

The KWS Manual for UK Growers

KWS AgroService Sugar Beet

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SEEDING
THE FUTURE
SINCE 1856



To ensure you get the best from CONVISO® SMART there are 3 key areas that must be followed:

1 To prevent seed return

Do this by controlling bolters and groundkeepers.

2 Use CONVISO® ONE as the label states

This is a legal document and must be followed accordingly. This helps protect the active ingredients for use in future years.

3 Ensure accurate use of the system

Do not let weeds get too big.

Following these points and the guidance set out in this booklet will provide you with the knowledge required to get the best from the CONVISO® SMART system.





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CONVISO® SMART – a valuable system

- CONVISO® SMART gives new options for weed control in sugar beet – the first introduction of new active ingredients in sugar beet for decades.
- KWS and Bayer have worked for decades to develop the CONVISO® SMART system.

The system is based on two components:

- SMART KWS varieties, bred by KWS, specifically tolerant to CONVISO® ONE.
- CONVISO® ONE, the novel herbicide developed by Bayer.

SMART KWS seeds make it possible to introduce a new herbicide in sugar beet.





SMART KWS varieties



CONVISO® ONE



- Bred with classic breeding methods.
- Specifically tolerant to CONVISO® ONE.
- With best crop safety to CONVISO® ONE.
- Can also be treated with classical herbicides if required.

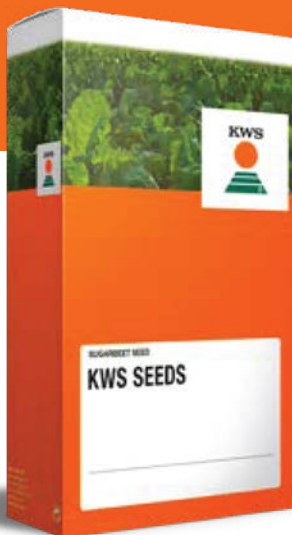


- Broad weed control spectrum.
- Fewer herbicide applications.
- Can be sequenced with classical sugar beet herbicides if required.
- Can be tank mixed with 3 different active ingredients.

UTILISE FULL YIELD POTENTIAL

INNOVATIVE WEED CONTROL

Classic KWS sugar beet seed box



SMART KWS sugar beet seed box



Design of the seed box

The seed boxes of SMART KWS seed are clearly differentiated from classic KWS sugar beet seed boxes by the following elements:

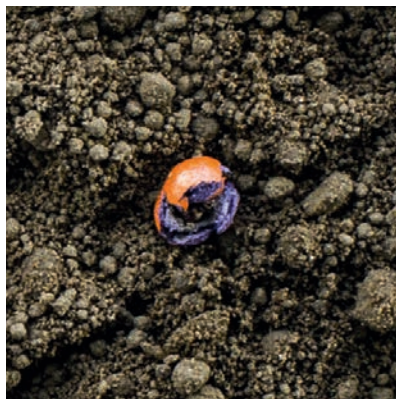
- 1 Green lid.
- 2 Different sugar beet picture on the upper part of the box.
- 3 Green bar plus CONVISO® SMART logo on both sides of the seed box.
- 4 Grower label, which will clearly differentiate SMART KWS seed from classic ones.

How can I distinguish between SMART KWS and classic seed?



Purple inner colour

SMART KWS sugar beet seed



Grey inner color

Classic KWS sugar beet seed



SMART KWS seed has a **purple** inner pelleting mass whereas classic KWS sugar beet seed is **grey** on the inside. Both pellets are orange on the outside.

Do not mix SMART KWS seed and classic sugar beet seed.



Can I mix classic seed with SMART KWS seed?



Never mix classic seed with SMART KWS seed.

- The seed drill needs to be completely clear of classic seed when drilling SMART KWS seed.
- Classic sugar beet are fully susceptible to the herbicide CONVISO® ONE and thus will be killed if treated.

	CONVISO® ONE	Classic herbicides
SMART KWS variety	✓	✓
Classic variety	✗	✓

Stay with the system and choose the correct herbicide.





- Plan whole fields for CONVISO® ONE to avoid mixing varieties.
- Know where your varieties are!



Keep SMART KWS seed separate from classic sugar beet seed. Don't mix the seed in the seed drill.



KEEP IT CLEAN!

