

Stubble management: Equipment, information, and experiences.

(A report for GRDC Project LIE2602-001SAX "NGN A Comparison of Mechanical and Chemical Methods for Managing High Stubble Loads in Western Australia")

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Table of Contents

Introduction 4

Review scope 4

Existing stubble management information review 5

High Rainfall zone WA stubble trials 5

Ten years of stubble research 6

GRDC Stubble retention guide 7

Biological Digestion products 8

Decision framework 8

Equipment and tools review 9

Cutting and crimping rollers. 9

Mandako and Stagamulch Stubble cruncher 10

HeVa Cutter Roller 11

Horsch Cultro TC 12

Indutar Katrina F5 13

Industrial Triângulo Pegasus knife roller 14

AGRIMEC T-REX REXTER 15

Bednar – Tillcut TE Cutting rollers 16

FlatOut 17

MyT Crimper roller 18

Auscut RollMax Cruncher 19

Evolve Engineering Bladerunner 20

Dalbo MaxiCut 21

K-Line Trashcutter 22

Slashers 23

Gason Cropper Topper 24

Schulte 25

Auscut 26

High Speed discs / Disc tillers 27

Amazone 28

Bednar 30

Farmet and Tatu 32

Great Plains 35

Gregoire Besson 36

Horsch 38

John Deere 40
K-line Powerflex 42
Kubota 44
Kuhn 46
Lemken 48
Poettinger 51
Sumo 53
Unia 54
Vaderstad 56
Disc Chains 57
Brookfield 58
Bute 60
Earnshaw Ag 62
Kelly Engineering 63
Stubble management survey results 65
Summary of grower responses 65
Overview 65
Respondent profile 65
Expected seeding risk 66
Stubbles requiring management 66
Management practices 68
Weeds, disease and testing 69
Seeding systems 69
Key observations 70
Appendix A: Survey as distributed 71

Introduction

The management of crop residues including stubble starts at harvest, with crop cut height and residue distribution both important considerations for the subsequent crop.

Achieving uniform residue distribution during harvest is a critical first step in effective stubble management. Even residue cover facilitates more consistent decomposition, reduces variability in soil moisture, and contributes to more uniform crop establishment, growth and maturity.

While modern parallelogram knife seeding systems typically provide sufficient clearance to handle stubble loads encountered in average production years, seasons where exceptionally high residue levels are produced may require additional stubble management strategies.

These strategies typically involve physically or chemically altering the stubble to assist the residue flow through the seeding bar and minimise blockages.

Review scope

This report focuses on stubble management tools and practices applicable to the Geraldton and Kwinana West port zones. Particular emphasis is placed on mechanical and machinery-based approaches that enable retained stubble systems to remain productive under increasingly heavy residue loads.

Burning is acknowledged as an effective means of removing crop residues and, under some circumstances, may remain an important tool of last resort. However, increasing environmental considerations, changing community expectations (social licence), and the associated risks of soil erosion and nutrient loss are expected to reduce its use over time. As a result, burning is not considered in detail within this review.

Similarly, grazing can be an effective means of reducing standing residue and redistributing biomass but is generally limited to mixed farming enterprises. With sheep numbers in Western Australia having declined markedly in recent years, and further reductions expected following the phase-out of the live sheep export trade, grazing is becoming a less widely applicable stubble management option. Consequently, grazing is acknowledged but not examined in detail.

Other approaches, including baling residues, secondary cutter bars and residue guards (stubble tubes), are also recognised but are not reviewed in depth. Secondary cutter bars can assist in lowering harvest height without increasing straw throughput but generally perform poorly in damp residue, at higher operating speeds, and are susceptible to damage from rocks and stumps. Residue guards are designed to improve residue flow past tine shanks and reduce snagging but do not directly alter the quantity or distribution of retained residue.

Outside radical machinery changes, (for example, moving to a disc seeding system), other approaches beyond the scope of this review include varying the seeding direction which might see growers seeding at around a 15° angle to the previous crop run lines.

Milestone 102

Submission of a Stubble Management Report that addresses the criteria in Output 1 and includes a section on new implements that growers need to be aware of.

Output 1 criteria

A review of existing stubble management information will be undertaken.

This review will be combined with grower consultation in each of the port zones to establish grower requirements for stubble management.

The weighting of drivers for stubble management such as trash flow at seeding, enhancing weed control or managing stubble borne disease will be assessed and reported on.

Second and third season trial protocols may be adjusted to accommodate findings from the review.

Existing stubble management information review

An information review identified a number of stubble management information sources of varying recency and relevance to this project (LIE2602-001SAX).

High Rainfall zone WA stubble trials

The most recent and relevant work is being undertaken by Stirlings to Coast Farmers in Western Australia's Albany Port Zone (GRDC Project SCF2502-001SAX[1]). The project was established to investigate biological, nutritional and mechanical approaches to managing heavy cereal stubble and their impacts on nitrogen tie-up, crop establishment and disease carryover.

The original trial design compared treatments under both standing and mechanically tilled stubble systems, however the planned broadscale tillage treatments were not implemented by cooperating growers. Consequently, the project shifted towards evaluating biological and nutritional products within standing stubble systems under commercial paddock conditions, while the comparison of standing and tilled stubble continued in replicated small-plot trials.

Results from the 2025 season[2] demonstrated that seasonal conditions and the overall stubble management system had a much greater influence on crop performance than the products evaluated.

None of the biological or nutritional treatments consistently improved stubble decomposition, reduced disease loading or increased yield compared with the untreated control. Likewise, no treatment provided a reliable "silver bullet" for managing high stubble loads. Instead, environmental conditions and whether stubble remained standing or was incorporated had a greater influence on nitrogen dynamics, crop establishment and yield.

[1] https://grdc.com.au/grdc-investments/investments/investment?code=SCF2502-001SAX
[2] https://scfarmers.org.au/wp-content/uploads/2025/05/Stubble-Management-Trials-Review-Booklet-_-2024-_-FINAL-060525-SplitSEND-10.pdf

While the project provides useful information on biological and nutritional approaches to stubble management, it is unable to contribute to the evaluation of mechanical stubble management equipment.

The cancellation of the planned broadscale tillage treatments means that outside this project (LIE2602-001SAX) there are currently no other Western Australian comparisons of mechanical stubble management implements.

Ten years of stubble research

A broad ranging 2024 GRDC Update paper by Swan et al.[3] focussed on the management of stubble without impacting agronomics and ultimately profitability.

The paper summarises the findings from more than a decade of GRDC-funded stubble management and farming systems research conducted across southern Australian cropping regions.

Rather than identifying a single preferred stubble management strategy, the authors conclude that successful management requires flexibility and should be adapted to the farming system, residue load and seeding equipment being used.

The key message is that stubble should not be allowed to compromise the key drivers of profitability. These include: weed control, disease management, pest management and the timeliness of sowing.

The review recognises retained cereal stubbles provide benefits including erosion mitigation, improved water infiltration and carbon inputs, but suggests these benefits diminish once residue loads become excessive.

The authors argue that around 2–3 t/ha of retained stubble provides sufficient ground cover for erosion control. Residue levels exceeding that often increase management challenges. Where heavy residue loads threaten timely sowing or crop establishment, strategic intervention is encouraged.

The paper also outlines a range of post-harvest options that may be appropriate depending on the farming system.

These include mulching, shallow incorporation with supplementary nitrogen, baling, grazing or, where necessary, strategic late burning, particularly ahead of second wheat crops or canola following high-yielding cereals.

Importantly, the paper notes these practices should be considered as discretionary tactical interventions rather than routine operations.

The review also highlights the importance of matching residue management to the seeding system. Growers using tine seeders in high-residue environments may require some form of residue size reduction or redistribution to maintain sowing efficiency, while systems using stripper fronts or harvest-high strategies may benefit from leaving residue standing rather than processing it.

[3] https://grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2024/08/managing-heavy-stubble-loads-without-compromising-the-big-things-weeds,-disease,-pests,-timeliness-and-profit!-a-decade-of-stubble-management-and-farming-systems-experiments

Specifically referring to stripper fronts, the authors suggest these can substantially improve harvest efficiency while retaining standing stubble, which reduces summer soil evaporation and may be easier to seed through than flattened residue. However, this potential advantage is not without compromise. GRDC-supported harvester loss research conducted by the Grower Group Alliance[4] found grain losses from stripper fronts to be more than double those recorded with draper or Vario-style fronts. Accordingly, any improvements in residue management or harvest capacity should be balanced against the potential cost of increased grain loss.

A further conclusion from the Swan et al. paper is that cereal stubble should be regarded primarily as a source of carbon rather than nitrogen. Because decomposing cereal residue can temporarily immobilise soil nitrogen, a recommendation is made for additional nitrogen at sowing (approximately 5 kg N per tonne of retained cereal residue) particularly where large quantities of residue are incorporated into the soil.

Crop rotation also remains an important component of stubble management, with more diverse rotations and inclusion of legumes reducing disease pressure and improving nitrogen cycling.

GRDC Stubble retention guide

The GRDC WA Stubble Retention Guide (Minkey, 2023)[5] provides a comprehensive review of stubble retention and current stubble management practices in Western Australian cropping systems.

The guide draws on Australian and international research covering agronomic, environmental and operational impacts of retained stubble, covering erosion control, soil moisture conservation, nutrient cycling, weed management, stubble-borne diseases, pests and machinery considerations associated with establishing crops into retained residue.

It also incorporates practical case studies from Western Australian growers demonstrating how retained stubble systems have been successfully integrated into commercial farming operations.

A consistent theme throughout the guide is that stubble management should be viewed as a whole-farm systems issue rather than a single agronomic practice.

Decisions surrounding residue management require growers to balance a range of competing objectives including maintaining adequate residue cover, ensuring reliable trash flow through the seeder, conserving soil moisture, reducing erosion risk, managing nutrient cycling and limiting weed, pest and disease impacts.

The guide concludes that no single management strategy is appropriate across all farming systems, with optimum management depending on seasonal conditions, residue loads, soil type, machinery capability and crop rotation.

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[4] https://www.gga.org.au/wp-content/uploads/2023/06/Final-Report_GGA2211-001SAX_Measuring-Harvest-Losses-in-the-Western-Region-2022-23-Season.pdf

[5] https://grdc.com.au/__data/assets/pdf_file/0030/590673/GRDC_WA_STUBBLE-RET_Report_WEB.pdf?utm_campaign=pdf_download&utm_content=WA+Stubble+Retention+booklet&utm_medium=download_button&utm_source=website&utm_term=West

The increasing importance of machinery in successful stubble retention systems is noted. Recommendations focus on maximising residue distribution at harvest, retaining standing stubble where practical, matching seeding equipment to residue loads and optimising harvester and seeder setup to minimise blockages and maintain crop establishment. Discussions around machinery are largely confined to modifications and management of conventional harvest and seeding equipment, reflecting on the technologies commonly available at the time of writing.

Since publication of the guide, the range of specialised mechanical residue management equipment available to Australian growers has arguably expanded. Speed tillers (shallow operating tillage discs), disc-chains, knife rollers, crimp rollers, heavy-duty slashers and other residue processing implements are now being actively marketed as alternatives to burning, grazing or cultivation where excessive residue compromises sowing efficiency or crop establishment.

Biological Digestion products

Biological stubble digestion products have attracted increasing commercial interest in Western Australia, with products such as Res+ and Digest-it marketed to accelerate residue decomposition and nutrient release.

Despite this interest, independent evaluation of these products remains limited. Existing WA-focused literature largely describes the biological processes responsible for residue decomposition rather than assessing commercial inoculants or enzyme products. The Stirlings to Coast Farmers project (SCF2502-001SAX) will be one of the first independent investigations of biological residue digestion products under Western Australian field conditions.

While commercial products continue to emerge, additional replicated field research across seasons and environments is required before firm conclusions can be drawn regarding their effectiveness under WA cropping systems.

Decision framework

Understanding the options available to meet a specific stubble management objective could utilise a framework similar to the following:

Objective	Suitable options
Improve residue breakdown	Speed discs or chain discs for incorporation, biological decomposition (where proven)
Minimise soil disturbance	Knife rollers, slashers
Reduce standing residue	Knife rollers, slashers
Prepare heavy residue for sowing	Slashers, speed discs
Retain maximum ground cover	Knife rollers
Incorporate lime	Speed discs
Wheel track renovation	Speed discs

Reduce disease risk	Crop rotation, residue decomposition and appropriate harvest management (mechanical tools may play a secondary role)
Improve residue flow through tined seeders	Knife and crimp rollers, slashers, residue guards (stubble tubes), harvest management

Equipment and tools review

Cutting and crimping rollers.

Cutting and crimping rollers (commonly referred to as knife rollers or crimp rollers) are passive, ground-driven implements which process standing crop residues.

The rollers usually have one or more heavy (sometimes ballasted) rotating drums fitted with hardened steel blades that cut, crush and crimp residue as the machine passes over the paddock.

Breaking the stubble stalks down increases the exposed surface area of the residue, accelerating microbial decomposition and reduces residue height while also improving contact with the soil.

Knife rollers are typically used to manage heavy cereal, canola and pulse stubbles, improving residue flow through subsequent seeding operations while still maintaining surface cover to protect against erosion and conserve moisture.

