

CANTERBURY REGIONAL COUNCIL

Kaunihera Taiao ki Waitaha

Winter forage crop grazing and wet weather management

GUIDELINES FOR FEP AUDITORS



Introduction

Winter grazing management presents several environmental and animal welfare risks that need to be understood, planned for and mitigated against.

Winter is also a demanding time for farmers. Being properly prepared and having a plan that all staff are aware of can reduce stress.

Extreme weather events should be expected. Mud, cold, heavy, persistent rain or snow is not an 'if' but a 'when'. Being unprepared can turn a difficult time into a disaster. Each farm is different, and no single set of rules will prepare all farms for winter.

Winter grazing is in general an activity with moderate or high environmental risk. The practice poses risks to both water quality and soil health as well as risks to animal welfare. Risks to water quality arise from nitrogen, phosphorous, sediment and faecal material contamination. Without exception winter forage grazing needs careful management to minimise those risks.

Given the nature of the risks, minimising one risk may compromise the ability to minimise another risk – this calls for good judgement on a case by case basis and careful planning. It needs to be kept in mind that in some cases environmental risk mitigation may not resolve welfare risks and in some cases may compromise welfare.

Winter grazing, particularly the grazing of winter forage crops, is one activity that the FEP Auditor must assess the impacts of as part of the FEP audit process. This guide is therefore intended to help FEP Auditors assess the level of confidence they have, in farmers ability to identify and plan for the various risks associated with this activity and to put in place a plan and mitigations to help deal with these risks.

How to use this guidance

This guidance has been developed to provide greater clarity and direction for FEP auditors when auditing the practice of winter grazing with sheep, cattle or deer. In particular, the focus of the guidance is on the grazing of winter forage crops. Notwithstanding this, the approach outlined in the document applies equally to other forms of intensive winter grazing such as the grazing of winter fodder crops.

While not a specific objective or target area within the FEP framework, winter grazing should be considered as an activity as part of the evaluation of other target areas. It is important to keep in mind that this guidance is just that – guidance. The specific practices, mitigations etc. mentioned in this document are not intended to be an exclusive list of acceptable practices or mitigations, the focus must remain on achieving the outcomes sought. How those outcomes – for example management, mitigation, and avoidance of risks to the environment – are met will be specific to the farm itself.

Specific Auditor guidance is provided in Tables 1 and 2 for each of the four stages of winter management, these being;

- Paddock selection: Winter / early spring
- Block set-up: Early summer / pre-grazing
- Crop grazing: April to August; and
- Post grazing management: August / October and beyond

Auditors are expected to take account of, and audit to the standards set in Tables 1 and 2.

A summary of industry guidance, for each of the four stages of winter grazing management, is provided in Appendix 1.

Specific reference to winter grazing and wet weather management good management practice can be found on the websites of Beef+LambNZ, Foundation for Arable Research, DairyNZ and DeerNZ. An overview of industry policy and good management practice guidance can also be found in the document; 'Intensive Winter Grazing – Pan Sector Policy Guidelines.'²

²Intensive Winter Grazing – Pan Sector Policy Document – November 2019

Audit scope

Winter grazing is an activity which may occur both on-farm and off-farm. Auditing those activities undertaken on-farm are within the Auditor's scope. Auditing activities undertaken off-farm are out of scope unless specifically referred to within the Farm Environment Plan. Notwithstanding this, where some or all stock are winter grazed off farm, it is expected that there is a written agreement between the parties setting out the responsibilities/liabilities of the stock owner and grazier. There is an expectation that stock are grazed lawfully on properties that have a land use consent or meet permitted activity rules. While not within audit scope the auditor should take the opportunity to remind the landowner of their responsibilities for stock grazed off-farm.

Timing of audits

The majority of FEP audits occur over the period October through to April. For properties that have a large area set aside for winter grazing, and/or where winter grazing is assessed as a high environmental risk activity, consideration should be given to auditing these properties during the winter months. Alternatively, a split audit could be considered. Farmers are required to have their audits completed within prescribed timeframes. Where moving to a winter audit means these timeframes can't be met, permission must be sought from Environment Canterbury.



Photo credit: Dairy NZ

Table 1: FEP Auditor Guidance relating to Nutrient Management – Target 2 – Winter forage grazing³

Topic area	Expectations of auditors	Example auditing questions	Target LOC Assessment Reasons for:	Typical evidence expected (Pre-grazing season audits) ⁴	Typical evidence expected (Grazing season audits)
Paddock selection	<p>The auditor should be seeking to assure themselves that the farmer has identified and understands the environmental risks, together with the risks to mahinga kai values, associated with winter grazing of the selected blocks.</p> <p>Evaluation of risks is essential to deciding on appropriate paddock selection and mitigation actions for winter grazing management</p> <p>There are at least eight critical environmental and management risk factors that need to be considered in order to determine whether the farmer is applying the appropriate level of mitigation: These include:</p> <ul style="list-style-type: none"> • Soil type: Heavy (poor draining, deep silty or clay soils) or Lighter soils, (freely drained, stony, shallow, silty or sandy), and how wet it is likely to get during winter months. • Waterways: Including streams, rivers, wetland and open drains. • Sub-surface drainage: Including mole and tile drainage. • Critical source areas: The CSA is that area where runoff water must flow (i.e. the gully in the paddock before discharging out of the paddock or into waterways.) • Slope: Angle of slope and length of slope increases the velocity and volume of water flow respectively. • Stock class: In general, heavier stock present greater risk. • Forage crops: The use of forage crops which are grazed in-situ greatly increase the environmental risk with potentially much higher nitrogen and sediment losses than under pasture. Where good management practice is not employed, the use of forage crops can increase the environmental risk of winter stock management. • Drinking water protection zones: While the winter grazing of forage crops by stock is not specifically excluded in designated drinking water zones, specific consent conditions may apply. <p><i>It is very important to understand that these risk factors are cumulative. This in turn strongly influences the scale of the necessary mitigations required to minimise environmental (and welfare) risks.</i></p> <p>It is expected that the auditor will have considered all of these risk factors as part of their LOC evaluation for this practice.</p>	profile, presence of waterways etc.)”	Critical source areas in winter forage block/s have been clearly identified	<p>Map with critical source areas and waterways clearly defined. (Included within or separate to the FEP)</p> <p>Discussion + Field assessment confirming critical source areas are correctly identified.</p> <p>Photos from previous season grazing + field inspection of last year's block</p>	Discussion + Field assessment + Photos taken on the day
			Winter forage crops are located in areas of low risk from flooding, contaminant loss and land damage.	<p>Discussion + Field assessment + Photos taken on the day</p> <p>Documented winter grazing plan which includes paddock selection – risk assessment (Included within or separate to the FEP)</p>	Discussion + Field assessment + Photos taken on the day