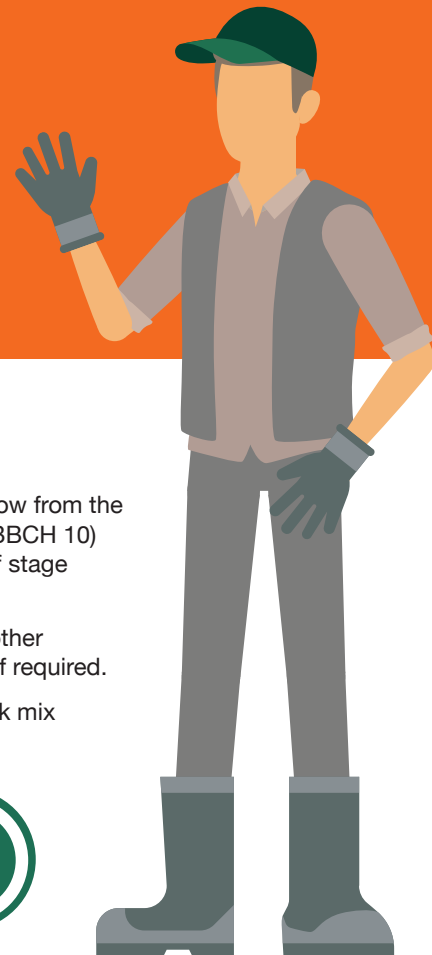
Left over seed from classic sugar beet varieties needs to be completely removed from the seed drill before SMART KWS seed is put in. We also do not want to have CONVISO® sugar beet in classic fields.

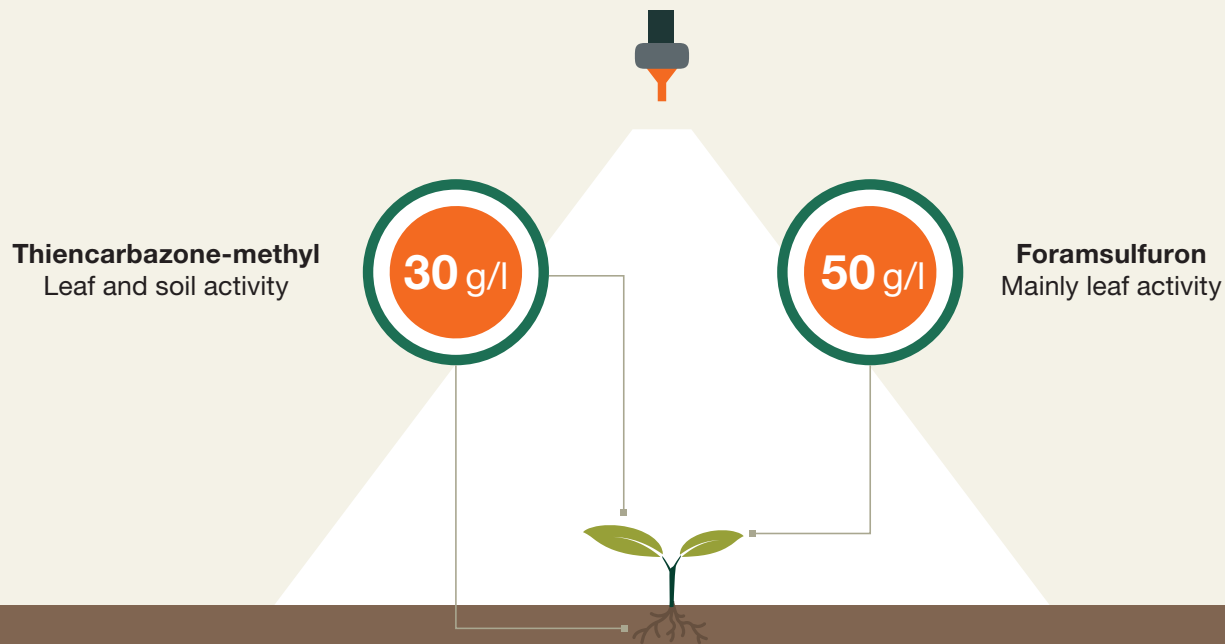
What are the basics that I need to know about the CONVISO® ONE herbicide?

CONVISO® ONE...

- is a post-emergence herbicide belonging to the ALS-inhibitor group (HRAC 2, Legacy B).
- contains two active ingredients (Foramsulfuron and Thienencarbazone-methyl) in an oil dispersion (OD) formulation.
- has soil and leaf activity.
- effectively controls weeds with a single application (1.0L/ha).
- has a registered application window from the cotyledons being fully unfolded (BBCH 10) up to and including the 8 true leaf stage (BBCH 18) of sugar beet.
- can be used in a sequence with other registered sugar beet herbicides if required.
- can be mixed with authorised tank mix partners if required.

Reduced dose rates are not allowed. Follow the label and published guidance to maximise long-term performance.