Similar machines are also used to roll and terminate cover crops by crimping stems without spraying or cultivation.

Overall the majority of designs do not differ significantly, but there are features which are particular to each brand.

Mandako and Stagamulch Stubble cruncher



BP Imports are a Western Australian company based in Gnowangerup and are the Australian agents for Mandako Stubble Crunchers. The Mandako are available in single roller widths of 4.6m to 6.1m or in a triple roller configuration measuring 12.2m or 12.8m in total operating width.

Wings are hydraulically actuated for folding and unfolding and hydraulic rear-wheel steering for auto-folding in preparation for transportation. Transport width is 3.5m for the triple roller models.

Rollers run on 75mm bearings and comprise a 610mm diameter drum with 102mm bolt-on straight grader blades which are hardened and bevelled. A localised variation particular to BP imports is the Stagamulch which offsets or staggers the blade position for a progressive and presumably smoother rolling action.

More information: https://www.bpimports.com/stubble-cruncher-mandako/

Phone: 08 9827 1998

HeVa Cutter Roller



Image courtesy: Danmas

Available for front-mount (1.5-6m wide), Tip-roller (4.5-10.2m), Tip roller XL (12.3-15.3m) and King Rollers (12.3-20.3m), the Cutter-Roller from Heva is available with either 545mm or 595mm diameter rollers which can be filled with water for additional mass.

The rollers are shod with eight carbide blades in a chevron style pattern and can be retro-fitted to most other HeVa roller models.

In Western Australia, HeVa is imported by York-based company Danmas.

More information: https://www.he-va.com/en/news/2026/products/the-new-cutter-roller/

Phone: 0447 131 208

Horsch Cultro TC



Image courtesy: Horsch

Muddy River imports Horsch equipment into Australia. The Cultro TC from Horsch has a pair of smaller rollers with body diameters of 300mm. According to Horsch, this provides high rotational speeds.

With six knives per rotor, Horsch claims the Cultro TC offers a crushing effect and a theoretical stubble cutting length of 14cm using double rollers.

Using a pendulum suspension for ground following, working widths extend from 2.9m to 8.9m with a Cat. II/III linkage attachment or 12.2m and 18.2m using a K80 ball head coupling. Transport width is under 3m for all models.

An option for Horsch RollFlex, RollPack or RingFlex 600mm diameter packers are available.

More information: https://horschaustralia.com.au/cultro-tc/

Phone: 0438 946 700 (WA only)

Indutar Katrina F5



Image courtesy: Indutar

Burando Hill is the Australian distributor for the Indutar Katrina F5 knife roller.

The machine has a 9.05 m overall width and an 8.71 m working width, with three 680 mm diameter rollers fitted with 48 offset knives per roller, giving an overall roller diameter of 918 mm.

The total operating weight is 6,300 kg and can be water-ballasted with up to 1,000 L in each roller to increase crimping force.

In transport configuration it folds hydraulically to a width of 3.48 m, with transport mode engaged from the tractor cab, eliminating the need for the operator to manually fold or unfold the machine.

More information: https://www.burandohill.com.au/indutar-katrina-knife-roller

Phone: 08 9821 4422

Industrial Triângulo Pegasus knife roller



Image courtesy: Industrial Triângulo

The Industrial Triângulo Pegasus knife roller range comes into Australia through ATS Ag Imports.

The Pegasus 9000, 12900 and 18000 have operating widths of 8.3m, 12.5m and 17m respectively.

All have roller diameters of 483mm with the 103.5mm knives (made using Hardox 450 steel) extending this effective rolling diameter to 690mm. The rollers operate alternating fore and aft of the drawbar across the width to eliminate gaps between each roller.

The Pegasus 9000 has 90 knives per roller and weighs 3200kg empty and 4780kg water ballasted.

The 12900 has 120 knives and weighs 5100kg empty or 6680kg ballasted while the 18000 has 180 knives in total and tips the scales at 8500kg bare and 10,700kg ballasted.

Transport width varies as standard at 4m, 4.2m and 5.4m respectively. Alternatively, with the road transport kit these can be reduced to 3.2m, 3.4m or 4.4m.

More information: https://atsag.com.au/brands/industrial-triangulo/

Phone 0439 192 224

AGRIMEC T-REX REXTER



Image courtesy: Serafin Machinery

Available in two working widths, 6.5m or 9m, the Brazilian-built Rexter articulated knife roller 3650 and 3900 respectively feature 745mm roller drums fitted with 135mm blades making for a total roller diameter of 1015mm.

The 3650 weighs in at 3500kg and can carry 3000L of water ballast for a total mass of 6500kg while the 3900 weighs in at 8040kg dry with a ballast capacity of 3960L.

In transport mode the Rexter folds to 2.45m wide.

The Agrimec T-Rex Rexter is imported into Australia through Serafin Machinery.

More information: https://www.serafinmachinery.com.au/machinery/t-rex-rexter-articulated-knife-roller/

Phone: 1300 737 586

Bednar – Tillcut TE Cutting rollers



Image courtesy: Bednar

Bednar Australia imports two widths of cutting rollers. Both are trailed and are called the Tillcut TE 7500 and the 12400 available in widths of 7.5m or 12.5m respectively. Previously, they were designated as the "Duracut"

The Tillcut TE has a total roller diameter of 940mm with the Hardox cutting blades fitted. Blades are arranged in a "V" or chevron pattern.

The Tillcut TE7500 has three rollers while the TE 12400 carries five. Each roller is individually suspended on the frame to assist ground following.

Total weight for the TE7500 is 7400kg with an additional 1900L of water ballast delivering an operational mass of 9300kg while the TE12400 weighs in at 12100kg dry or 15500kg once the 3400L of water ballast is added.

More information: https://www.bednar.com/en/cutting-rollers/

Phone 0428 816 701

FlatOut



Image courtesy: OzAg Machinery

Machinery importer OzAG imports both fixed and Tri-Plex FlatOut land rollers, with selected models available fitted with optional knife-profile roller drums.

Fixed models are available in a 6.1 m working width, while Tri-Plex models are offered in 12.8 m and 18.9 m working widths.

All models feature 1020 mm diameter rollers. For transport, the Tri-Plex models fold to widths of 4.15 m and 4.55 m respectively.

More information: https://www.ozagmachinery.com.au/reliable/farm-machinery/land-roller/

Phone: 0499 866 813 (WA only)

MyT Crimper roller



Image courtesy: MyT Engineering

Built in Gatton, Queensland, the MyT Crimper roller is available in single roller widths to 4m or multi-roller configurations from 4m to 12m working width.

Drum diameter varies on the model between 700mm and 900mm.

Blades are straight, positioned in offset rows, are replaceable, and are fabricated from Bisalloy.

More information: https://www.mytengineering.com.au/products/rollers/myt-crimper-roller

Phone 0437 520 468

Auscut RollMax Cruncher



Image courtesy: Auscut

Made in Cowra, New South Wales, the Auscut RollMax is available in working widths of 3.05m, 4.7m, 6.12m, 12.3m and 18.44m.

Drum diameter for the three narrower operating widths denoted 42C30, 42C47 and 42C60 is 610mm while the wider units, the 42C12 and 42C18 run 830mm drums. Blades are 12mm thick and extend 110mm off the drum wall. Drum wall thickness is 13mm across the range and drum suspension is via rubber blocks.

Operating weight is 2800kg, 3700kg and 4800 kg for the three smaller models and 12500kg and 17700kg for the larger 42C12 and 42C18 respectively.

More information: https://www.auscutglobal.com.au/our-machinery/slashers/copy-of-commander

Phone 02 6341 3383

Evolve Engineering Bladerunner



Image courtesy: Evolve Engineering

Manufactured to order near Walgett, NSW, the Evolve Engineering Bladerunner is available in nominal operating widths of 3.0, 4.5, 6.0, 9.2 and 12.2m. The 3000, 4500 and 6000 models comprise a single roller, while the FLD-9 and FLD-12 are folding three-roller machines. A FORM-12 configuration is also available, consisting of three independent rollers connected by a common towing frame.

The Bladerunner uses a patented chevron blade arrangement with replaceable bolt-on blades mounted on the drum with a twisted pitch. Blades can be individually replaced if needed.

Operating weights, including water ballast, are approximately 1200kg, 1700kg and 2500kg for the 3.0, 4.5 and 6.0m models respectively, increasing to approximately 6000kg and 8000kg for the FLD-9 and FLD-12. The FLD-9 and FLD-12 fold to around 3.5m for road transport.

More information: https://www.evolveengineering.com.au/ourmachinery

Phone: 0409 758 285

Dalbo MaxiCut



Image courtesy: Techgrow

Manufactured in Denmark, the Dalbo MaxiCut is imported by Techgrow in South Australia. The range comprises two models: the MaxiCut 600 with a 5.8m working width and the MaxiCut 920 with a 9.2m working width.

The rollers use 100mm high × 8mm thick hardened steel knives, with 90 knives fitted to the MaxiCut 600 and 165 knives to the MaxiCut 920. The roller drum has a diameter of 610mm, increasing to an effective cutting diameter of 820mm with the knives fitted.

The MaxiCut 600 has an operating weight of 4300kg, increasing to 6100kg when water ballasted. The MaxiCut 920 has a standard operating weight of 9800kg and is not designed for water ballast.

Transport width is 2.55m for the MaxiCut 600 and 3.00m for the MaxiCut 920. An optional front-mounted gang of corrugated coulter discs is available for the MaxiCut 920 to pre-cut standing residue ahead of the roller.

Dalbo recommends an operating speed of between 15–20km/h.

More information: https://www.techgrow.com.au/dalbo

Phone (08) 8842 1384

K-Line Trashcutter



Image courtesy: K-Line

The TrashCutter from K-Line differs from the lateral knife roller designs described elsewhere in this report.

Instead of rotating knife drums, the machine uses gangs of self-sharpening fluted coulter discs mounted on hydraulically loaded trailing arms to pin and cut standing residue.

Disc angle and hydraulic downforce can be adjusted to suit residue conditions and the level of soil disturbance required.

Two models are available with working widths of 12.2m and 18.3m, fitted with 98 and 143 discs respectively.

Recommended tractor power is 180–260hp for the 12.2m model and 230–350hp for the 18.3m model.

More information: https://k-lineag.com.au/agricultural-machinery/trashcutter

Phone nearest CNH dealer.

Slashers

Wide operating width slashers are typically PTO-driven and are designed to reduce the height and size of standing crop residues after harvest.

Unlike knife rollers, which rely on the weight of rotating drums to cut and crimp residue, slashers use one or more high-speed horizontal rotors fitted with swinging blades or flails to cut and mulch standing stubble.

By reducing residue height and producing smaller stubble pieces, slashers can improve residue flow through seeding equipment and increase the exposed surface area available for microbial decomposition.

It should be noted however, the finer residue produced can also be more susceptible to wind movement than residue flattened by knife rollers. In addition, the risk of fire through rock strike is also elevated and could limit operational windows.

While typically a narrow format (under 4m), a selection of broadacre slashers are available in working widths of 10m or more, making them suitable for cropping operations.

Compared with passive knife rollers, they generally require higher tractor power and corresponding fuel consumption and have higher levels of maintenance requirements.

Gason Cropper Topper



Image courtesy: Gason

Manufactured in Ararat, Victoria, the Gason Cropper Topper is a heavy-duty PTO-driven stubble mulcher available in four cutting widths: 7.13m, 9.39m, 10.67m and 12.47m.

The slasher uses multiple horizontal rotors fitted with hardened laminated spring steel dual mulch blades incorporating stepped shredding blades to reduce standing residue into smaller fragments.

Wing sections fold hydraulically for transport and free-float over ground contours, while adjustable skids provide cutting height control.

Depending on model, transport widths range from 3950mm to 5830mm, with recommended tractor power from 150–600hp.

Optional equipment includes hydraulic rear guards, a deck-mounted fan to clear chaff and debris, and an automatic fire suppression system.

More information: https://gason.com.au/pasture-toppers-broadacre-stubble-mulchers/cropper-topper

Phone: 03 5352 2151

Schulte



Image courtesy: Schulte Australia

Schulte Industries, based in Saskatchewan, Canada, manufactures a wide range of heavy-duty rotary slashers which are distributed in Australia through Schulte Australia, based in Wellington, New South Wales.

Six models in the range exceed 6m in operating width: the FX-320 and FX-520 at 6.1m, the 5024 at 7.3m, the 5026 at 7.9m, the FX-530 at 9.1m and the largest, the FX-742, with a 12.8m cutting width.

Model designation numbers generally indicate the number of cutting rotors, with the FX-742, for example, using seven independent rotor gearboxes.

Wing sections fold hydraulically for transport and float independently to follow ground contours, while gearbox drivelines with slip clutches or equivalent overload protection transmit PTO power to each rotor.

Schulte offers a range of blade options and cutting capacities to suit applications ranging from pasture maintenance to heavy crop residue management.

More information: https://www.schulte.com.au/slashers-rotary-cutters/

Phone: 02 6845 2992

Auscut



Image courtesy: Three Rivers Machinery

Manufactured in Cowra, New South Wales, the AusCut TurboTopper is a PTO-driven broadacre slasher designed specifically for crop residue management.

