

CONVISO® SMART

the KWS manual for
SMART growers

SEEDING
THE FUTURE
SINCE 1856





Content

KWS – Seeding the future:

With our CONVISO® SMART varieties we are supplying the key component for the new standard for weed control in beet.

The KWS team provides you a guidebook for the professional use of the CONVISO® SMART system. In case of further questions, you are always welcome to contact us: simon.witford@kws.com

- 04** CONVISO® SMART
the new standard
in weed control
- 06** SMART KWS seed
- 10** CONVISO® ONE
herbicide
- 12** CONVISO® ONE
herbicide application
- 22** Future productivity with
CONVISO® SMART
- 35** Disclaimer

CONVISO® SMART the new standard in weed control

- CONVISO® SMART offers innovative options for weed control in beet globally since 2018.
- The system is successfully established in more than 25 countries.
- The system is based on 2 components:
 - SMART KWS varieties, bred by KWS, specifically tolerant to CONVISO® ONE
 - CONVISO® ONE herbicide developed by Bayer (containing Foramsulfuron and Thien carbazone-methyl)
- CONVISO® SMART is sold as a system and the components are not available separately.
Per hectare, you will receive
 - 1 unit of KWS SMART seeds (100,000 seeds/unit)
 - 1 litre of CONVISO® ONE
 - 1 litre of PARTNER® oil



Get the power with CONVISO® SMART:



SMART KWS varieties*

Bred with classic breeding methods

Specifically tolerant to CONVISO® ONE

Excellent crop safety to CONVISO® ONE

Can be treated with classic herbicides as required

Utilise full yield potential

CONVISO® ONE

Broad weed control spectrum

Strong against hard to control weeds

Fewer herbicide applications

Can be sequenced or mixed with classical beet herbicides as required

Innovative weed control

*SMART KWS varieties will initially only be available as sugarbeet varieties which are suitable for lifting, not grazing. KWS is actively developing SMART fodderbeet grazing varieties for NZ farmers and hope to make these available soon.

How can I distinguish between SMART and classic KWS seed?



SMART KWS seed will come in a seedbox easy to distinguish from the classic seedbox.

! Do not mix **SMART KWS seed** and **classic beet seed**.

SMART KWS seed:
Purple inner colour



Classic KWS seed:
Grey inner colour



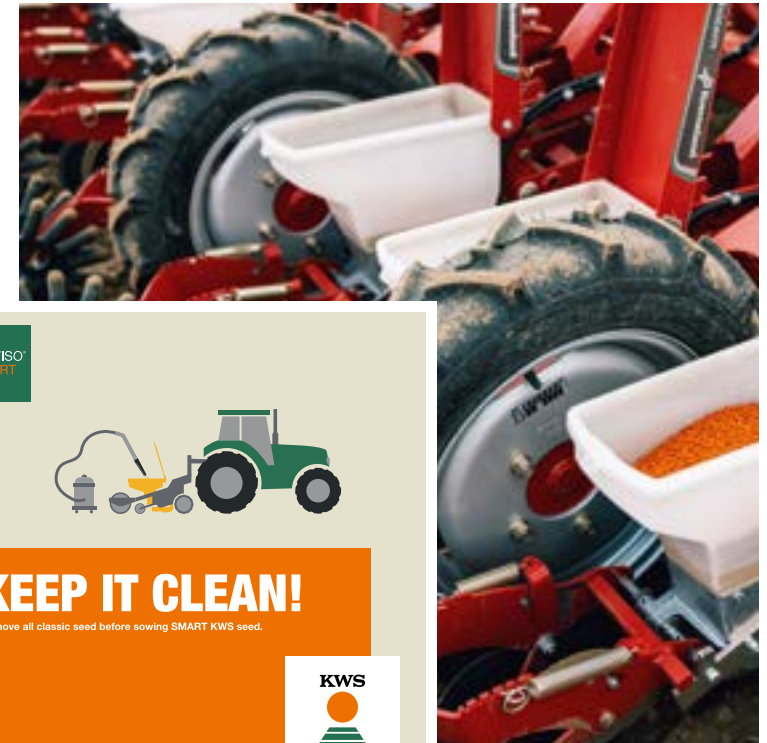
SMART KWS seed has a **purple** inner pelleting mass whereas classic KWS beet seed is **grey** on the inside. Both pellets are orange on the outside.

