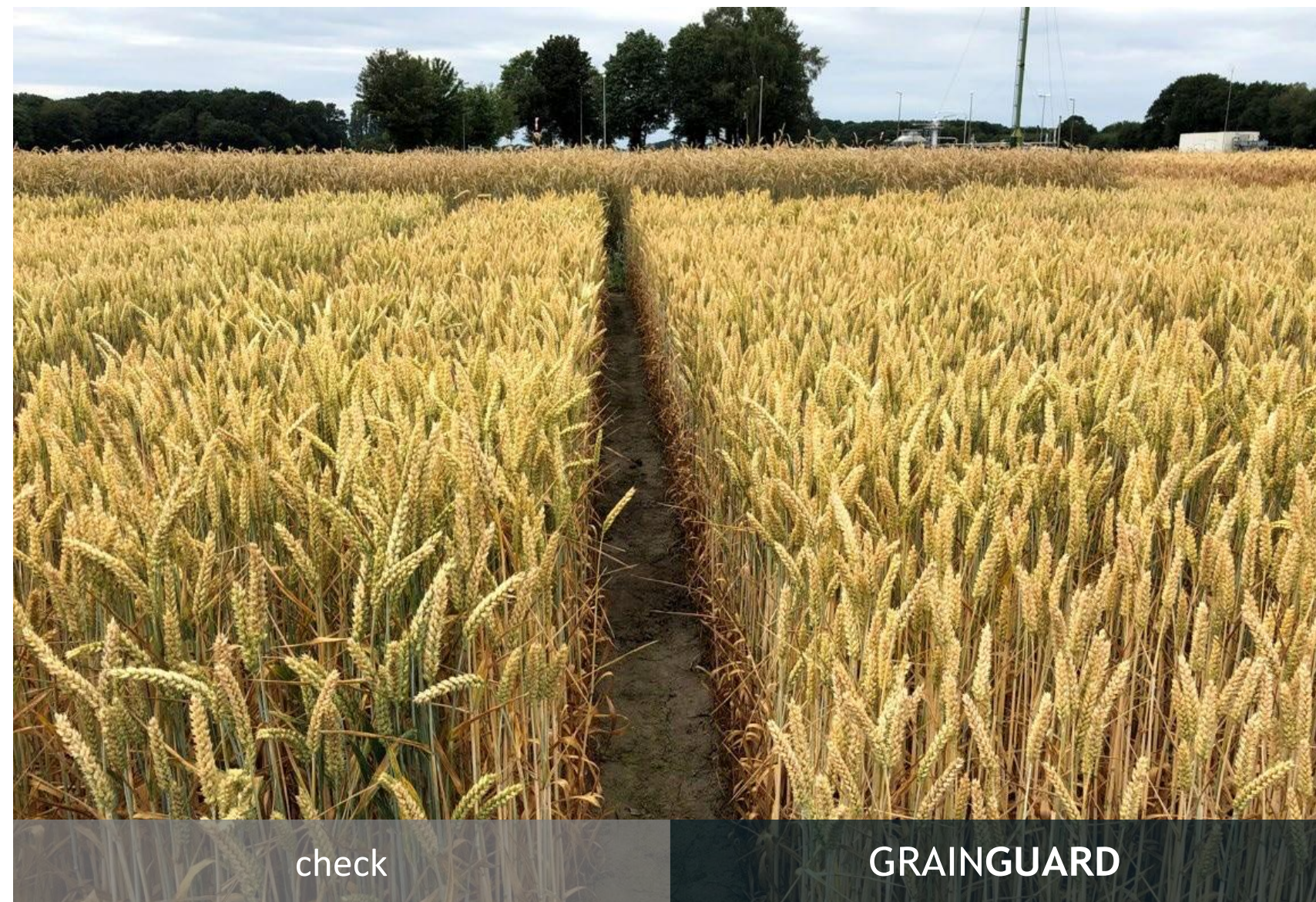
# YIELD WITH GRAINGUARD 2020



# CROP DEVELOPMENT IN THE FIELD

Improved yield stability for your grain.