The range includes trailing models with cutting widths of 9.0m, 12.3m and 18.3m in addition to smaller linkage and trailing models.

The TurboTopper uses multiple heavy-duty disc rotors fitted with hardened dual mulching blades to reduce standing residue into smaller fragments, with the smaller rotor design intended to reduce driveline loads while providing a finer cut.

Individual floating decks and front-mounted gauge wheels are designed to allow the machine to follow ground contours, while a forward-folding design provides transport widths of 3.5m for the 9.0m and 12.3m models and 4.4m for the 18.3m model.

Depending on model, recommended tractor power ranges from 186kW (250hp) for the 9.0m and 12.3m machines to 291kW (390hp) for the 18.3m model.

Optional equipment includes hydraulic rear guards, deck-mounted fans to reduce chaff accumulation and stabiliser wheels.

High Speed discs / Disc tillers

Unlike knife rollers and slashers, which primarily reduce the size and height of standing residue while minimising soil disturbance, high-speed discs are designed to combine residue management with varying degrees of soil engagement.

The discs cut and process crop residue while simultaneously improving residue-to-soil contact, which can accelerate decomposition and assist seedbed preparation. Depending on machine design, operating depth and ground speed, they can also provide varying levels of weed control, soil levelling, incorporation of surface-applied amendments and remediation of wheel tracks or shallow compaction.

High-speed discs typically consist of two opposing rows of independently suspended concave discs followed by a rear consolidation roller. They are designed to operate at relatively high forward speeds, generally between 10 and 20 km/h, with working depths ranging from shallow weed control to approximately 150–200 mm depending on disc diameter and machine configuration.

Amazone



Amazone's Catros and Catros+ implements are made in Germany and available in working widths of 2.5m, 3m, 3.5m, 4m, 5m and 6m in a linkage configuration with trailing models available in working widths of 4m, 5m, 6m, 7m, 8m, 9m and 12.25m.

A more aggressive Certos is available in 4m, 5m, 6m and 7m and has 660mm diameter discs for working to 200mm depth.

Trailing model working widths are 8m, 9m and 12.25m respectively, being the Catros+ 8003-2TX, Catros+ 9003-2TX and Catros 12003 2TX (replaces the 12003 TS) to suit controlled traffic farming).

All three fold to under 3m transport width and a transport height of 4m with a maximum roading speed of 40km/h.

Discs for the Catros+ are available in 510 and 610mm diameter with either smooth or serrated profiles. Disc thickness is 5mm and the 8003-2TX, 9003-2TX and 12003 2TX have a total of 64, 72 and 96 discs respectively spaced at 250mm.

Disc cutting angles are 17 degrees for the front row with 14 degrees at the rear and working depths of 50 to 160mm can be achieved with the 610mm diameter discs or 50 to 140mm with the 510mm diameter discs.

To maintain an even cutting depth, the lead row of discs is pre-set slightly higher than the second rank to allow for this front row to pull in and dig deeper when leading in harder soil. This height setting can be adjusted using a tie rod between the ranks with a second tie rod adjustment to address any crabbing.

The outer disc on each row of discs is slightly elevated by the equivalent working depth to prevent soil throw edge ridging. Height of these outer discs is adjustable by loosening the bolts on an elongated slot on the bar mount.

Speed and power

Operation speed is quoted as 12-18km/h but this is soil type and moisture content dependent. A minimum of 176kW (240hp), 198kW (270hp) and 260kW (360hp) is needed for the 8, 9 and 12m machines respectively.

Operating depth is hydraulically controlled by two or four leading flotation depth control wheels depending on width. These are shod with 380/55-17 tyres and are mounted on the front of the bar. Depth stop working position can be set with a series of ram block leaves.

For viney stubble or heavy trash, there is an option to remove these depth control wheels to make way for a knife coulter roller.

Transport wheels running 500/50-17 flotation tyres roll on a solid rear axle mounted to a cast yoke via a folded steel section frame which swing up out of the way in operation.

Disc arms are cast steel construction mounted to a 75mm sectional steel bar with suspension provided using four triangular profile torsion blocks on each arm mount.

Disc bearings are two-row angular-contact ball bearing with slide seal and are oil-filled to be maintenance-free.

Maintenance requirements are minimal as a result with around a dozen 50-hourly grease points. Central lubrication grease lines can be optioned as can an auto-greaser on some models.

Roller options include 520mm or 600mm single or tandem 520 and 380mm cage rollers, 580mm U, double U, WW-angle profile rollers, wedge ring rollers or 600mm disc rollers.

The Catros+ has a heavy-duty hydraulic jack stand, hydraulic connection storage and a ripcord to unlatch the frame locks for unfolding. Safety chains are available. Decals are informative and the user manual is comprehensive.

More information

www.claasharvestcentre.com

Bednar



Bednar's tillage range includes the Swifterdisc which is available in working widths of 3.5-18.4m. The Czech Republic-made Bednar models for Western Australia and South Australia are imported and distributed by Grant Borgward, based in WA.

The Swifterdisc is available in Australia as 10m (XE 10000 model) and 12m (XE 12000 model) working widths, as well as a custom 12.4m unit (XE 124000) which Borgward says has been designed specifically for the Australian controlled traffic farming market.

A new model – the Atlas AE 12400 L – is now also available that uses a larger diameter disc than other models in the range.

The Atlas has two rows of disc gangs across a 12.4m working width, 3m transport width and is fitted with 99 discs (6mm thick and 620mm in diameter). Total weight is 13,000kg in a two-folding wing design that includes forward-mounted double support wheels (on the outer front section of the frame) and a centre-mounted transport axle and wheels. Discs can be standard or notched.

The Swifterdisc design (which incorporates two rows of disc gangs and rear finishing roller or rollers) is its two-section folding mechanism to provide a transport width of just 3m. Two large flotation tyres sit well forward of the central frame section while narrower dual outrigger tyres are fitted on the outside of the wings, also at the front of the frame.

Disc layout

The two rows of discs (offset at 16 degrees to the direction of travel) use 560mm, 5mm thick notched discs, or optional 520mm 'A-discs'.

The A-discs have a more aggressive fluted and notched profile with the aim of creating a series of blades or serrations to maximise the cutting and mixing of stubble.

Discs are grouped in pairs either side of each swingarm, which helps improve underframe clearance for trash flow. Disc arm movement and breakout is provided through the use of rubber block suspension, and disc hubs (an SKF Agrihub) are fully sealed with twin-row ball bearing units in an oil bath.

Disc spacing is set at 125mm, with 80 discs fitted to the XE 10000, 96 on the XE 12000 and 100 on the XE 124000.

Maximum working depth is 150mm, with depth controlled hydraulically by the rear packer roller or front wheels. Borgward says ideal working depth is 50mm and ground speed is 10-15km/h depending on conditions.

Several different design rear packer units are available from Bednar, but most in Australia are fitted with a 600mm diameter V-profile ring and scraper system, which weighs in at 176kg/m.

Other options include U-rings in a single or double arrangement, rubber tyres, cage rollers or steel rings.

An adjustable metal deflector plate is fitted on either side of the frame to help manage soil throw and ridging.

The hitch (a ring pull is standard fitment) is height adjustable.

A hydraulic jack is standard as are colour-coded hydraulic couplings.

Recommended power requirements are 220-260kW for the XE 10000, and 300-335kW for the wider machines.

Maximum weight is 9300kg (XE 10000) and 10,800kg (XE 12000), depending on accessories fitted. Bednar also offers a smaller unit, the XO-F Swifterdisc, in 4m, 4.5m, 5m, 6m and 7.5m working widths.

More details: Contact Grant Borgward, mobile ph. 0428 816 701

www.bednar.com/en/

Farmet and Tatu



Serafin Machinery, Griffith, New South Wales, offers a range of high speed discs and stubble incorporation gear including implements made by Farmet and Tatu.

Farmet gear is made in the Czech Republic while Tatu equipment is built in South America.

The Farmet range includes Softer high-speed discs (with the option of 510mm or 560mm diameter discs) and Diskomat discs (fitted with 620mm diameter discs) to allow for more aggressive mixing and working depth to 180mm.

Both the Softer and Diskomat range have ideal working speeds of 10-15km/h.

The Softer range covers trailed working widths of 4.5m, 6m, 8m, 9m, 11m and 12m and there is a 1250Pro model with a working width of 12.25m. Linkage models are available up to 4.5m working width.

Trailing models have a centre section and wing fold (single wingfold denoted by PSW) and depending on single or double wing fold, the 11m and 12m models fold to a 3m transport width (Pro models) or 4m.

The range's basic design is two gangs of discs (front all set to work ground one way and the rear all set in the opposite orientation) followed by a rear finishing roller (or rollers if optioned).

Discs are notched and the gangs are quite close together with a gap 803mm from the centre of the front disc gang to the centre of the rear disc gang. Disc row spacing is 240mm. On the 9m model, 70 discs are used.

Working depth is 35-120mm. Each disc has a sealed hub (an SKF AgriHub) so there is no lubrication required. The only grease nipple on the machine is on the hitch. A ring hitch is standard. Pivot points on the frame use high tensile bushes and hardened pins.

When setting up, once the rear roller depth has been set using shims on the hydraulic rams, there is a corresponding setting for the front wheels (one either side of the frame) which is a locking pin in a laser cut plate.

Adjustment when in use is via hydraulics from the cab. Shims can be added to the wing rams if uneven disc wear leads to tracking or crabbing to one side.

Each disc has its own attachment to the frame with breakaway courtesy of a rubber torsion block system. The disc arms are raked back substantially, especially compared to the Diskomat which are set more vertically.

The drawbar frame is made of laser cut plate steel to provide an open design. The centre frame sections are 150mm x 150mm SHS. A hydraulic jack with its own hydraulic remote and safety chains are standard fit.

There is a hanger for the hydraulic couplings (four are used for the Softer) and the hanger can be adjusted fore and aft.

Couplings are colour-coded and well labelled via decals on the drawbar.

At the rear of the Softer, a variety of finishing rollers can be fitted including cage tube rollers and steel ring packer rollers. Individual rear scrapers can be removed via linchpins.

An adjustable deflector plate is used on the end of the disc frame to help prevent ridging, as well as a covering disc which has a six 'spoke' design .

Three Pro models have the option of adding a forward-mounted Flexi-Cut tool to help break up stubble prior to running through the disc gangs. There are also eight rear roller options, including a tube roller, V roller and double ring roller.

Diskomat

The Diskomat is available in working widths up to 8.3m in rigid and folding frame designs and has a similar frame setup to the Softer however it is fitted with larger diameter discs (620mm) and can work to a depth of 180mm. Disc breakout is via a coil spring and a 'clod buster' is fitted between the front and rear disc gangs.

Disc hubs are sealed and include non-preload, tapered bearings.

Tatu Speed Disc

Made in Brazil, the Tatu Speed Disc is available in four working widths from 7.6-13.7m.

Wider models are a three-section design with each wing folding upwards and forwards for transport. Transport width varies from 3.97m to 5.5m depending on the model.

Disc diameter is 560mm (scalloped disc) and there are two rows of discs (front gang opposing the rear disc gang) followed by a cage roller (solid bar, not tube).

The front discs are offset by 17 degrees while the rear are offset at 14 degrees. Rated working speed is 16-22km/h. Disc spacing is 254mm across the range. The 7.6m model is fitted with 60 discs while the 13.7m model has 108 discs.

Depth setting is via the rear roller and front wheels and adjustment is hydraulic.

There are about a dozen grease nipples on the Tatu that require daily lubrication but the discs use a sealed hub with oil-bath, tapered roller bearings.

Disc break out (providing up to 225mm of vertical travel) is via rubber torsion blocks which have a spigot moulded into the design to prevent them from moving sideways. The rear cage roller bearings sit in an oil bath.

The outer working edge has an adjustable (fore and aft) soil deflector.

Other implements include the Speed Disc Cultivator that has a working width of 6m, 620mm disc diameter and working depth of 130-180mm.

The 6m machine is fitted with 48 discs (plus an additional disc that acts as a deflector) to help with a level finish and weighs 6500kg.

Disc spacing is 230mm across two gangs and there's a rear roller (dual crumble rollers with hydraulic depth adjustment) as well as finger harrows.

Each wing folds upwards for a transport width of 3.5m and depth is adjusted hydraulically.

Disc hubs are fitted with Agri Hub bearings.

More details: www.serafinmachinery.com.au

Great Plains



Great Plains machinery is made in the United States and distributed in Australia by Kubota. Great Plains has traditionally sold the Turbo Max in Australia as more of a vertical tillage, seed bed preparation tool, rather than a speed tiller for residue incorporation.

As the discs are set vertically, there is no undercutting action. The 500mm wavy "turbo blade" discs are set at a 190mm spacing, with the rear bank offset giving an effective spacing and chop width of 95mm, and the disc angle can be adjusted hydraulically on the go from zero to six degrees to the direction of travel.

Frame wings can flex up to 10 degrees below horizontal, with unlimited vertical movement, giving good contour following ability, with a down-force of 114-132kg per disc. All disc hubs are maintenance free and shielded with a six-lip seal.

At the back end a single cage roller is fitted to smooth the surface, and a spike harrow can be optioned for more thorough mixing of soil and residue. This is attached in front of the rear roller.