CONVISO® ONE can only be applied to SMART varieties. Classic sugar beet will be killed if treated with this herbicide. Avoid drift on to non-target crops!



What is the correct application timing for CONVISO® ONE?



	CONVISO® ONE Single application	Classic herbicides
Indicator weed	Fat hen* (<i>Chenopodium album</i>)	Any weed
Timing	max. 4 true leaf stage of fat hen min. cotyledons fully unfolded	Cotyledon stage of weeds
Number of applications	Single application - 1 x 1.0 L/ha	3–6

**if not present, apply when other weeds reach the same true leaf stage.*

Always follow the growth stage of the indicator weed.



The mixing and application of CONVISO® ONE



- Shake the CONVISO® ONE can well before opening (shake upside down).
- If sediment is visible ensure it is fully mixed before filling the sprayer.
- Only add water to the can for final rinsing.

**Recommended water volume:**

150–300 L/ha (Do not use less than 150 litres)



pH value of water: 5–7



Optimal temperature for spraying: 10–20 °C



Rain fastness:
4–6 hours



Reactivation of Thien carbazonemethyl by moisture:
up to 14–18 days after application

Always follow the instructions on the CONVISO® ONE label and use the approved dose rate of 1 x 1.0 L/ha per season.



Do I need to clean the sprayer after CONVISO® ONE?

Always clean the sprayer after use of CONVISO® ONE. Use of a proprietary cleaner is recommended to avoid carry over into susceptible crops.

When cleaning, follow the standard procedure for ALS-inhibitor herbicides.

Recommendation: clean the sprayer directly after use to avoid:

- damage to crops you spray after using CONVISO® ONE.
- drying and hardening of the herbicides in the tank.

Never apply CONVISO® ONE to classic sugar beet. Small amounts of CONVISO® ONE harm sugar beet and other sensitive crops heavily.

The infographic features a green tractor with a yellow sprayer tank. Above the tractor, the text 'Single application 1 x 1.0 L/ha' is displayed. In the top left corner, the 'convISO® SMART' logo is shown. Below the tractor, a large orange box contains the text 'KEEP IT CLEAN!' in bold white letters. Underneath this, smaller text reads: 'After spraying CONVISO® ONE rinse the sprayer thoroughly following standard procedures.' At the bottom right, there are two logos: the Bayer logo (a green circle with 'BAYER' in white) and the KWS logo (a green circle with a red sun-like symbol and 'KWS' in white).

How do I apply
the **single** application
of CONVISO® ONE
correctly?



Single application 1 × 1.0 L/ha

Correct application timing:

max. 4 true leaves of fat hen.
min cotyledons fully unfolded of
the SMART beet.

If no fat hen is in the field: apply when
the first plants of other weed species
reach max. 4 true leaf stage (BBCH 14).

**The approved use pattern in the UK
is a single application of 1L/ha.**



Too small



Correct target size



Too big

Aiming for two to four true leaves of the fat hen.

**Always follow the label recommendations
of CONVISO® ONE.**



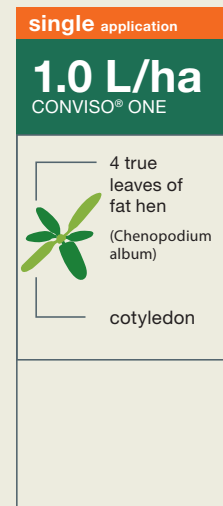
What is the standard application recommendation?

Standard recommendation

- Max. yearly dose rate: 1.0 L/ha as a single application.
- Registered application window: expanded cotyledons to 8 true leaves of sugar beet.
- Apply using a pressure of 2.5 - 3.0 bar and a spray quality of fine to medium (BCPC category).

CONVISO® ONE with a mixing partner

Using CONVISO® ONE with a specific mixing partner is now allowed to offer improved flexibility. A straight product of only one of the following active ingredients is allowed: Clopyralid, Ethofumesate or Metamitron.



When are the first effects of CONVISO® ONE visible in the field?

CONVISO® ONE is a systemic herbicide being absorbed and then translocated through the plant. Symptoms take several days to become visible.

Once treated, weeds stop growing, but symptoms take longer to be visible.

Weed symptoms:

- Symptoms will take several days to be visible and include yellowing and stunting of the weeds.
- First herbicidal effects will be visible after approx. 5–7 days.
- Significant symptoms and dying plants are visible approx. 7–12 days after spraying. Complete dying can take up to 4 weeks depending on the weather conditions.



Day of application



11 – 14 days after spraying



21 days after spraying

How long does the soil activity of CONVISO® ONE last?