WINTER WHEAT (hybrid)

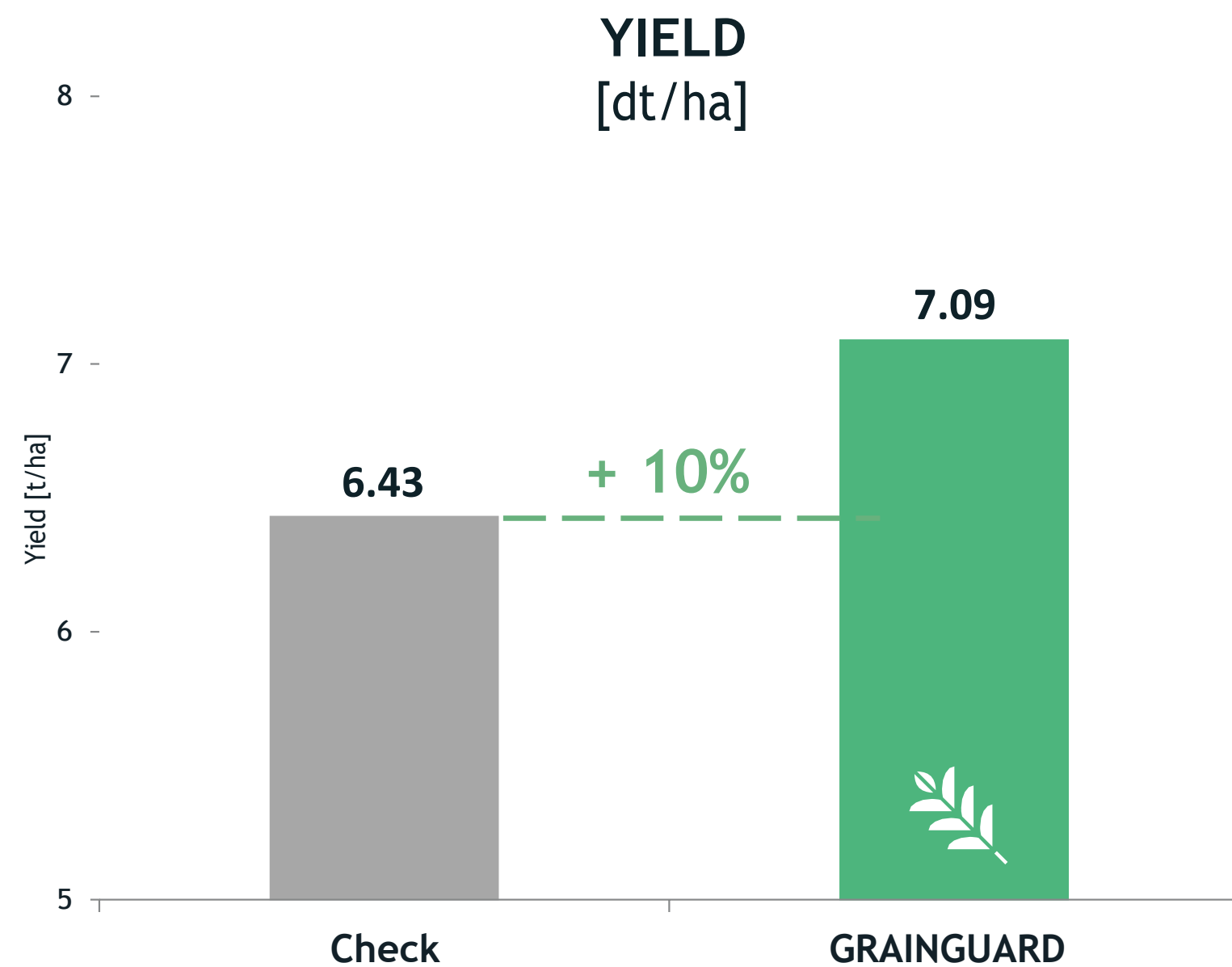


SPRING BARLEY



# YIELD WITH GRAINGUARD 2018/19

Strip trial winter barley in Sassenberg (North Rhine-Westphalia)