Hydraulic weight transfer is used to ensure even downforce across the width of the machine and is standard on the 3000TM and larger units.

Hydraulic pressure is quick to check and adjust thanks to two dial gauges and valve banks on the drawbar which are visible from the tractor cab.

The Turbo Max is available in working widths of 6m (6.0M-TM), 8m (8.0M-TM), 9.1m (3000TM), 10.7m (3500TM), 12.2m (4000TM) and 14.6m (4800TM).

Both the 6m and 8m units are in two sections and fold up to 3m wide for transport, with the 3000TM at 4.7m and the larger units over 5m. The larger units have a separate centre section.

Weight maxes out at 14,300kg for the 4000TM and 17,200kg for the 4800TM.

More details: https://greatplainsaustralia.com.au/

Gregoire Besson



A range of Gregoire Besson incorporation, tillage and cultivation gear is available through Waringa Distribution, based in Western Australia and dealerships in eastern Australia.

Grégoire-Besson machinery is built in France and the range in Australia includes the Discordon and Normandie stubble cultivators and speed tillers.

The Discordon range features two trailing models – the T70 and T80 - and both have disc gangs with a set of tines in between and a rear roller attachment.

Discs (660mm or 710mm diameter) can be plain (7mm thick) or notched (6,7 or 8mm thick).

Working widths vary from 4.5-7.5m. Up to 56 discs can be fitted on the wider machines and there are several tine options available. Hydraulics allow the tine depth to be independently controlled from the tractor cab.

Working depth is controlled by two stabilising castor wheels running 11.5-80x15.3 tyres while the main frame-mounted transport wheels roll on 650/50R22.5 tyres.

Approach angle of the discs is 13.3 degrees to the direction of travel and 5.2 degrees camber.

Discs are mounted on maintenance-free bearings on profile-cut steel arms fixed to a half bracket clamp and fixed with six bolts to the top bracket.

Discordon machines fold to 3m for transport.

The Normandie is more suited to stubble cultivation (from 20-120mm depth) with no tines and is available in working widths of 2.5-12.m across five models in linkage (+T60 and +T80) and trailed versions (+50, +T60 and +T70).

As an example, the +T70 can be fitted with 56 to 72 discs and covers working widths of 7-9m.

A tubular, ladder-style frame is featured on all models as are elastomer 'triangles' for suspension between the disc arms and frame and maintenance-free, sealed bearings.

Discs are 560mm in diameter and can be a flat or curved notched design.
There are four rear roller options - the Impak V roller, double square bar roller, Emopak V roller and square bar roller (for maximum aggressiveness).
Transport width for the Normandies is 3m.

Waringa also has three models of Gregoire Besson Occitan disc harrows that can be fitted with a seed hopper and a range of rear rollers and finger style harrows. The Occitans have an underframe clearance of 750mm and the spacing between the two rows of discs varies from 950-1350mm.

Working widths across the three models (two linkage and one trailing variant) vary from 2.5-6.2m.

More information: Waringa Distribution

www.waringa.com.au

Horsch



The Horsch Joker is available in widths of 3m to 12m across the specifications; RT, CT, HD and the recently introduced RT +. Of these, machines of 8m working width or more can be found in the RT, RT + and HD range.

Made in Germany, the larger Joker RT models come in 8.15m, 9.75 or 12.25m working widths. The RT + is available with a 12.15m working width, fitted with 99 discs of 580mm diameter each and weighs around 19,000kg.

Other models have 520mm diameter scalloped discs in two rows cutting at an angle of 17 degrees. An 8m working width HD model sees 620mm diameter discs employed.

Cast steel plate disc arms are welded to the lower folded steel carrier mounting bracket and mounted to a 75mm sectional steel bar.

The top carrier mounting bracket is fastened using six long bolts which pull up to accommodate the disc vertical suspension provided by four long cylindrical torsion blocks. Each disc arm mounting bracket carries a pair of discs on a single arm. A flat spade disc is fitted to one end of each row to level the outer cut width and prevent edge ridging.

Discs are 6mm thick and mounted to the bearing with five bolts on the RT and six on the HD. Bearings are oil-bath/maintenance free and feature a 40mm shaft diameter. There is a total of 68, 80 and 98 discs on the 8RT, 10RT and 12RT models respectively. The 8HD carries 58 of the larger diameter discs.

Working depth is specified as up to 170mm for the RT and 150mm for the HD according to their respective manuals despite the latter having the larger diameter discs.

Power requirement is specified as 205–280kW (280–380hp) for the 8RT, 220–310kW (300–420hp) for the 10RT, 265–350kW (360–480hp) for the 12RT and 220–260kW (300–350hp) for the 8HD.

Two castoring pairs of depth control wheels are mounted to the front of the bar and shod with 400/60-15.5 BKT tyres. Depth and packer pressure is controlled hydraulically via the rams to the castor wheels and set stops using ram collar blocks.

Transport width is 3m across the range with a 4m transport height. The Joker 8RT is 7.36 or 7.6m long depending on packer choice while the 10RT and 12RT are both 7.7m in length. The 8HD is slightly shorter at 7.1m. Chassis-mounted transport wheels roll on 520/50–17 rubber on the 8RT, 400/60-22.5 for the 10RT and 12RT while the 8HD runs on 385/65-22.5 tyres.

Total machine weight varies according to packer selection but starts at 8600kg for the 8RT, 10,000kg for the 10RT, 12,100kg for the 12RT and 7500kg for the 8HD.

The drawbar linkage is adjustable on all models with 42/51/71mm hitch linkages on 8m models and 51/71mm on 10 and 12m models. Hitch height is hydraulically adjustable and a large support foot folds out from the main frame to support the hitch. The hitch also has hydraulic hose storage.

Maintenance requirements are minimised with the use of sealed oil-filled bearings which should be inspected at the same time as around 19 other pivot points require a 40-hourly greasing.

More information

www.horschaustralia.com.au

John Deere



John Deere offers a range of tillage gear that includes high speed disc (HSD) variants and combination implements including the 2730 combination ripper for one-pass ripping and finishing.

The 2730 has recently been added to the range and its combination of front-mounted discs, ripping tines and rear finishing tools and roller covers working widths of 4.27-7.92m in rigid and folding frame designs.

The 2730 and most of the HSD range can be ordered as autonomy-ready and feature TruSet - a system that provides adjustment of the machine by a touch of a button to respond to changing field conditions.

The TruSet compatibility kit is available as an option and allows operators of competitive tractors and older John Deere tractors to adjust their depth and pressure settings on the implements on-the-go from the cab.
TruSet is available as a field-installed option including an implement add-on valve and installation components. TruSet allows in-cab active control of the rear basket roller pressure and raise functions on the 2730 and set-point depth on the HSD.

The autonomy ready kit includes implement lights, a receiver mast and implement receiver harness.

The HSD discs follow a similar design to the Norwood Kwik Till implements that are made in North Dakota in the United States.

HSD (and 2680H) models (11 variants) are available in a range of trailing and linkage setups (linkage models are the 2680H) in rigid and folding frame configurations with working widths of 4.65m to 13.79m. The design includes two rows of discs and a rear packer/roller for consolidation.

Eight of the 11 models have a transport width of just under 4m.

The main rear frame that the discs hang from is a ladder design made of 180mm x 180mm SHS, 9.5mm thick steel.

The main hitch member is thicker (16mm) and a healthy 300mm by 150mm.

The front row of discs are offset at 17 degrees (to the direction of travel) while the rear discs are at 14 degrees. Discs are 610mm in diameter and 6mm thick.

Typically, the front discs are a notched design with the rear being plain but any combination is available (for example for lighter residues, two rows of plain discs can be used or in heavy residues, two rows of notched discs can be fitted).

Disc breakout is via rubber torsion blocks (shaped like a rod) and each disc shank has its own separate attachment to the frame.

In terms of weight, the HSD15 tips the scales at 6,214 kg (with 37 discs/blades at 167kg per disc/blade) while the HSD42 weighs 14,544kg (with 102 discs/blades at 142kg per disc/blade).

The HSD45 weighs 15,272kg, fitted with 110 discs/blades at 138kg per disc/blade.

Ideal ground speed in the paddock is 14-17km/h.

All disc hubs are SKF AgriHubs which are sealed and require no lubrication and all pivot and hinge points on the machine function with nylon bushes. The wheel bearings are the only greasable points (500hr intervals).

A hydraulic jack is standard fit as is a height-adjustable deflector plate to help minimise ridging at the edge of the working width.

Safety chains are fitted as standard.

For more details: https://www.deere.com.au/en/tillage

K-line Powerflex



CNH manufactures its Powerflex speed tiller range in Cowra, New South Wales, under the K-Line Ag brand. It makes a range of sizes from smaller three-point linkage units to larger trailing models with a forward-folding configuration for transport.

The largest 15.5m model folds up to just under 6m width, with the 12.5m unit coming just under 5m and the 9.5m unit at 3.85m for transport.

Powerflex models have the transport wheels positioned in front of the two rows of discs, with cage roller positioned at the rear. Two tillage modes can be used – rigid or floating hitch. In rigid hitch mode the rear row of discs is hydraulically held at working depth which gives a more aggressive action and greater soil disturbance in harder conditions. This sees a greater residue incorporation than in the floating hitch mode where the wheels are used to set the depth of the front row, and the roller sets the depth of the rear discs. This gives a more precise depth control and is more suited to softer soils and seedbed preparation.

Automated in-cab adjustments

With the impending release of Soil Command on the 6.2m, 8.2m, 9.5m and 12.5m PowerFlex variants farmers will be able to manage residue by matching variable tillage treatments to specific field conditions.

Soil Command seedbed sensing technology measures key soil parameters from the tractor cab in real-time. With Soil Command, when you make a change to the depth, all other tillage functions automatically adjust to ensure consistent results.

These inputs can be operator initiated or automatic (if using a prescription). Soil Command mapping technology records as-applied tillage adjustments at one-second intervals. Information streams into FieldOps to provide precise tillage data layers. The system can compare recorded data to yield maps to understand the effects tillage has on various areas of the field to make more informed decisions.

Heavy duty

Overall construction of the Powerflex models is heavy duty, with the 15.5m unit tipping the scales 22,500kg.

Disc rows are suspended from a 9mm thick 100mm SHS bar and disc arms are profile cut and pressed from 32mm plate steel. Disc arm suspension is catered for by four 52mm diameter high-density rubber blocks.

Standard disc fitment is 6mm thick, 600mm concave scalloped discs, but a 660mm (26-inch) option is available.

The largest 15.5m unit is fitted with 124 discs, and the 12.5m unit features 100. Disc hubs are maintenance-free and feature a seven-lip labyrinth seal, while the cage roller bearings require manual greasing every eight hours.

The cage roller is standard fitment and leaves a level finish across most soil types, but a heavy-duty spring-style roller is also available for stickier soil types, as the vibration helps shake accumulation loose. This roller is recommended for heavy trash conditions.

The rear roller can be lifted clear of the ground which should help operation in wet conditions.

The lateral position of the front disc row can be adjusted with respect to the rear to compensate for disc wear. The front row can be shifted up to 125mm sideways to ensure full coverage by the rear discs as the disc diameter decreases.

The folding arrangement sees the entire disc and roller assembly hinge up vertically with the wings then folding forward either side of the drawbar. In transport mode, this does shift weight onto the tractor's drawbar, but in working arrangement this leaves little downforce on the drawbar, aided by the Powerflex's overly long pull. This should also aid tracking behind the tractor.

More information: https://k-lineag.com.au

Kubota



Kubota's disc harrow range (known as the CD series) covers working widths from 2m-12.25m (40 feet) with the widest option available for controlled traffic farming.

The CD has five models (two rigid frame and three folding frame) with several variants within each model.

In the folding CDs, the CD2001f series has working widths of 4m-6m (three-point linkage attachment) while the trailing CD2001t series covers 4m-7m and the trailing CD20001T series is the widest at 12.25m working width.

Kubota has also recently announced the CD21231T with a working width of 12.25m across four independently mounted frame sections (folding to a transport width of 3m).

On the CD21231T, the pressure of the four frame segments can be adjusted via a Ground Contour System to achieve the same pressure on each segment. Working depth is adjusted with a pre-setting at points – one setting is mounted at the gauge wheel and the second at the rear roller. Both setting points are on the left-hand side of the implement where the driver exits the tractor cab.

Gauge wheels and the rear roller are adjusted separately to maintain the balance between the two rows of discs. Once working depth is set, adjustment can be made hydraulically from the tractor cab.

Trailing models and folding models provide a transport width less than 3m.

Seeding packs can also be added to the Kubota CD series with a 500 litre capacity hopper available as an option for broadcasting seed.

The CD series has the base design of two rows of discs (gangs are 900mm apart) which are followed by a rear roller and the rear roller acts as the depth control.

For the trailing models the unit is pulled via a two-point swivel hitch. The drawbar has an adjustable top link for pitch adjustment and the tractor's linkage arms help pull the front gang of discs downwards with positive pressure to keep the unit level and help the discs penetrate the ground in hard or tough conditions.

A fixed pulling eye on the drawbar is also an option for customers that do not have a tractor-mounted three-point linkage.