Can I mix classic seed with SMART KWS seed?

- Never mix other beet seed with SMART KWS seed.
- The drill should be completely clear of other beet seed before drilling SMART KWS seed.
- Classic sugar and fodder beet are fully susceptible to the herbicide CONVISO® ONE and will be **seriously damaged** if treated.
- Try to avoid mixing different beet varieties in one field.
Try to fill the entire field with SMART varieties to minimise risk.
Plan to drill SMART varieties in whole fields to minimise risk.
- Know and record where your varieties are!

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

! CONVISO® ONE can only be applied on SMART varieties. Stay with the system and choose the correct herbicide.

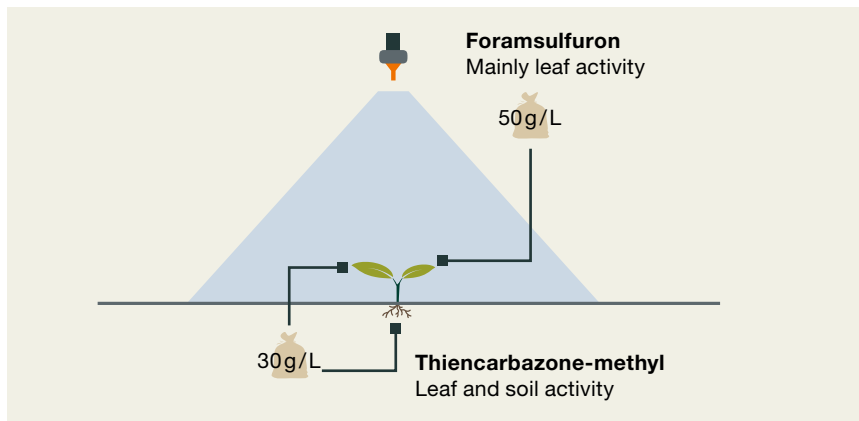


! Keep SMART KWS seed separate from classic beet seed. Don't mix the seed in the drill.

What are the basics of CONVISO® ONE?

CONVISO® ONE

- is a post-emergence ALS herbicide (HRAC 2).
- contains two active ingredients in an oil dispersion (OD) formulation.
- has a registered application window from 2 true leaves (BBCH 12) until 8 true leaves (BBCH 18) stage of beet.
- is applied as two applications, in mixture with the supplied adjuvant, with a 10–14 day interval.
- can be mixed or used in a sequence with other registered beet herbicides if required.



What is the correct application timing for CONVISO® ONE?

CONVISO® ONE	
Indicator weed	Fathen* (<i>Chenopodium album</i>)
Timing	max. 2–4 true leaf stage of fathen
Number of applications	2 × 0.5 L/ha (two applications, in mixture with the supplied adjuvant, with a 10–14 day interval)

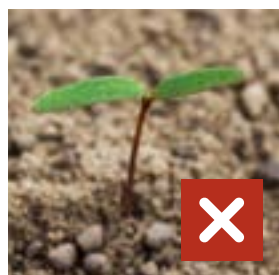
*if not present, apply when other broadleaf weeds reach the same true leaf stage



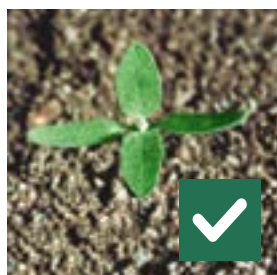
- Correct timing is key for the success of the CONVISO® SMART system.
- Always follow the growth stage of the indicator weed fathen.

What is the standard application recommendation?