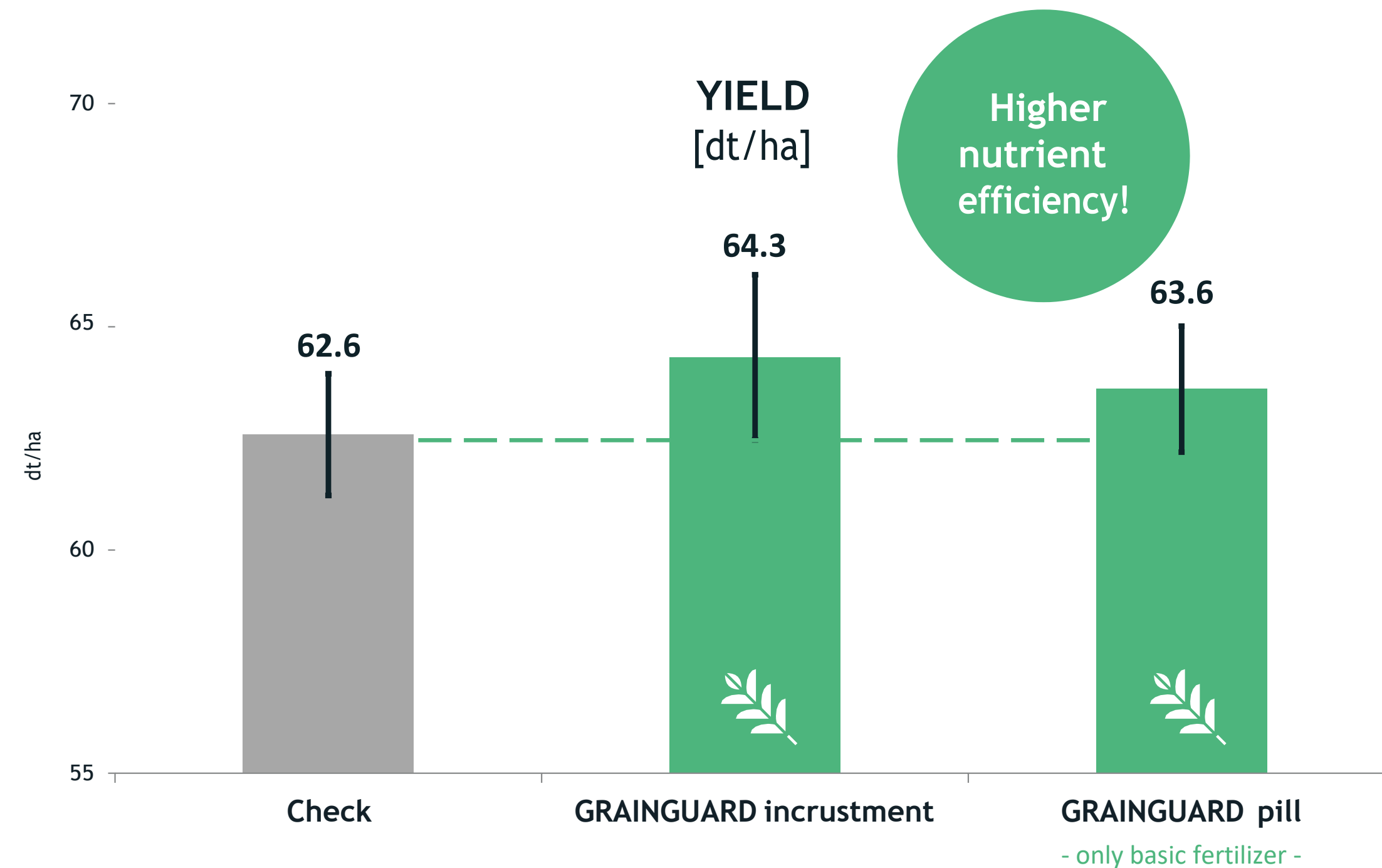
- Location: Warendorf (North Rhine-Westphalia)
- Homogeneous field with sandy soil
- High temperatures with low precipitation (2019)

Variety: SY Galileo  
Sassenberg (North Rhine-Westphalia), 2018/19  
Strip trial  
Field trial manager: SeedForward GmbH



# YIELD WITH GRAINGUARD 2019

Plot trial in winter wheat with reduced fertilizer input in Cappeln (Lower Saxony)



➤ Trial question: Reduction of fertilizer input with GRAINGUARD?