Discs are notched and conical in shape and 600mm in diameter and 6mm thick on all variants except for the 2m-3.5m working width, rigid-framed CD1001 where they are 500mm in diameter and 5mm thick. Working depth is stated at 20-150mm.

Each disc (set 250mm apart) is suspended by rubber blocks around the main frame beam which is 100mm x 100mm x 8mm steel (150x150x10mm on the widest variants).

The discs are made by Kverneland, which Kubota owns and the 6mm thick discs are heat treated and hardened from the outer edge to 2/3 of the way to the centre of the disc.

Kubota says this gives the disc a long wear life while still maintaining flexibility in the steel closer to the centre of the disc where it is bolted to the hub. There are 98 discs on the largest model.

Each disc hub has a 35mm axle and NSK maintenance-free, double roller, oblique high-speed bearing which is protected by a five-lip seal design to prevent contamination.

Adjustment

The disc gangs also come standard with lateral offset adjustment. Being able to adjust the gang offset means allowances can be made as the discs wear down.

Depth adjustment is via the hydraulic rear rollers in combination with the front depth wheels. This is done with spacers on the hydraulic cylinders that determine the stroke of the hydraulic cylinder.

The frame of the rear wheel carrier has some suspension during transport and also in the field at high working speeds with an accumulator to dampen vibrations and bouncing.

Kubota says the accumulator dampening design gives the machines the ability to work up to 20km/h with no frame bouncing or hopping.

There are two rear roller options - a cage roller and heavy-duty ActiPack roller and rear levelling finger harrows are standard on all models.

The 550mm diameter cage roller is a more economical price option and is designed to crush clods and aerate the soil, weighing 90kg/per lineal metre.

The 560mm diameter ActiPack roller is the heavy-duty all-rounder designed to tackle conditions from heavy soils to stony conditions.

Weighing 220kg/m, this roller is designed to reconsolidate the top layer of soil to firm the ground up to assist in reducing blowing of the soil and seal in some of the soil moisture. This roller also has additional knife points placed every 125mm along the roller to assist in clod breakdown and trash burial.

Soil deflectors on either side of the disc gangs are parallelogram mounted and help prevent ridges forming.

All pivot points are greaseable and bushed with brass bushes to maximise operational life.

The trailing models require three double-acting hydraulic remote valves and one free return. These hydraulic functions are for raising and lowering the machine, folding the disc gang wings and changing of the hydraulic depth adjustment. The free return is used in conjunction with rear accumulators for the frame dampening.

For more details, visit www.kubota.com.au

Kuhn



Kuhn produces the Optimer in both L and XL variants, both of which are available in Australia.

Both Optimer L and XL ranges are available in working widths of 3m, 4m and 5m (two sections), 6m and 7.5m (three sections) and 9m and 12m and 12.5m (four sections).

Even the largest 12.5m units fold up to a transport width of 3m, making them ideal for frequent road transport.

There are several differences between the Optimer L and XL lines. The L is aimed at shallow stubble ploughing and soil preparation to a depth of 100mm. The XL is the more aggressive of the two machines and is designed to cut and incorporate heavy residue to 150mm.

The Optimer L is fitted with 6mm thick 510mm diameter notched discs, and discs are angled at six degrees to the vertical and 16 degrees to the horizontal. Discs are supported on steel arms with polyurethane elastomer suspension blocks.

The Optimer XL has larger 6mm, 620mm notched discs with a more aggressive undercut angle of 12 degrees from vertical, and a 14-degree horizontal angle of attack. Discs are supported on a cast and forged arm.

Nine metre models feature 72 discs with a total operating weight of 9150kg (Optima L) and 10,300kg (Optimal XL), while 12m units are fitted with 96 discs and tip the scales at 12,300kg (L) and 13,700kg (XL). The Optimer XL 12500 weighs 14,300kg.

There is a range of rear roller options for both the L and XL ranges for the smaller units up to 5m, but less options are available for the larger machines, with the 12m units limited to a double U roller.

There are three rollers for the six and 7.5m machines – double U, HD liner and double tube bar (cage) rollers.

Smaller Optimer models have also picked up optional front-mounted levelling boards or a shredder or knife roller, which are not offered for larger machines.

Kuhn also offers a 600L seed box with GPS-based rate adjustment to complement the 200L and 400L units available.

Maintenance is kept to a minimum with sealed, maintenance-free disc hubs, although the parallelogram linkage supporting the rear rollers requires regular greasing.

On the 12m and 12.5m machines pivot points are fitted with self-lubricating bushes.

Downforce is regulated by Kuhn's Steady Control system which isolates the frame sections, with hydraulic pressure used to regulate ground pressure consistent across the width of the machine. This allows the frame sections to independently follow the ground contour but maintain an accurate working depth.

The Steady Control system is available on all models from 6m and up and is standard fitment to the 9m, 12m and 12.5m Optimers.

Smart Soil Technology (SST) is available on the Optimer L and XL 6000 and 7500 models, which is an ISOBUS system that has the ability to control (from an in-cab terminal) working depth, unfolding and folding sequence, compatibility with TC GEO (for modulation depth, based on maps and compatibility with TC SC for automatic up and down on headlands.

Automatic Steady Control which is an in-cab extension of the pressure control offers automatic calibration to optimise ground tracking according to the type of soil (correction of the implement for self-alignment independent of the tractor).

Pricing (July 2026): Optimer L 12500: $276,425 plus GST. Optimer XL12500: $291,640 plus GST.

More details: https://www.kuhn.com.au/crop/tillage-implements/stubble-cultivators/stubble-disc-cultivators/optimer

Lemken



Lemken tillage and incorporation gear is made in Germany and includes Rubin and Heliodor high speed disc implements in trailed and linkage versions but these can be added to the Lemken Gigant toolbar to cover working widths up to 16m.

Both the Rubin and Heliodor implements have the same basic design which is two rows of discs followed by a finishing roller or rollers.

The Rubin is used for a more aggressive tillage with larger diameter discs which are more undercut and has spring coil suspension while the Heliodor discs are suspended via a spring steel tine arm.

Discs are set at 20 degrees to the vertical that allows the discs to "grab" while providing mixing of the disturbed soil and trash.

On its own, the Rubin 10 has a symmetrical disc layout, so each row of discs has the discs facing the opposite way (outwards from the centre for the front row and inwards for the back row).

Lemken says the Rubin 10's symmetrical design allows better straight line following of the tractor.

The Rubin 10 range with covers working widths of 2m, 3m, 3.5m and 4m in linkage and 4m, 5m, 6m and 7m in trailing models, denoted by 'TF'. Each implement folds to a transport width of 3m.

The TF range has been updated with a wider gap between the disc gangs (from 1250mm to 1350mm) as well as a strengthening of the central chassis and drawbar and a new folding design.

The drawbar is made of lasercut steel plate sections and SHS framework manufactured by a forged process (no seams).

Hitch area

The drawbar has an open design and neatly houses hydraulic lines and a few other components. A manual jack stand is the only option available.

The drawbar includes storage for the hydraulic hose couplings and colour-coding (four hydraulic remotes are standard) for correct allocation of functions.

Setting the implement up is a matter of ensuring the disc gangs are level (a magnetic spirit level is supplied) and matching the depth indicators. The main depth control is well marked in the centre of the front of the frame and is easily adjusted with a steel rod and hole-punched plate.

If fitted, trash flow tines are adjusted manually with a X-shaped handle. A depth indicator for this is also well marked on the side of the frame.

Hydraulics take care of adjustment on the go via a ram at the front of the frame.

Discs

Duramax discs (645mm diameter) used are notched and Lemken says they are treated to be 56 per cent more hard wearing than a standard metal disc. Disc spacing is 250mm.

Tillage depth can be up to 140mm on Rubin 10 models and 200mm for Rubin 12 models depending on disc wear. A lateral limiter plain disc is fitted to the outside of the frame to aid soil throw.

The coil spring suspension is capable of breaking out and re-setting and uses a clever rebound and reset mechanism which aims to minimise shock transfer to the implement frame. If a big enough obstruction is encountered, a nyloc bolt will shear.

A set of levelling harrows (attached to the frame via spring steel tines) can be adjusted up or down manually and the rear rollers are 540mm (front) and 400mm (rear) in diameter. The roller frame can pivot front to rear to help contour following.

Rear roller options include a double profile steel ring roller, knife roller and a single packer roller.

There are 11 grease nipples on the machine used for pivot points on the hydraulic rams and wheels.

In the field, the rear wheels are lifted off the ground. The standard tyres are a flotation type 550/60 R22.5. Seven metre working width machines can be fitted with stabilising wheels on the front of the frame.

The 5m working width Rubin weighs 8000kg.

A double row straw harrow is also available as an option which bolts onto the frame in front of the forward disc gang.

The Rubin 12 has the same design and features of the Rubin 10 but is a heavier duty build and is fitted with 736mm diameter discs. The 12 models also have a large deflector plate which is adjustable at the end of the disc gang for soil throw management instead of a disc.

Being a bigger, heavier machine, there are also larger bearings, springs and pins compared to the Rubin 10 while a straw harrow and levelling harrow are retained and the rear axle is integrated into the machine.

The Rubin 12 provides working widths to 9.5m.

Models with working withs to 7m have a 3m transport width while the 8m model's transport width is 4.5m and the 9.5m model folds to 6m.

Disc spacing on the Rubin 12 is 300mm.

Undercut angle for both disc gangs is 20 degrees. The front set of discs is offset 16 degrees to the direction of travel and the rear set is offset 14 degrees.

Heliodor

The Heliodor is available in trailing models in 4m, 5m, 6m and 7m but can be up to 16m when used on the Gigant frame. Linkage models are offered from 2m in width.

Disc diameter is 510mm and the disc suspension or break out is via a steel leaf arm, not coil spring. The disc hubs are the same sealed ones used on the Rubin. Depth indicators and set up are the same as on the Rubin as are the rear finishing rollers.

Both the Rubin and Heliodor have ideal working speeds of 10-15km/h but this will vary according to the prevailing residue and soil conditions.

For more information, visit www.lemken.com

Poettinger



Austrian-made Poettinger machinery includes a range of high speed Terradisc implements which covers linkage and trailed models to a working width of 12.5m Trailing machines come in 4m, 5m, 6m, 8m, 10m and 12.5m widths while linkage, rigid Terradisc's are available in 3m, 3.5m and 4m widths and linkage folding models are available in 4m, 5m or 6m.
Transport width for all trailing models is 3m while the folding linkage implements have a transport width of just 2.8m. All folding trailed models up to 10m are a dual wing design, with the 12.5m model having four sections for added terrain adaption, with the overall layout being two rows of discs followed by a finishing roller.
Poettinger uses a twin arm design where two solid, forged carrier arms (each with a disc attached) are welded to every 380mm clamping bracket. Disc diameter is 580mm with a disc-break out via four x 40mm diameter rubber torsion blocks. Main frame components are made of 80mm x 80mm box steel.

The front row of discs are offset 17 degrees with an undercut of seven degrees while the rear disc gang is offset at 15 degrees and also has seven degrees of undercut angle.

Sealed, maintenance free hubs with twin race, tapered bearings and a labyrinth seal are used for the discs.

Discs are spaced 125mm apart – equating to eight discs per lineal metre with the distance between the front and rear disc gangs being 900mm. Standard disc fitment is a scalloped disc while a plain disc can also be optioned.

For initial setup, 3-6m and 12.5m machines use shims on the rear roller for depth control while 8, 10m Terradisc's can either be fitted with shims for non-ISOBUS models or controlled completely from the cab for ISOBUS models (with depth adjustment of 50-150mm).

The 8m models have optional guide wheels for the wings while the 10m and 12.5m models have these as standard.

Hydraulics

Three double-acting and one single-acting hydraulic remotes are standard for 8m and 10m models with the 12.5m machine requiring four double acting hydraulic remotes. ISOBUS optioned Terradisc's have a power beyond, load-sensing hydraulic system where the machine can be folded at the touch of a button via the in-cab terminal.

On 8m and 10m models, a pressure correction factor for the folding sections allows for a movement of six degrees upwards and three degrees downwards.

The 12.5m machine allows each of the frame sections to follow the ground contours independently. The inside sections have a freedom of movement between -3.0 degrees and +6.0 degrees. Independently of the inside sections, the outside frame sections are free to move between -4.5 degrees and +4.5 degrees.

Adjustable steel edging boards are standard on all models, working in the area behind the second row of discs at either end of the disc gang.

The 8m,10m and 12.5m models have a hydraulic drawbar jack as standard while the ring pull for the hitch can be 30mm, 40mm or 70mm diameter with the 12.5m model having a 70mm diameter ring pull hitch. A height-adjustable drawbar is also standard on the 8m,10m and 12.5m models.

Price: 8m Terradisc with cage roller option priced from $191,070 including GST.

More information: www.poettinger.com.au

Sumo



ATS Agriculture, based in Western Australia has several Sumo implements that can be used for stubble and trash management.

The Sumo gear is made in the United Kingdom and included in the ATS Agriculture range is the Quatro combination cultivator (with 2 sets of discs and tines), Trio combination cultivator (1 set of discs and front ripping tines) and MixiDisc high speed cultivator (discs only).

Tines on the Quatro and Trio range can be lifted if not needed.