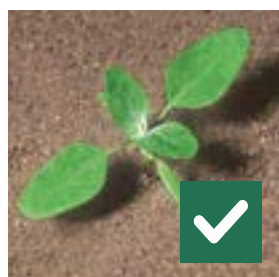
Two applications at 0.5 L/ha each time



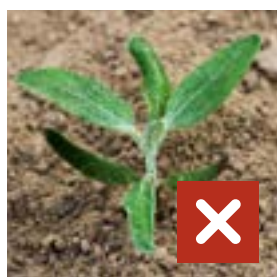
Too small



Correct:
2 true leaves
of fathen



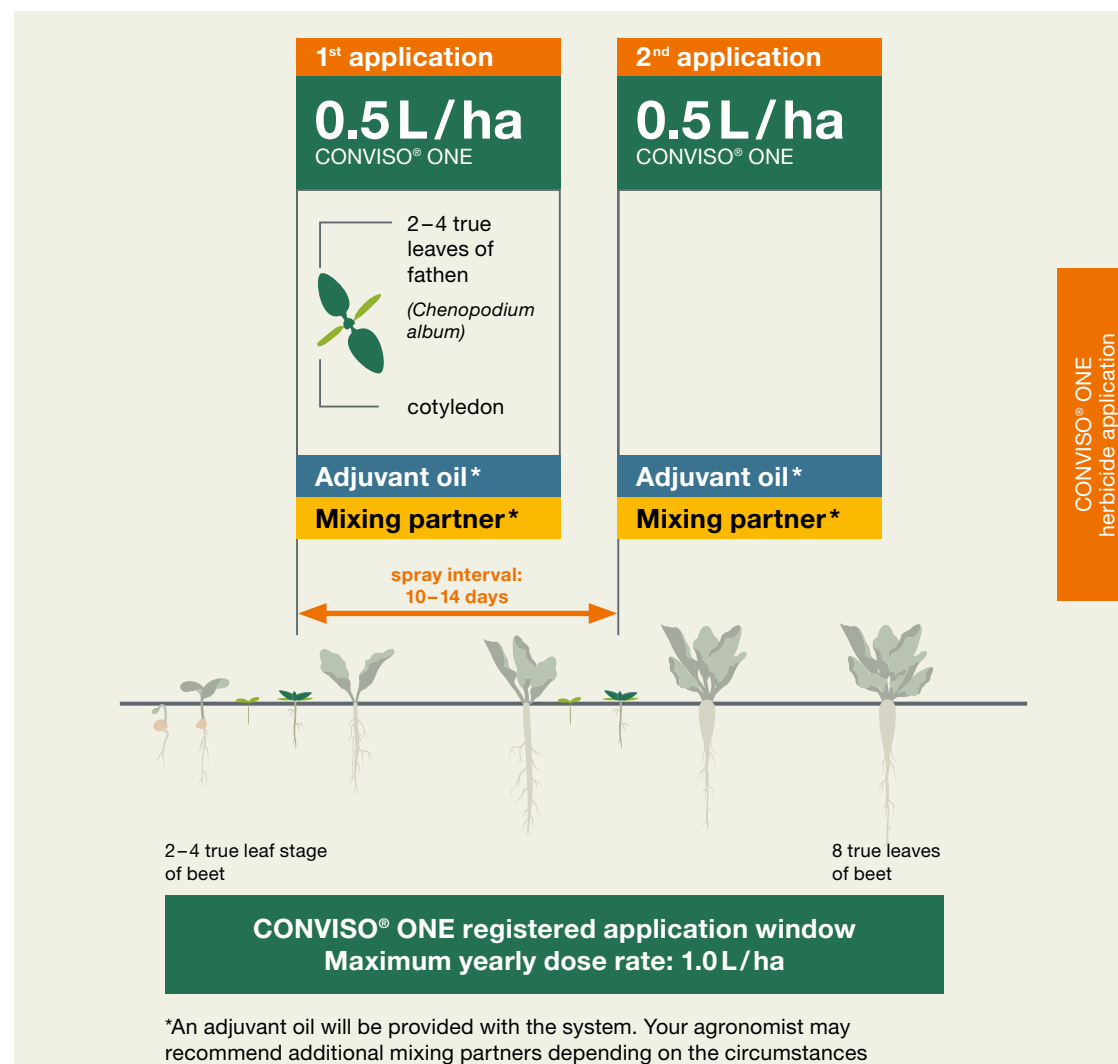
Correct:
4 true leaves
of fathen



Too big

- **1st application:** When the very first fathen plants (*Chenopodium album*) reach 2–4 true leaves.
- **2nd application:** When new emerging plants of fathen reach the 2 true leaf stage, with an interval of 10–14 days after first application.
- No fathen in the field: apply when the first plants of other broad-leaf weeds reach max. 2–4 true leaf stage.

How do I apply CONVISO® ONE correctly?



Getting the best from CONVISO® ONE



Always apply both applications full to maximise contact and residual activity.