➤ Trial conditions:

Fertilization adapted to the crop requirement	Only base rate of fertilizer
Control GRAINGUARD incrustment	GRAINGUARD pill

➤ Increased nutrient efficiency by improved root performance and metabolic activation

Variety: Asory

Cappeln (Lower Saxony), 2019  
Field trial manager: field trial services Homann

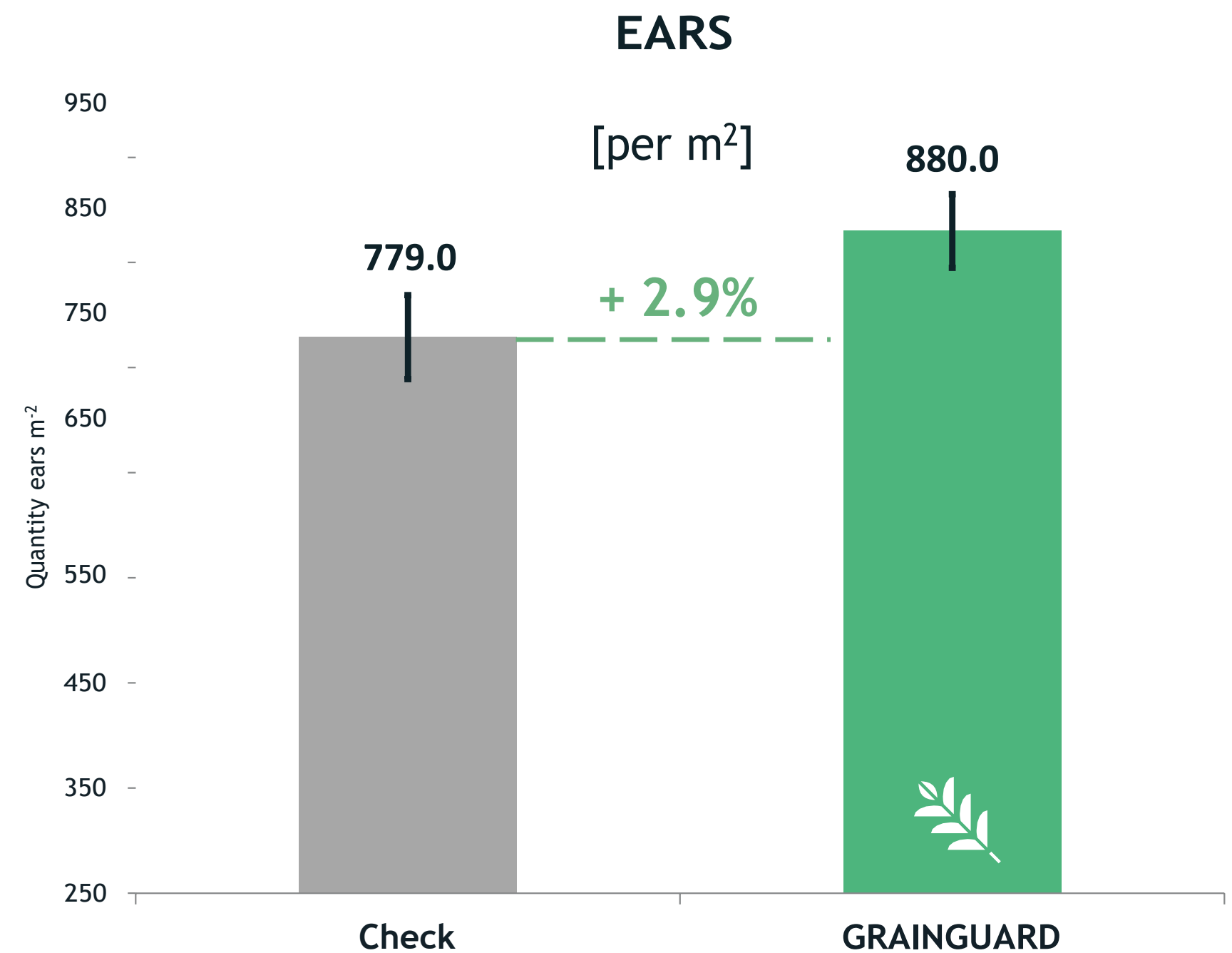
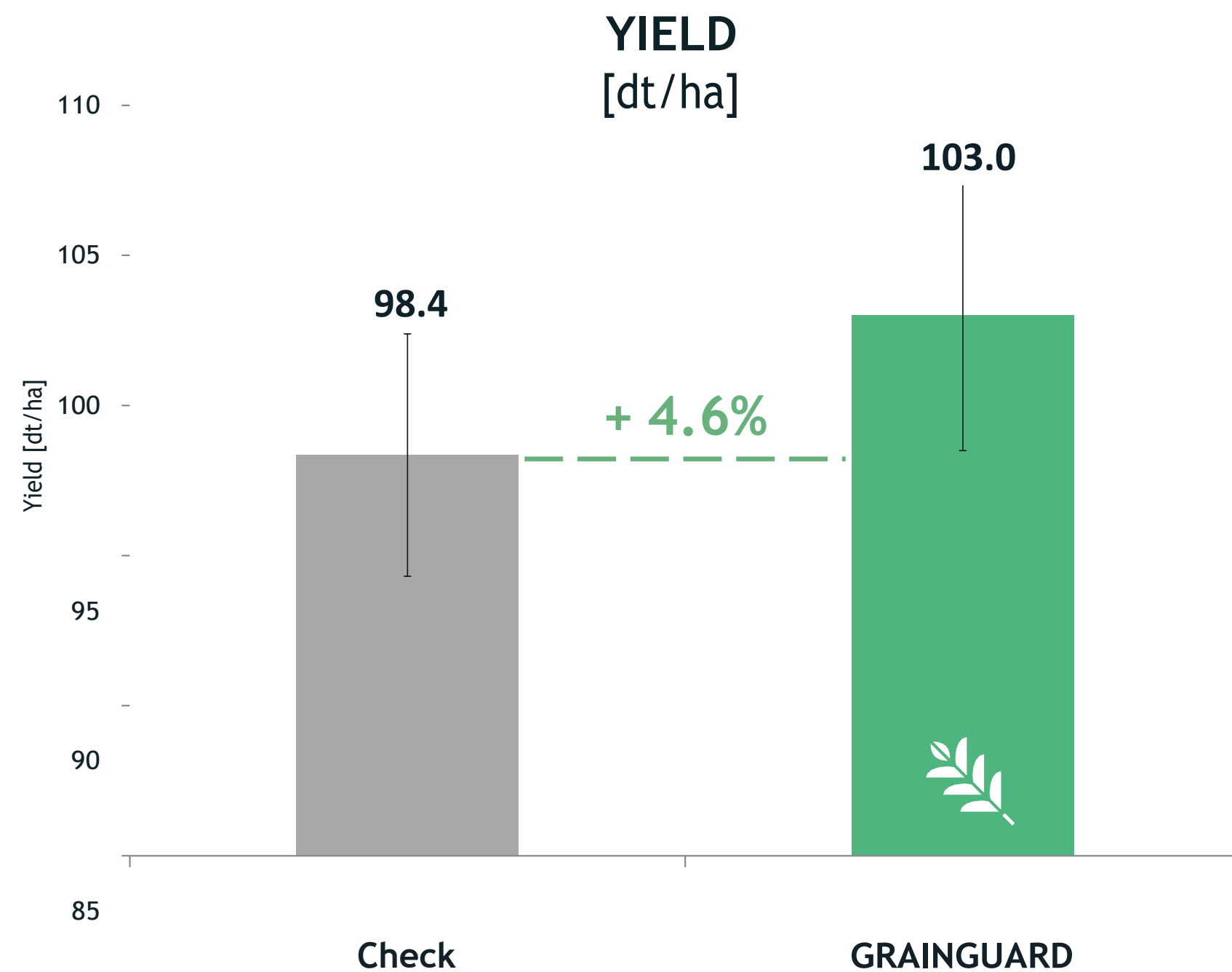
Plot trial, n = 4 repetitions per treatment