The Quatro implements offer a one-pass system that comprises a front or leading double row of 600mm diameter concave serrated discs, followed by 500mm tines for compaction-busting, then another gang of 600mm serrated discs for mixing and at the back is a Multipacka for surface consolidation. Each ground-engaging stage can be independently adjusted. The tines have an auto reset hydraulic break-out system.

Quatros are available in linkage and trailed versions covering working widths of 3m-6m with three trailed, folding models. Transport width of the linkage model is 3.5m while the trailing models fold to 3m for roading.

The 6m working width Quatro 6 is fitted with 12 subsoiling tines (spaced at 500mm), 96 discs (for a working depth of 30-200mm) and weighs in just shy of 13,000kg.

Designed to disturb the soil to 100mm depth, the MixiDisc/S is available in sizes from 3m-7m working width in linkage and folding, trailed options. A row of double concave discs (500mm diameter) suited to a maximum working depth of 100mm roll on maintenance-free bearings mounted to sprung-suspension arms allowing for rock clearance.

The 7m MixiDisc/S weighs 9005kg and is fitted with 56 discs (set at 270mm spacings). The Multipacka roller is standard fit at the rear of the machine.

Price: Quatro 6 (6m): $330,000 incl GST.

More information: ATS Agriculture

www.atsag.com.au

Unia



Unia high speed discs are made in Poland and imported by FarmTech Machinery based in Wodonga, Victoria.

Unia high speed discs are available in two models – the Ares XL and Ares HP.

XL models are available in seven working widths - 3m, 3.5m and 4m with rigid frames and 4m, 4.5m, 6m, 7.5m (hydraulic folding). All the XL Models can be fitted with a trailing kit.

The HP range is trailing only and covers working widths of 4m, 5m, 6m and 8m. All models fold to a transport width of 3m and the design is based on two rows of disc gangs and a finishing roller (usually a cage/tube roller of 600mm diameter).

Working depth is 100-175mm and working speed is a minimum of 10km/h.

The XM range is trailing only and covers working widths of 5m and 6m. XMs are fitted with discs of 560mm diameter and offer a working depth range to 150mm.

A range of finishing rollers are available to suit the application and they are hydraulic folding with four cylinders making the unit transportable on road.

On XL and XM models, the front and rear disc gangs are 800mm apart and on the HP models the distance is 1200mm. Swedish steel (from SSAB) is used throughout the frame construction.

Disc size can vary from 560mm to 660mm (all 6mm thick) and the standard disc is a scalloped design, offset 18 degrees to the direction of travel.

Each disc has its own arm attached to the frame with a rubber torsion block break out and there is no lubrication required for the sealed disc hub which uses roller bearings. HP models can be optioned with coil spring break out. Disc row spacing is 240mm.

Once the working depth is set using shims on the hydraulic rams, hydraulic control is from the tractor cab (mechanical control is standard while hydraulic is optional). Three sets of hydraulic remotes are standard and a hydraulic hitch is optional.

Safety chains are optional and machines can also be fitted with hydraulic or air brakes.

The rear cage roller uses hollow pipe and there are several other finishing roller options including rubber rollers and a double steel ring roller.

Unia also manufactures a 12m model (the Ares XL H 12). The 12m machine consists of two 6m sections mounted on a solid chassis with four transport wheels. The XL H 12 has a transport width of 3m. The working depth is set on the tillage roller and the range is 50-150mm. The weight of the machine is 13,900kg. Power demand is stated as 283-358kW (380-480hp). Price is $247,500 incl GST (as of July 2026).

Other prices (July 2026): 6m trailed Ares HP with standard 600mm cage roller: $141,790 incl GST.

6m XM trailed with standard 600mm cage roller: $117,480 incl GST.

More details: www.farmtech.com.au

Vaderstad



Vaderstad's Swedish-made TopDown covers working widths of 3-7m in a trailing design featuring a twin row of high-speed discs, centre section of ripping tines, levelling wheels and a rear packer roller.

Vaderstad describes the machine as having four work zones from front to back: TrueCut 470 discs for cutting and mixing, tines with updated hydraulics including accumulators for loosening and mixing, a levelling zone, and at the rear there is a packer known as the double SteelRunner. The rear packer can also be optioned as a single SteelRunner.

The tines can be lifted out of the ground while in the paddock so the TopDown is just running as a high-speed disc, effectively but owners generally use the implement for a one-pass solution for ripping and incorporation.

The front two rows of discs are 470mm in diameter on a row spacing of 125mm. Offset angle is 16 degrees and undercut angle is 6.2 degrees.

Discs use a maintenance-free sealed hub and there are grease nipples on the implement's hydraulic rams and frame pivot points. Disc suspension is from rubber torsion blocks.

Transport width for the range is 3m.

Tine spacing across the width of the machine is 270mm and working depth for the tines is 150-300mm. Tine break out (hydraulic) is rated at 700kg.

The levelling zone behind the tines is a row of levelling wheels which are mounted on a parallelogram frame and hydraulically controlled from the tractor cab.

Initial set up is similar to most other machines with the use of shims or collars on the rams. In paddock control is completely hydraulic with depth indicators easily visible. Four sets of hydraulic remotes is standard as is a manual jack stand for the drawbar.

Outrigger wheels are included on 6m and 7m models. Safety chains can be optionally fitted via the dealership the machine is purchased from.

A 7m machine in standard specification (with single steel rear roller) weighs 10,300kg and will require a minimum of 265kW to pull it depending on ground conditions. Recommended working speed is 8-12km/h depending on conditions.

More details: www.claasharvestcentre.com

Disc Chains

Disc chains use gangs of interconnected cutting discs suspended beneath a flexible frame, allowing them to closely follow ground contours while providing shallow residue cutting and mechanical weed control with generally less soil disturbance than high-speed discs. Both implement types are increasingly being adopted as alternatives to conventional cultivation where growers seek to improve residue handling while retaining a conservation farming system.

Brookfield



Designed and manufactured in Cowra, New South Wales, the Brookfield ChainBar is a chain-based toolbar that can be used for stubble management, mechanical weed control, seedbed preparation, paddock levelling and soil or product incorporation.

The implement's design sees chains suspended beneath the toolbar in a diamond-shaped configuration that operate at a 45-degree angle to the direction of travel. Brookfield says the arrangement, combined with close disc spacing on the cutting-chain options, provides consistent coverage across the working width.

ChainBar models are available in working widths from 4.0m to 18.4m. The independently-suspended chains allow the machine to follow paddock contours and maintain consistent ground contact across the working width.

A key feature of the ChainBar is the range of interchangeable chain and tooling options meaning owners can select the right tooling for their application, soil type and desired result. The chain and tooling options are also available as retrofit options for existing implements.

Chain and tooling options:

- **DLC36 Dog Leg Chain – 36kg/m**
  A flexible, low-disturbance chain suited to stubble knockdown and mulching, particularly in lighter or erosion-sensitive soils. It can also be used for paddock levelling and behind seeding equipment.

- **SC12 Continuous Cutting Edge Spider Chain – 65kg/m**
  A low-impact surface-working chain designed to break soil surface tension, improve surface aeration and prepare paddocks ahead of seeding without excessive soil disturbance.

- **CD5 Continuous Cutting Edge Disc Chain – 70kg/m**
  A sharpened cutting-disc chain designed for more aggressive stubble cutting,

mechanical weed control and seedbed preparation. The replaceable disc system is particularly suited to heavy soils and high-use applications.

- **LD6 Continuous Cutting Edge Levelling Disc – 70kg/m**
  Designed to create greater soil movement and tilth, the LD6 is suited to paddock levelling, seedbed preparation and working heavier soil conditions.

- **KC96 Continuous Cutting Edge Knuckle Chain – 96kg/m**
  The heavy-duty Knuckle Chain is a true zero-till chain designed for intensive stubble mulching without engaging the soil. It is suited to a broad range of soil types and is commonly used in heavy cereal and canola residue.

Recommended operating speeds vary depending on the tooling selected, soil conditions, stubble load and the result required.
More details: BROOKFIELD, ph. 1800 774 274, email: sales@brookfield.net.au
www.brookfield.net.au

Bute



Bute Discs is an Australian disc chain manufacturer, supplying disc and weight systems for stubble management.

The range is designed for farmers wanting to retrofit Bute Discs to their existing disc chain machine, without replacing the whole frame.

The Bute hook-and-eye system allows existing machines to be converted to a Bute Disc setup across different frame sizes, brands and models.

For customers looking to purchase a complete new machine, Bute Discs has partnered with two Australian brands (CRF and Techgrow) to offer new disc chain frames fitted with Bute Discs. These frame options range from 5m to 18m working widths.

For stubble management, the two main Bute Discs products are the Turbine Blade and the Bute 625 Cutting Disc.

Turbine Blade

The Turbine Blade is a no-till stubble management product released in 2024. It is designed to cut and bruise stubble at the plant nodes, leaving residue in shorter pieces across the soil surface to break down.

Each disc has eight sharp blades. The blade that contacts the ground runs at a 90-degree angle to the direction of tractor travel. This should allow the Turbine Blade to break down stubble without throwing soil.

The Turbine Blade fits the same universal hook-and-eye system as the other discs in the Bute Discs range, making it suitable for retrofitting to existing frames.

Bute 625 Cutting Disc

The Bute 625 Cutting Disc is used where stubble management requires a more aggressive cutting action. The 625 refers to the disc spacing, with discs fitted 6.25 inches apart along the chain.

Each disc is 14¼ inches in diameter and 5mm thick, with a sharper edge, deeper curvature and a 90mm wearable edge. This disc profile is suited to heavier or bulkier residue, including thick, straw-like residue and canola stubble.

Patented weight system

Bute Discs has developed a patented weight system that allows weights to be added or removed from each disc while the discs and chains remain connected. This allows farmers to increase the weight and aggression of the chain in specific areas when conditions require it.

For growers managing stubble while also requiring some tillage or weed control in the same pass, weights can be added to the Turbine Blade or 625 Cutting Disc setup.

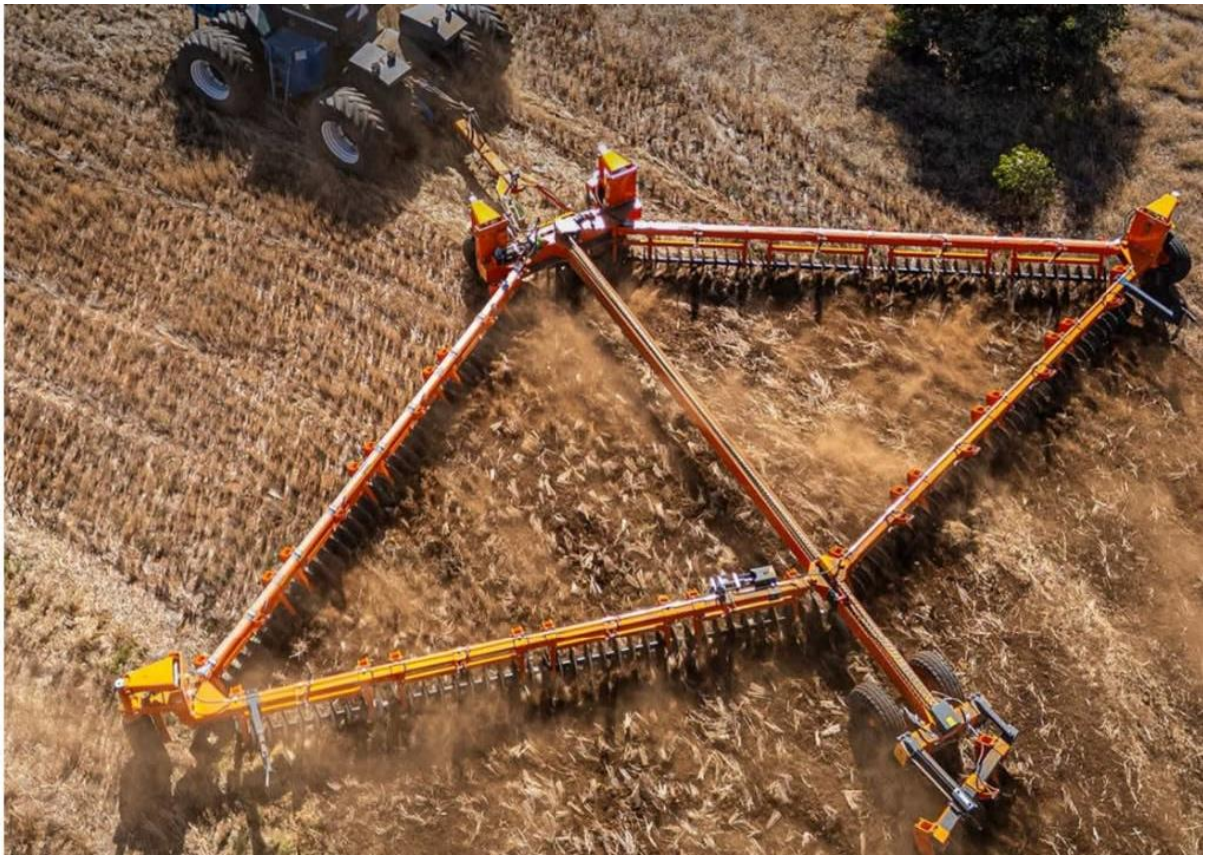
The standard 625 Cutting Disc has a chain weight of 68kg/m and an expected working depth of 12-25mm. With one weight per disc, the chain weight increases to 82kg/m, with an expected working depth of 25-50mm. With two weights per disc, the chain weight increases to 96kg/m, with an expected working depth of 50-75mm.