- 1 Use adjuvant oil:**
 - The use of the supplied adjuvant is essential and improves efficacy, e.g. against hard to fight weeds, large weeds or in dry/cold conditions.
- 2 Use a mixing partner:**
 - Adding a suitable post-emergent mixing partner increases the efficacy, e.g. against hard to control weeds, large weeds or in dry/cold conditions.
 - Including other actives contributes to good weed resistance management.
- 3 Use a sequence:**
 - Applying a classic herbicide (mixture) pre-emergence or early post-emergence controls:
 - The first flush of weeds (esp. under dry/cold conditions) and
 - Hard to control weeds, e.g. scrambling speedwell

How do I maximise weed control with CONVISO® ONE?



Our recommendations:

- Make sure the supplied adjuvant is included as per label requirements.
- Adding alternative herbicides can enhance the activity of CONVISO® ONE. These can be used as a mixing partner or in a sequence.
- Always apply both applications of CONVISO® ONE and the supplied adjuvant with a 10–14 day interval.

What are some of the challenging weeds controlled by CONVISO® ONE?



Willow weed
(*Persicaria maculosa*)



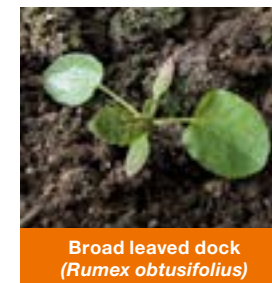
Shepherd's purse
(*Capsella bursa-pastoris*)



Large-flowered mallow
(*Malva sylvestris*)



Fathen
(*Chenopodium album*)



Broad leaved dock
(*Rumex obtusifolius*)



Black nightshade
(*Solanum nigra*)

How to mix and apply CONVISO® ONE?

Ensure the spray tank has been thoroughly cleaned of all previously sprayed products

- **Shake the closed CONVISO® ONE canister well before opening (shake upside down).**
- If deposit is visible ensure full mixing before filling the sprayer.
- Fill tank with 1/2 of water and turn on agitation system.
- Entirely dissolve CONVISO® ONE before adding provided esterified oil and any mixing partners.
- Only add water to the canister for final rinsing.
- Add the rest of the remaining water.
- Keep the agitation system running while spraying.
- Do not pre-mix.
- Do not leave the sprayer filled with the spray solution standing for long periods.
- Recommended water volume: 200–300l/ha.
- pH value of water: 5–7.
- Optimal temperature for spraying: 10–25 °C.
- Rainfastness: 4 hours.

! Always follow the instructions on the CONVISO® ONE label and apply the full recommended dose as per the label.

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



Always clean the sprayer after use of CONVISO® ONE, even small amounts of residual product could adversely affect other crops.

Sprayer Clean Up

Failure to clean residues from spraying equipment can result in injury to sensitive crops. Ensure that the following operation is carried out in an area that is clear of waterways and desirable vegetation.

1. Drain sprayer, pump and lines completely and wash out with clean water.
2. Drain again.
3. Fill the tank with water and add 1 litre chlorine bleach (3% sodium hypochlorite) per 100 litres water with agitation running.
4. Flush some of the bleach solution through pump, lines and nozzles. Allow remainder to agitate in tank for 10 minutes.
5. Remove nozzles and filters and leave to soak in a bleach solution of 500 ml per 10 litres water while the tank cleaning is in progress.
6. Drain the tank and repeat the procedure of flushing with bleach solution.
7. Flush the tank and lines with clean water to remove traces of bleach.
8. Double rinse the nozzles and filters in clean water.
9. Dispose of surplus spray mix, rinsate and any spillage in accordance with the directions given in NZS 8409: 2004.

! Never apply CONVISO® ONE to classic beet. Small amounts of CONVISO® ONE will significantly harm or kill sensitive crops.

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

CONVISO® ONE is a systemic herbicide that's absorbed and then translocated through the plant. It is immediately effective after application, but symptoms take several days to become visible.

Weed symptoms:

- Once treated weeds stop growing.
- First visible effects will appear after approx. 5–7 days and include necrosis, yellowing and stunting of the weeds.
- Significant symptoms and dying plants are visible approx. 7–12 days after spraying. Plants will usually die between 2–4 weeks depending on species and growing conditions.