Herbicide soil activity

- The soil activity of CONVISO® ONE in most cases lasts 5–10 days longer than classic herbicides.
- The duration of the soil activity can be influenced by:
 - Soil type.
 - Organic matter.
 - Soil moisture.
 - Soil and air temperatures.

Organic matter



Soil moisture



Temperature



Low Herbicide soil activity High

How can I maximise the effect of CONVISO® ONE in specific conditions?

Dry and cold conditions

- Dry and cold conditions lead to reduced herbicide uptake and slow down translocation of the herbicide in the weed.
- In dry conditions the addition of methylated vegetable oil may improve the efficacy i.e. MERO®.
- Adjust the rate of oil according to the maximum temperature on the day of application.

Vary the dose of methylated vegetable oil according to temperature

Maximum temperature (°C) on the day of CONVISO® ONE application	Dose of adjuvant oil l/ha
Up to 14	1.0
14 - 18	0.75
18 - 21	0.5
Above 21	Not advised

Adapted from the BBRO Reference Book

Which hard-to-fight weeds in sugar beet are controlled by CONVISO® ONE?

The main hard-to-fight weeds controlled by CONVISO® ONE are:

- Knot grass (*Polygonum aviculare*).
- Fool's parsley (*Aethusa cynapium*).
- Common amaranth (*Amaranthus retroflexus*).
- Fat hen (*Chenopodium album*).
- Creeping thistle (*Cirsium arvense*) seedborne.
- Annual mercury (*Mercurialis annua*).
- Sensitive grass weeds.

To improve efficacy in specific weed situations, e. g. hard-to-fight weeds, large weeds, CONVISO® ONE can be:

- mixed with adjuvant oil.
- applied in a sequence with classic herbicides.
- tank mixed with authorised partners.

Do not sequence CONVISO® ONE with any other ALS inhibitor herbicide, such as a sulfonylurea.

How to keep the CONVISO® SMART system productive

Productivity for future years starts today!

To maintain the benefits of using CONVISO® SMART it should be used to manage weed control through your whole rotation.

- Optimise weed control by an intelligent combination of cultural and chemical control measures.
- Maximise your long-term activity of CONVISO® ONE by smart resistance management strategies.
- Manage bolters to actively minimise weed beet populations.

CONVISO® SMART is the one-time chance to clear your field from classic weed beet.



What shall I do with bolters of SMART KWS varieties?

Target: leave ZERO bolters on the field!

- To reduce the chance of bolters, do not sow too early.
- If bolters appear – pull them, like in classic sugar beet.
 - Break the stem of the bolter.
 - Remove the whole root to prevent regrowth.
 - Remove from the field.
- Pulling early before they start maturing is most efficient.
- Strictly avoid building up ALS-tolerant weed beet.
- Weed beet of SMART varieties cannot be controlled with CONVISO® ONE or classic herbicides.



Pull before seeds are maturing



Mature seeds can cause weed beet. Problems for future years!

Which crops are suitable after CONVISO® SMART sugar beet?

Year of
CONVISO®
application

- **SMART KWS sugar beet**
- **Maize** - wait 1 month after CONVISO® ONE and also plough or cultivate to at least 20cm.

After crop failure

- **Winter Wheat** - wait a minimum of 4 months after the CONVISO® ONE application and also plough or cultivate to at least 20cm.

Autumn sowing

JAN

FEB

MAR

APR

MAY

JUN

JUL

AUG

SEP

OCT

NOV

DEC

Spring sowing

Year after of
CONVISO®
application

In the year after application in a normal crop rotation:

Plough or cultivate to 20cm prior to planting, otherwise crop damage may occur.

Only winter wheat can be planted post-harvest in the year of application.

- | | | |
|------------------------|---------------------|------------------------------|
| ■ Winter wheat | ■ Maize | ■ Winter beans |
| ■ Spring wheat | ■ Peas | ■ Winter oats |
| ■ Winter barley | ■ Sunflowers | ■ Winter oilseed rape |
| ■ Spring barley | ■ Ryegrass | ■ Spring oilseed rape |

For further guidance on following crops please contact your local Bayer Commercial Technical Manager.

Harvesting and loading CONVISO® SMART sugar beet



- Ensure all beet are harvested. Take extra care on headlands and around in field objects, trees and pylons (if safe to do so).
- Some ways to significantly reduce harvester losses:
 - Decrease forward speed.
 - Set lifting mechanism deeper.
 - Check condition of shares.
 - Reduce turbine speed.
- Avoid excessive dirt and green material which can limit air flow in clamps thus raising its temperature and increasing sugar losses.
- Where clamps, spoil heaps or Maus runs have been, destroy any regrowth on left over beet. This will stop any seed return and also minimise a green bridge for pests!
- Consider not cropping any part of the field where clamping has taken place.
- Return any spoil back to the fields it has come from. This keeps potential groundkeepers in the 'correct' fields and minimises the risk of soil pests spreading.
- Consider using glyphosate as an effective tool to control regrowth.