New frame options

Bute Discs are also available as part of complete disc chain frame packages - the Dalbo Powerchain, supported in Australia by Techgrow and available in 5m, 8m and 12m frame sizes and the CRF Supa Chain, manufactured by Clear Ridge Fabrication, available in 13m and 18m frame sizes.

For more information, visit www.butediscs.com

Earnshaw Ag



Earnshaw Ag, based at Lake Grace in Western Australia, has its Adjust-A-Bar one pass disc gang implement available to purchase or dry hire.

There are two models, offering working widths of up to 15.2m (50 feet) and 18.3m (60 feet) but both have the same basic design that is a main trailing frame beam section with four sets of wings (two each side) that sit in a diamond shape when working.

The joining point of the two rear wings can be adjusted fore and aft along the main frame beam to vary the aggressiveness of the discs.

Unlike a disc chain, the Adjust-A-Bar has the discs fixed on smaller gang sections with down pressure adjustment via two accumulator hydraulic circuits (no extra weight required).

Working depth is set with mechanical stops and each disc gang has a triple-lip seal agricultural bearing at each end for greasing.

Discs can be scalloped and notched or plain and each disc is 460mm (18 inches) in diameter and 4mm thick.

Transport width is 3.85m and the dry hire cost is about $18/ha.

Contact:
Earnshaw
www.earnshawag.com
Phone 1300 170 887

Kelly Engineering



Kelly Tillage's disc chains are made in South Australia and available in working widths to 18m. The range includes one-pass solutions based on a diamond-shaped frame design with various disc options to tackle weeds, stubble and wheel ruts.

Kelly Tillage says the 12m and 18m machines are the two most requested units for Australian farms, designed to work at an in-paddock speed of 9-12km/h depending on conditions.

For tough ground and heavy stubble, Kelly Tillage has the CL2 disc to provide penetration into soils while the weight and shape of the boss keeps the disc cutting and limits the working depth.

The CL2 consists of a concave replaceable disc mounted in a heavy cast steel boss with a hook and eye for linking together.

Each disc unit weighs 24kg and the disc is 360mm in diameter. Chain weight is 110kg/m.

The CL1 disc is a more versatile option, running at a constant shallow depth with the aim of protecting moisture and soil structure while it handles stubble and weed control.

The K4 disc is a mid-weighted disc built for enhanced weed control, especially in the loam range of soils. The sharp edge of the K4 disc pulls weeds from the soil and sizes stubble and with its closer disc spacing.

Available also in a notched version, the K4 notched swaps a smooth cutting disc design for a notched blade which provides extra cutting power for heavier residue.

K4 notched discs are 330mm in diameter and the unit weighs 11kg. Chain weight is 68kg/m.

In sandy or light soils the closer spacing on the R300 offers a light surface tillage option thanks to an enhanced disc overlap layout.

For wet and sticky conditions, the W36's light curve design is ideal for mulching and levelling soil, breaking stubble and accelerating decomposition. The W36 is made from wear-resistant steel, welded to a heavy chain.

The SD49 heavy duty spiked disc chain has 10 spikes surrounding each disc with the aim of combining levelling and incorporating actions for a shallow-running, self-cleaning seedbed finish.

The Prickle Chain can be used for levelling soil surfaces and incorporating liquid, solid and granular fertilisers. The chains roll and gently pack the soil while levelling ridges and filling furrows. Self-cleaning is another claimed benefit of the Prickle Chain, with the angle and orientation of the spikes set to prevent residue build up.

All functions can be controlled from the tractor cab as the wings and rear frame lift hydraulically.

Contact:
Kelly Tillage
08 8667 2253
www.kellytillage.com

Stubble management survey results

Summary of grower responses

Overview

A survey was distributed to MIG and Liebe growers in May and June 2026 following heavy yields and the resulting stubble loads from the 2025 season.

The survey collected 38 responses from growers, predominantly from the Liebe Group and Mingenew Irwin Group regions. It provides a snapshot of the stubble loads expected to present challenges ahead of the 2026 seeding program and the management approaches growers are using or considering. (See Appendix 1 for a copy of the survey.)

Respondent profile

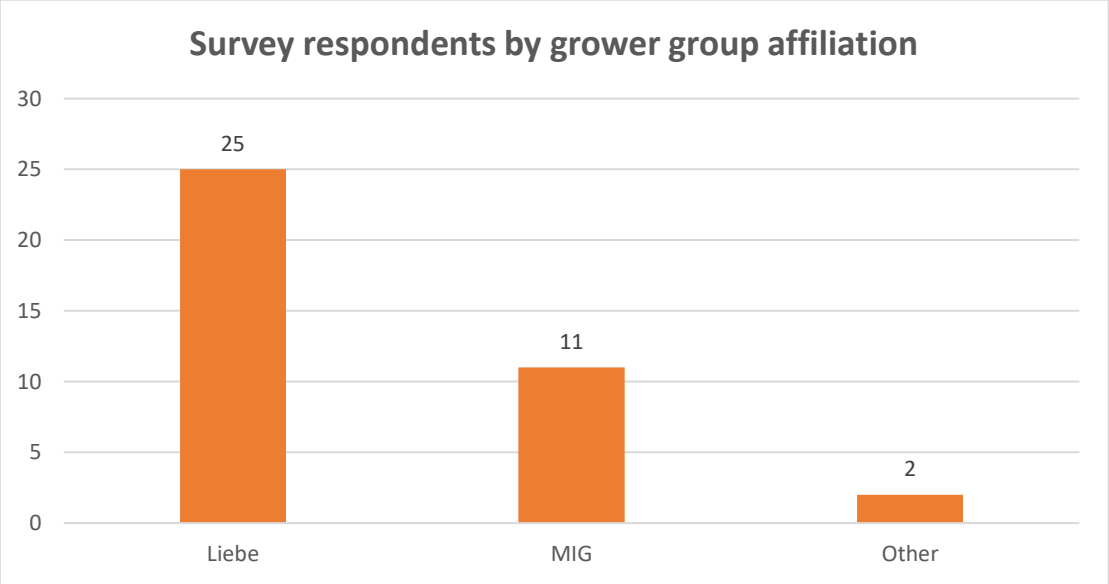


Figure 1. Survey respondents by grower group affiliation.

Most respondents were Liebe Group members (25; 66%), followed by Mingenew Irwin Group members (11; 29%). WANTFA and Morawa Farm Improvement Group each contributed one response in the "Other" category.

Expected seeding risk

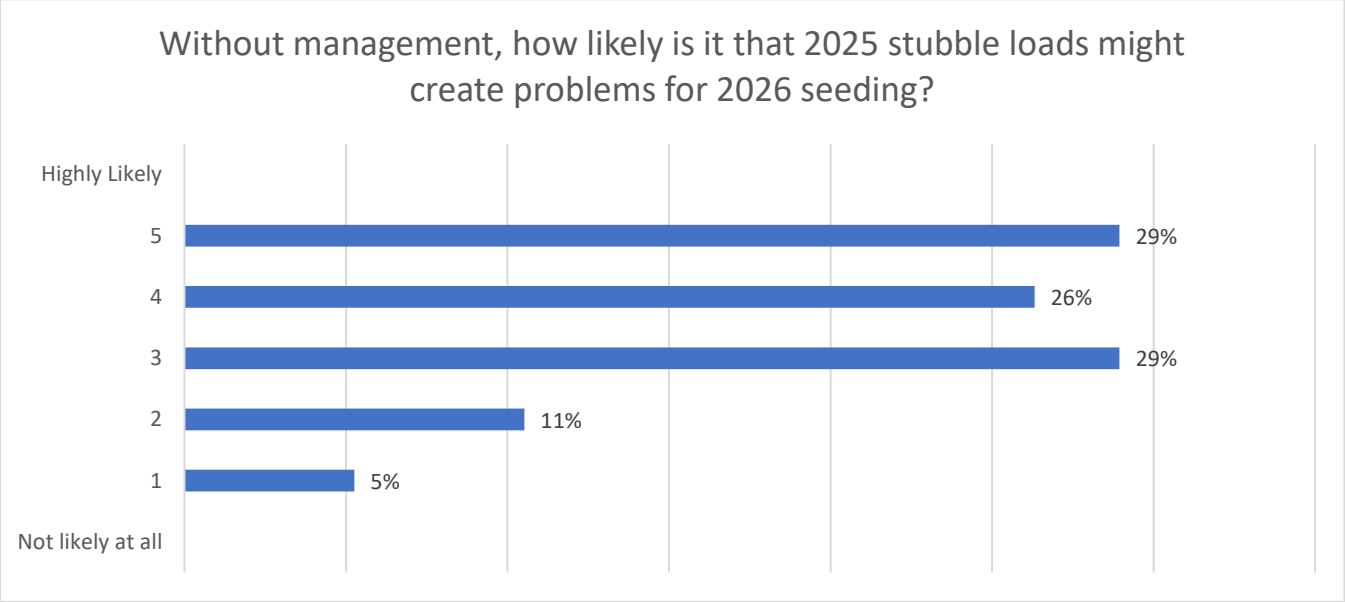


Figure 2. Grower rating of the likelihood that unmanaged 2025 stubble loads would create problems for 2026 seeding.

More than half of respondents (21 of 38 or 55%) rated the risk as 4 or 5 on a five-point scale. Only six respondents (16%) selected 1 or 2, indicating that heavy residue was a concern for most participating growers.

Stubbles requiring management

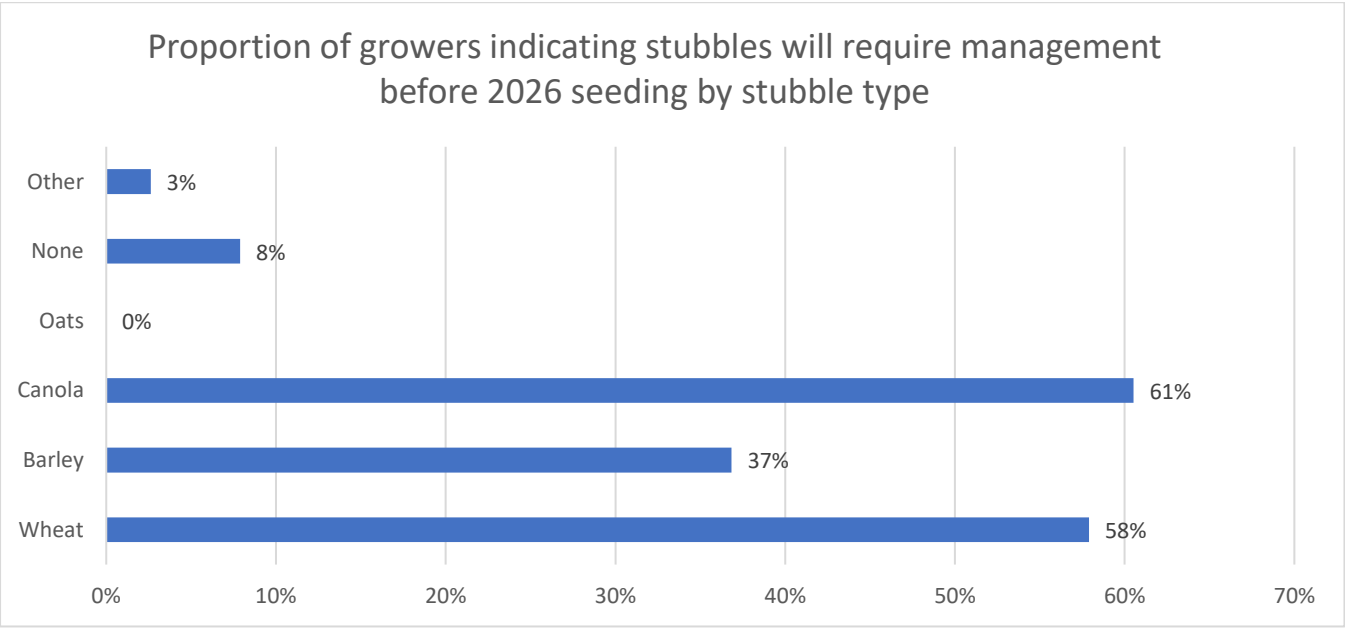


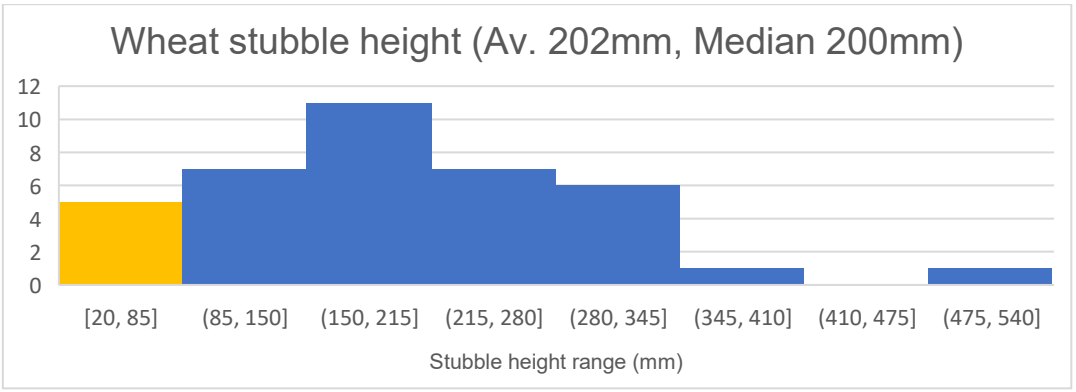
Figure 3. Crop stubbles growers expected to manage before 2026 seeding. Multiple responses were permitted.