Day of application



11–14 days after spraying



21 days after spraying

Soil activity with CONVISO® ONE



SMART control of late emerging weeds & grasses

Optimal soil activity

- + High soil moisture
- + Low organic matter
- + Mild temperatures

- The soil activity of CONVISO® ONE in most cases lasts similar or longer than that of classic herbicides.
- The duration of the soil activity can be influenced by: soil type, organic matter, soil moisture, soil and air temperatures.



How to keep the CONVISO® SMART system productive?

Future productivity starts now!



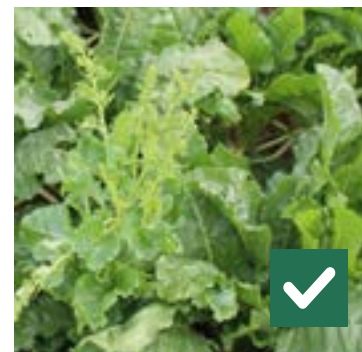
Maintain the full power and durability of CONVISO® SMART on your fields. Your strategy comprises the whole crop rotation:

- Optimise weed control by combining cultural and chemical control measures.
- Maximise long-term effectiveness of CONVISO® ONE by sensible weed resistance management strategies.
- Control bolters to actively minimise weed beet populations.

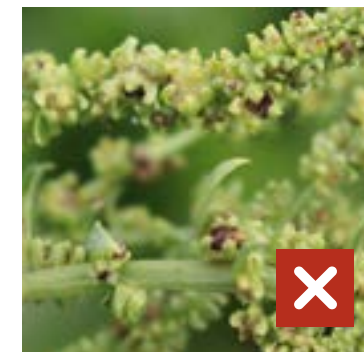
What shall I do with bolters of SMART KWS varieties?

Target: leave ZERO bolters on the field!

- To reduce the chances of bolters, do not sow too early.
- If bolters appear – pull them, as for conventional beet crops.
- Pulling early before they start maturing is most effective.
- Avoid building up ALS-tolerant weed beet.
- Weed beet of SMART varieties can not be controlled with CONVISO® ONE or classic herbicides.



Pull before seeds are maturing.

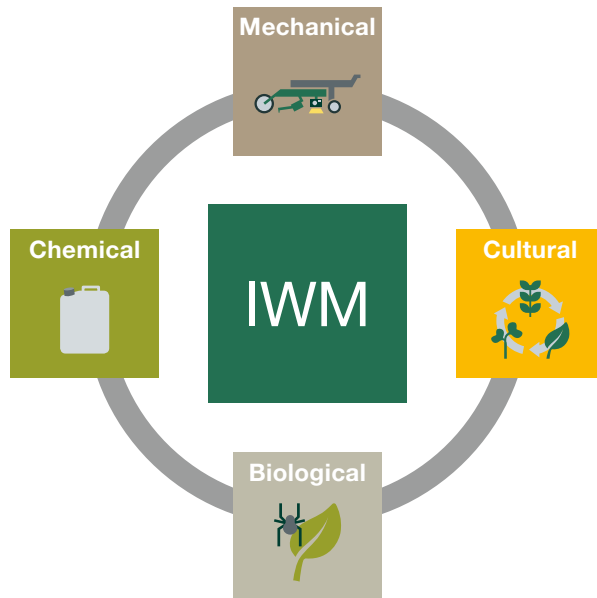


Mature seeds can cause weed beet in the next season.



Integrated Weed Management

The base for a SMART weed control



Integrated Weed Management (IWM) lays the foundation for your professional CONVISO® SMART beet cultivation.

Your key to success is the combination of **chemical**, **mechanical**, **cultural** and **biological** IWM measures which fit best to your situation.

Diversity is the key!

IWM gives you the advantages of:

- Reducing the risk of herbicide resistance development.
- Ensuring the longevity and productivity of the CONVISO® SMART system.
- Keeping your whole crop production system sustainable.



! Make sure not to rely on one measure only – diversity is your best weapon for successful and sustainable weed control!

What are the four principles of IWM?



- Use different herbicides with different modes of action.¹
- Maximise herbicide efficacy with:
 - full dose rate
 - correct application timing
 - optimal application conditions
- Avoid overusing other ALS-inhibitors in your crop rotation after SMART beet.
- Support your IWM with a non-ALS herbicide as a mixing partner or in a sequence.