# YIELD WITH GRAINGUARD 2019



# YIELD WITH GRAINGUARD 2019

Plot trial winter wheat in Cappeln (Lower Saxony)



Variety: SU Hymalaya (Hybrid)  
Cappeln (Lower Saxony), 2019  
Plot trial, n = 5 repetitions per treatment

# YIELD WITH GRAINGUARD 2019

Higher number of ears per square meter  
Higher yield

98,4

103,0

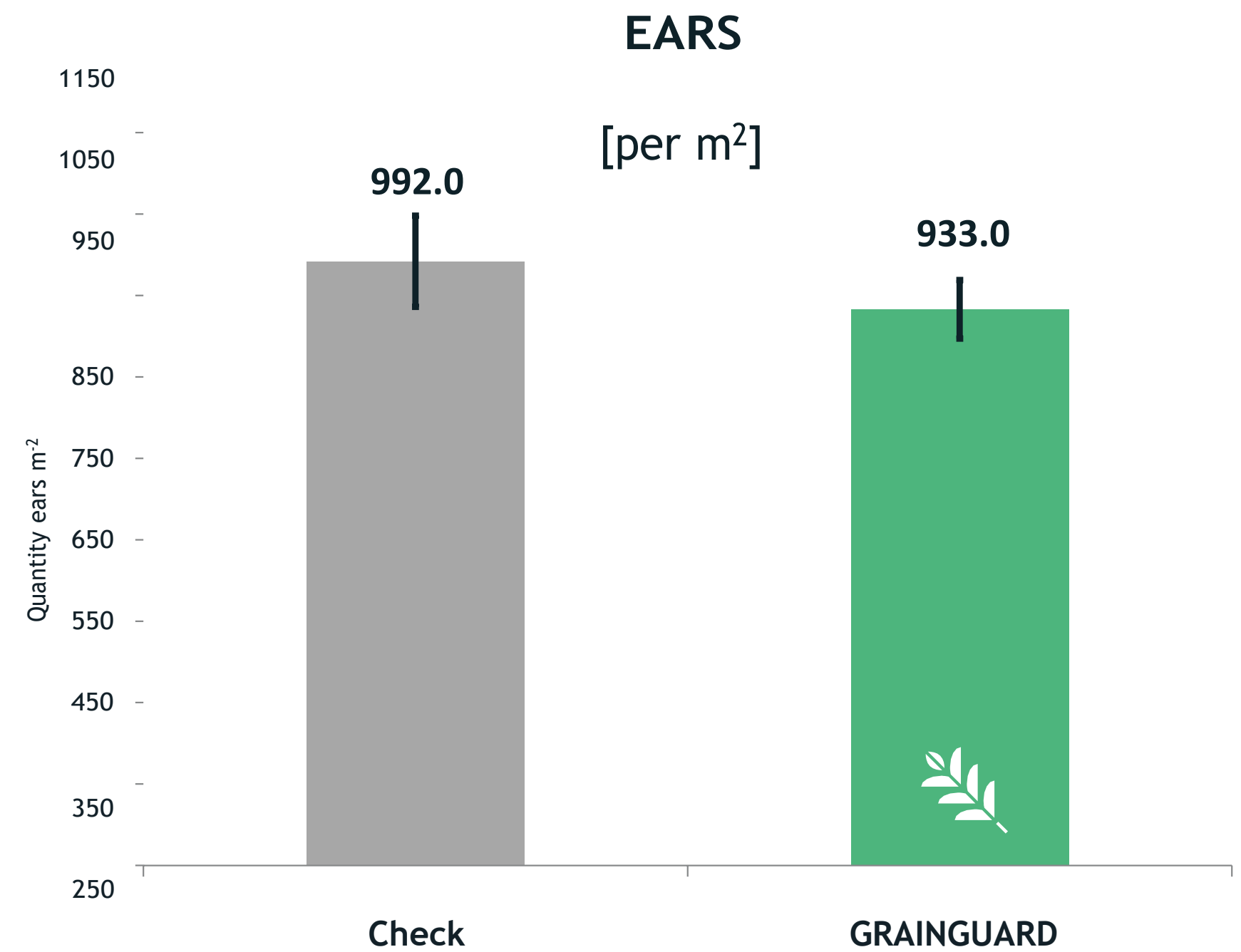
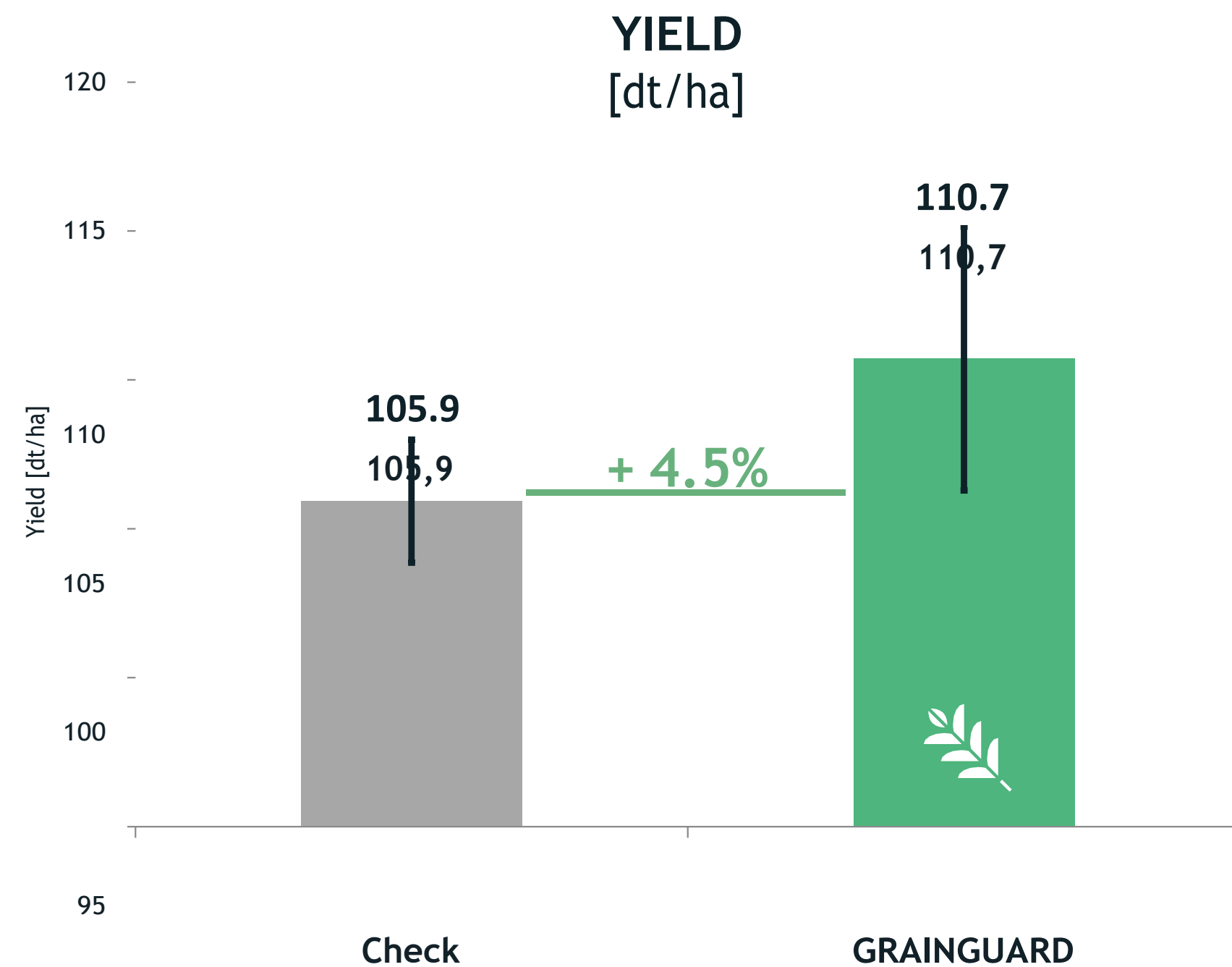
779,0