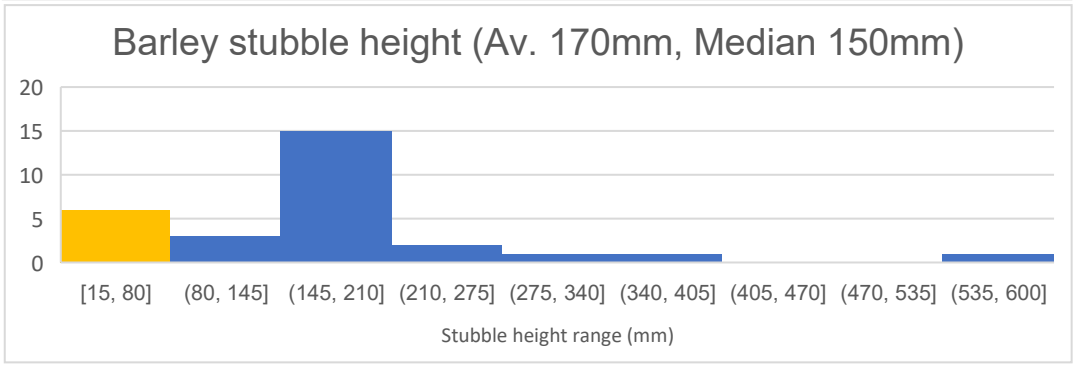
Canola and wheat were the main sources of concern, nominated by 23 and 22 growers respectively. Barley was selected by 14 growers, while four respondents expected no crop stubble to require management.

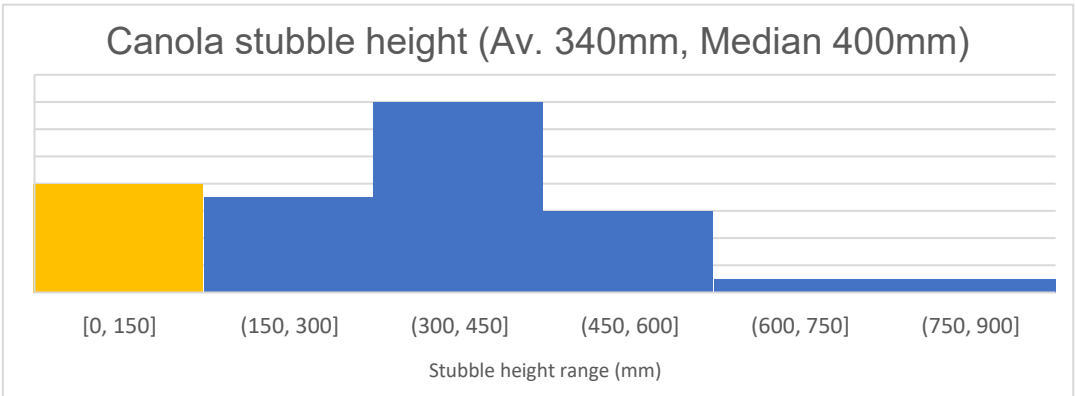
Average crop yields for 2025	Average yield for 2025 (t/ha)	Responses	Approximate median stubble height (mm)
Wheat	3.7	37	200
Barley	3.9	28	150
Canola	2.0	32	400
Oats	3.2	5	n/a

Table 1. Reported crop yields and approximate median stubble heights.

Average reported yields were 3.68 t/ha for wheat, 3.89 t/ha for barley and 2.00 t/ha for canola. Median stubble height was highest for canola at around 400mm, compared with 200mm for wheat and 150mm for barley.







The very low stubble heights highlighted in yellow on the frequency histograms for wheat, barley and canola are considered likely to reflect a misunderstanding of the survey question, with respondents potentially reporting stubble height following post-harvest residue management rather than the standing stubble height immediately after harvest.

Management practices

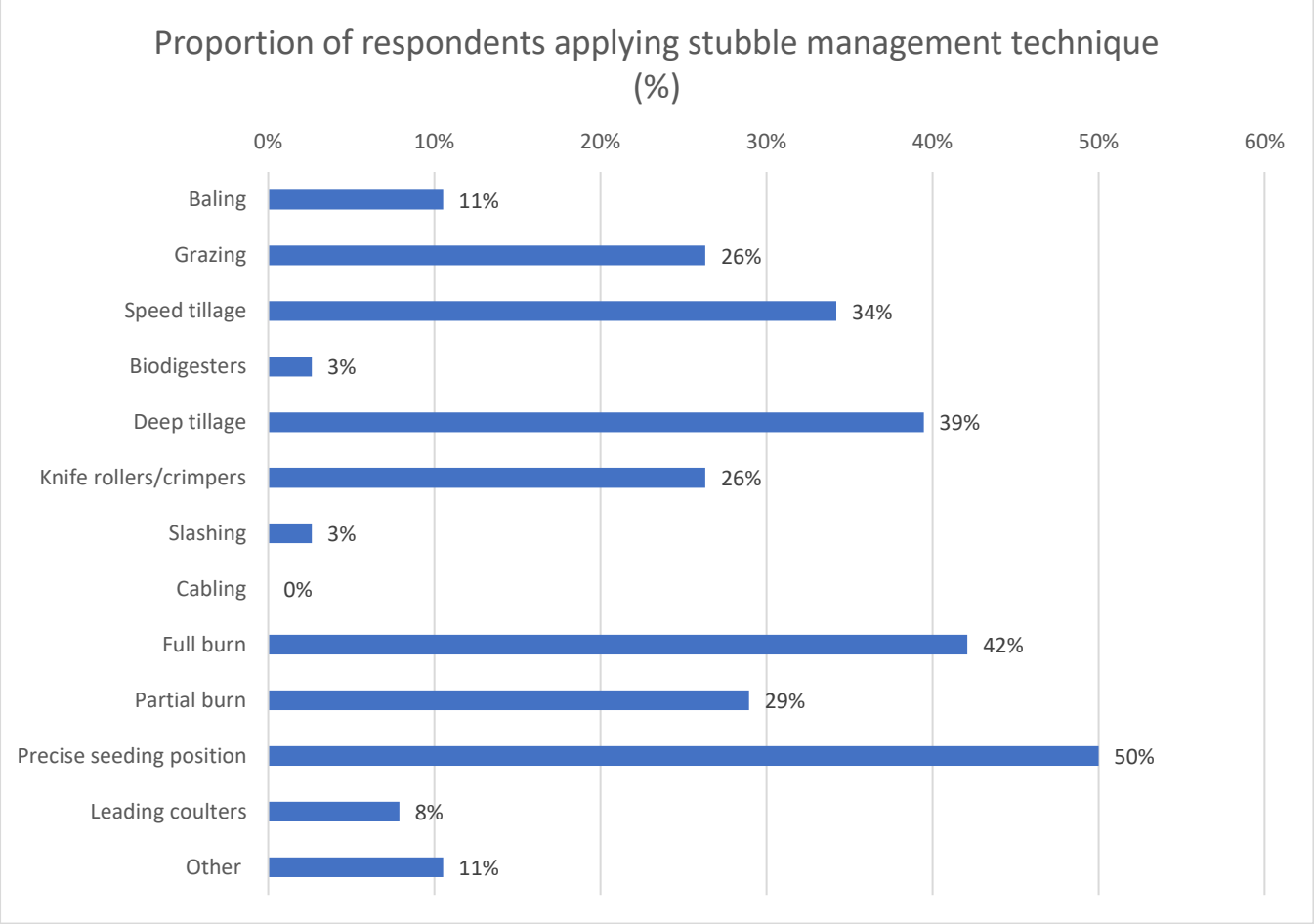


Figure 4. Stubble management practices used or planned. Multiple responses were permitted.

The most common response was precise tine positioning, used or planned by 19 growers.

Burning remained prominent, with 16 respondents nominating full burning and 11 partial burning.

Mechanical options were also widely represented: deep tillage was selected by 15 growers, speed tillage discs by 13, and rolling or crimping by 10.

Grazing was nominated by 10 growers.

The "Other" category responses included chains, angled seeding, disc seeder, full tillage.

The results suggest that growers generally rely on combinations of practices rather than a single treatment.

Seeding-system configuration, targeted cultivation, burning and residue-rolling tools are being integrated according to crop type, residue load and paddock constraints.

Weeds, disease and testing

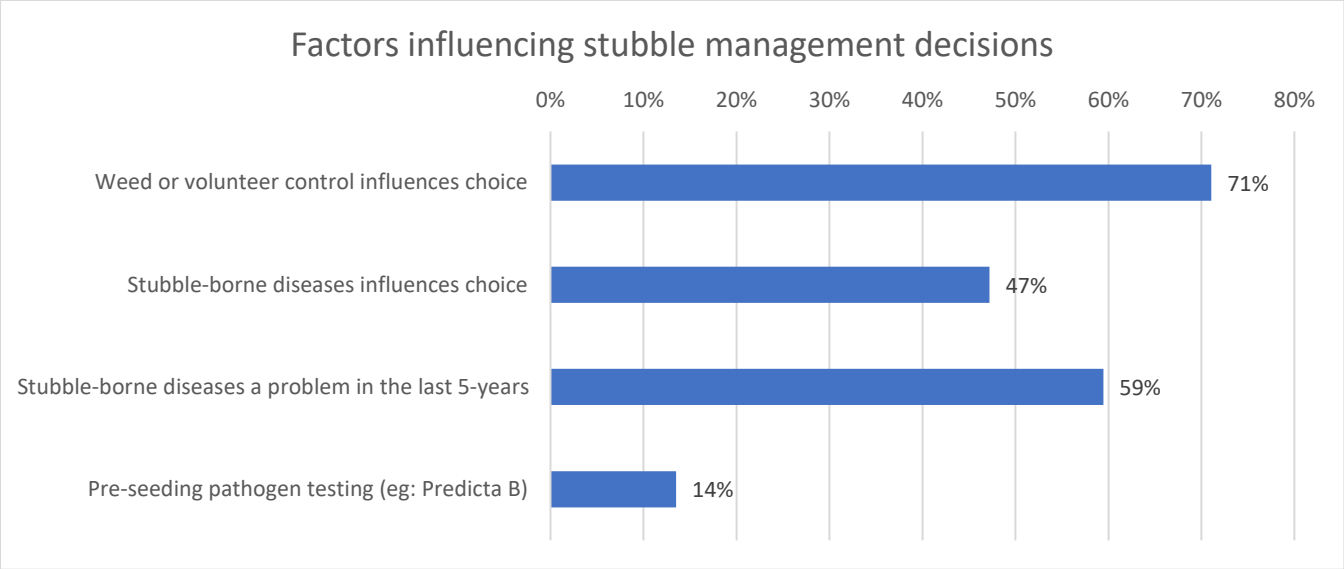


Figure 5. Proportion of respondents answering yes to weed, disease and testing questions.

Weed and volunteer control had the strongest influence on tool choice, affecting 27 of 38 respondents (71%).

Stubble-borne disease had been experienced by 22 of 37 respondents (59%), although only 17 of 36 (47%) said disease influenced their choice of stubble management tool.

Pre-seeding soil-borne pathogen testing was uncommon, reported by five of 37 respondents (14%).

Seeding systems

Seeding bar Make	Count	Proportion of respondents
Ausplow DBS	21	55%
Equaliser	7	18%
Boss disc	2	5%
Morris	4	11%
John Deere	1	3%
K-Hart disc	1	3%
Bourgault	2	5%

Table 2. Main seeding bar types reported by respondents.

Ausplow DBS bars dominated the sample, accounting for 21 of 38 respondents (55%), followed by Equaliser bars at 18%.

The median operating width was 18m and the median cereal row spacing was 300 mm.

This reinforces the importance of residue-management options that are compatible with wide seeding bars and relatively broad tine spacings.

Key observations

- Heavy 2025 residue was considered a significant seeding risk by a majority of respondents.
- Canola and wheat stubbles were the main management priorities.
- Growers were planning to employ a diverse mix of practices, with precise tine positioning, burning, deep tillage and speed discs most common.
- Weed control was a stronger influence on tool selection than disease, despite many growers reporting recent stubble-borne disease.
- Low adoption of pre-seeding pathogen testing may represent an opportunity for improved diagnosis and more targeted management.

The survey represents a relatively small, self-selected sample and should not be considered representative of all growers within the two GRDC port zones.

The results do provide a useful direction for the equipment review and confirm strong interest in mechanical options that can reduce residue loads while retaining flexibility to manage weeds, disease and seeding-system constraints.

Appendix A: Survey as distributed