What shall I do about CONVISO® SMART groundkeepers?



Groundkeepers

- Start with the beginning of the crops life-cycle. A suitably level and consolidated seed bed will encourage even germination.
- Ensure accurate spreading of fertiliser across the field. Encourage a competitive canopy to aid suppression and herbicide performance.
- Reduce the chance of groundkeepers by minimising harvester losses. This can be as simple as reducing forward speed.
- Cultivate to at least 20cm after harvest. This is the easiest way to reduce viable plants.
- If groundkeepers of SMART varieties sprout in the following crop, control them with a non-ALS inhibiting herbicide.
- Hormone herbicides (MCPA and 2-4-D) have been seen to be effective against ALS-tolerant sugar beet
- Groundkeepers need to be prevented from bolting.

Integrated Weed Management with CONVISO® SMART – how does it work?

Four practices contribute most to integrated weed management

Management of the weed seed bank



Diverse crop rotation

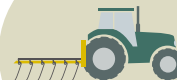


IWM

A proper weed resistance management ensures longevity and sustainability of the CONVISO® SMART system.

Contact your agronomist for individual advice.

Additional cultural control methods



Use of a variety of modes of action



Diversity is the key, do not rely solely on one measure!



What are practical measures of Integrated Weed Management?

Use CONVISO® ONE according to weed resistance management guidelines.

Adopt an integrated approach to weed management to avoid resistance issues.

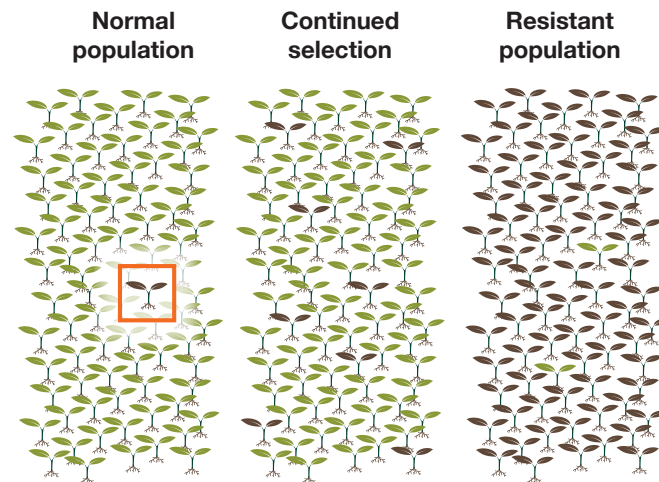
- Respect a diverse crop rotation.
- Rotate different herbicide mode of actions in the crop rotation.
- Use the herbicide according to the label (full dose rate, appropriate growth stage of weeds, etc.).
- Soil cultivation (> 10cm) supports Integrated Weed Management.

Over-reliance on the same herbicide mode of action can lead to herbicide resistant weeds.



Why should I rotate the herbicide mode of action and use non-ALS mixing partners?

Frequent use of the same mode of action in the crop rotation leads to high selection pressure and increases the risk of selecting a resistant weed population over time.



What should I do if I suspect resistant weeds?

Observe the weed population in your fields and react responsibly:

- Use CONVISO® ONE according to the label.
- If a resistance is documented or suspected:
 - discuss with a BASIS qualified advisor.
 - determine the weed species.
 - identify an alternative efficient herbicide.
- **If ALS resistance is considered to be not manageable:**
do not use CONVISO® SMART.

Act responsibly and keep your fields productive with CONVISO® SMART.



Practical example of Integrated Weed Management

An example of rotating different active ingredients across a rotation.

This is an example scenario. Situations on your own farm may be different.

Please consult a BASIS qualified advisor before using plant protection products.





Disclaimer

Use plant protection products safely. Always read the label and product information before use. Pay attention to the risk indications and follow the safety precautions on the label as well as all other required stewardship practices. The Control of Substances Hazardous to Health (COSHH) Regulations may apply to the use of this product at work. The information contained in this Grower Manual offers general advice and guidance for the CONVISO® SMART system. It is not and shall not be construed as an offer to sell. Please note that some information represented herein may be subject to adjustment for use under specific conditions and situations. For specific product information and recommendations, please refer to your local KWS or BAYER representative.

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