880,0



# YIELD WITH GRAINGUARD 2019

Plot trial winter rye in Cappeln (Lower Saxony)



> Nevertheless, higher yield due to higher TKW

Plot trial, n = 5 repetitions per treatment  
Field trial manager: field trial services Homann



Variety: SU Performer (Hybrid)  
Cappeln (Lower Saxony), 2019

# YIELD WITH GRAINGUARD 2019

Less ears per square meter

Plot trial, n = 5 repetitions per treatment  
Field trial manager: field trial services Homann

- >
- > Nevertheless, **higher yield due to higher TKW**

# 07 GRAINGUARD AND OTHER SEED TREATMENTS

- The registration of many fungicidal seed treatment products will expire. Therefore, alternative seed treatments such as electron treatment hot steam treatment are becoming increasingly important.
- In plot trials 2020, particularly low-quality seed lots were tested in combination with different seed treatments.
- The treatment with GRAINGUARD showed a positive effect on plant vitality in the trials.



grow better with  
**GRAINGUARD**<sup>®</sup>



# 08 PRACTICAL OBSERVATIONS

- Less herbicides are necessary due to better and earlier crop closure
- Leaf arrangement is more horizontal (planophilic) (EC 22-30)
- Reduced infestation of aphids

grow better with  
**GRAINGUARD®**



# READY FOR THE FIELD



Also available as a product of SAATEN-UNION GmbH.



Also available as a product of farmsaat AG.



All products also available for **organic farming**.

# AVAILABLE IN THE FUTURE



# LET'S GO FORWARD TOGETHER

Experience meets innovation.



SeedForward GmbH  
Averdiekstraße 4  
49078 Osnabrueck  
Germany

+49 (0) 541 202 80 880

More information about the variety of our products:

[www.seedforward.com](http://www.seedforward.com)

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SEED   
FORWARD  
grow better

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