- Keep your crop rotation diverse by integrating winter and spring crops.
- Use cover crops to reduce weed pressure.
- Keep your crop competitive by ensuring good crop establishment.



- Maximise the use of different mechanical weed control measures in the crop rotation.
- Start clean before sowing:
 - Deep soil cultivation > 10 cm (e.g. ploughing) can reduce weed populations
 - Shallow soil cultivation: stimulates weed germination, can be used in stale seedbeds



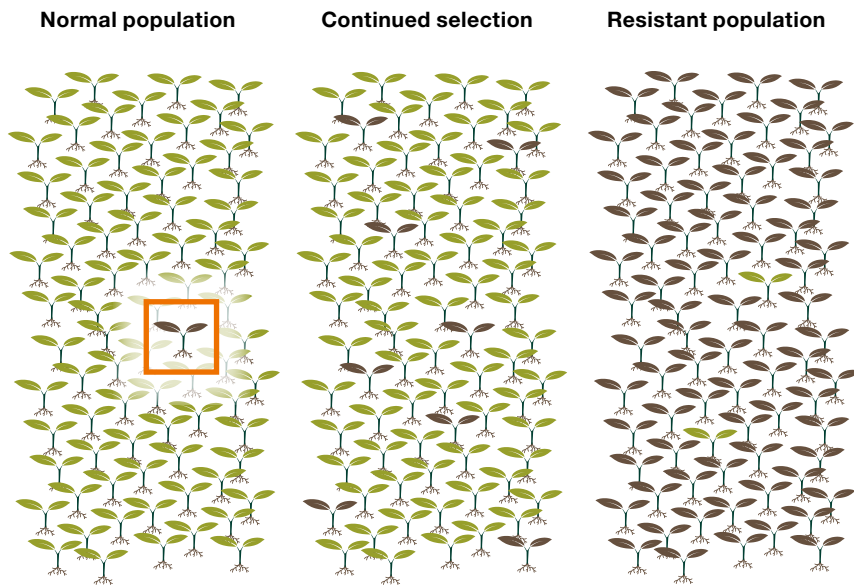
- Biological weed control is the use of an organism or biological process to suppress weed growth.
- Commercial products are not available yet, but development in this area is ongoing.

¹Mode of action = way in which herbicides control weeds

Efficient weed management is in your hands: choose the best strategies based on the weed situation in your fields. See CONVISO® ONE label for resistance management guidance.

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 shall I do if I suspect resistant weeds?

CONVISO® ONE contains two active ingredients:

- Foramsulfuron, and
- Thiencarbazone-methyl

Both actives act by blocking the normal function of acetolactate synthase (ALS), an enzyme essential for amino acid synthesis. However, resistance to these herbicides and related products could develop in some weeds from repeated use so it is important to use as per label instructions.

If weed resistance is suspected, please contact your agronomist in the first instance.

! Overreliance on the same herbicide mode of action can lead to herbicide resistant weeds. See CONVISO® ONE label for resistance management guidance.

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

*For further advice please contact your KWS consultant.

What shall I do about CONVISO® SMART groundkeepers?

Groundkeepers



- If groundkeepers of SMART varieties sprout in the following crop, control them with a non-ALS inhibiting herbicide. In trials, hormone-based herbicides have shown an effect against groundkeepers. Please contact your local KWS consultant for further information.

! Groundkeepers need to be prevented from bolting and potentially setting seed.

Your checklist for a successful CONVISO® SMART cultivation:

- ✓ Keep SMART seed and classic seed separate (further info on page 8/9).
- ✓ Follow our recommendation for CONVISO® ONE application (further info on page 12).
- ✓ SMART bolter management is key (further info on page 25):
 - Pull bolters early for highest efficiency.
 - Leave no bolters in the field.
- ✓ Integrated Weed Management (IWM) supports your sustainable beet cultivation (further info on page 26–29):
 - Follow a diverse crop rotation.
 - Rotate different herbicide modes of action in the crop rotation.



Disclaimers: Before using the products read and carefully observe directions, cautionary statements and other information appearing on the product label. Our technical information, whether given verbally or in writing, is based on extensive testing. It is, to the best of our current knowledge, true and accurate, but given without warning in as much as the conditions of use and storage are beyond our control. 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. For specific product information and recommendations, please refer to your local KWS or Bayer representative.