³**Nutrients Management - Target 2** - Phosphorus and sediment losses from farming activities are minimised. (Note 1: This target specifically relates to minimising phosphorous and sediment losses from farming activities. It doesn't relate to minimising nitrogen losses and or minimising soil impacts.) (Note 2: Other farming activities should also be assessed as part of the level of confidence assessment for this target.)

⁴Pre-grazing season assessments – should include assessment of previous grazing season blocks as indicator of practices undertaken.

Topic area	Expectations of auditors	Example auditing questions	Target LOC Assessment Reasons for:	Typical evidence expected (Pre-grazing season audits) ⁴	Typical evidence expected (Grazing season audits)
Block set-up – mitigation measures	<p>The auditor should be seeking to assure themselves that the farmer has put in place ‘appropriate’ mitigation measures to manage the environmental risks, and the risks to mahinga kai values, associated with winter grazing of the selected blocks.</p> <p>Areas of consideration should include, but not be limited to:</p> <ul style="list-style-type: none"> The adequacy of buffer margins along waterways and around critical source areas: Note: Industry guidance on buffer width is variable. As a minimum, farmers must comply with any regional or national rules relating to buffer widths. Note: The NPS-FM⁵ requires that the crop be set back more than five metres from a waterway. On the question of ‘appropriate’ width of buffer strip, FEP Auditors must make the call on a case by case basis based on their assessment of the location and the risk posed to water quality and mahinga kai values from winter grazing. The management of critical source areas (CSAs)⁶ Paddock set-up including the location of water troughs and supplementary feed placement Paddock entry and exit points. Cultivation methods and direction of cultivation⁷ Grazing plan – (e.g. top to bottom etc) Presence of off-site mitigation measures – (e.g. sediment dams in the gullies) Presence of run-off blocks Wet weather management provisions <p>It is expected that the auditor will field inspect sufficient blocks/locations to provide him/herself with the confidence that the environmental risks, and the risks to mahinga kai values, have been adequately identified and that all necessary mitigation measures have been put in place.</p> <p>Note: It is expected that the auditor will record within their audit report the total area of winter feed crop and the names of the blocks which they been field inspected.</p>	<p>“Given these risks, what mitigation measures are you planning or have in place to minimise these risks?”</p> <p>“Can you talk me through the risks that you have identified on the different block/s and describe to me how you plan to manage these risks.”</p>	<p>Buffer strips of appropriate width are left around all critical source areas.</p> <p>Adequate vegetative strips that does not include forage crop species are maintained between grazable areas and any waterbodies.</p>	<p>Discussion + Field assessment + Photos taken on the day</p> <p>Photos from previous season grazing + field inspection of last year’s block for indication of adequacy of buffer strips</p>	<p>Discussion + Field assessment + Photos taken on the day</p> <p>From field assessment – clear indication that buffers strips around waterways and critical source areas are of sufficient width to mitigate any runoff impacts.</p>
			<p>Provision made for stock exclusion, with appropriate margins from waterways within the block/s.⁸</p>	<p>Discussion + Field assessment + Photos taken on the day</p> <p>Photos from previous season grazing + field inspection of last year’s block for indication of adequacy of buffer strips</p> <p>Discussions with staff who were involved with last seasons’ winter grazing programme</p>	<p>Discussion + Field assessment + Photos taken on the day</p>

⁵National Policy Statement for Freshwater Management (2020) – Ministry for Environment – Full details of the new NPS_FM requirements were not known at the time of completion of the guidance. The guidance will be updated once full details around the NPS_FM requirements are known.

⁶Critical Source Areas (CSA’s) (connected to receiving water bodies) are not to be mechanically cultivated. If the CSA is cropped, it should only be grazed when the area is dry. (Intensive Winter Grazing, Pan Sector Policy Document, 2019)

⁷No mechanical cultivation above 20 degrees slope when establishing a fodder crop, (Intensive Winter Grazing, Pan Sector Policy Document, 2019)

⁸Buffer widths: Appropriateness should be assessed on a case by case basis. Industry guidance suggests that a minimum 5m buffer should be left with buffer width increasing beyond the minimum with increasing slope.

Topic area	Expectations of auditors	Example auditing questions	Target LOC Assessment Reasons for:	Typical evidence expected (Pre-grazing season audits) ⁴	Typical evidence expected (Grazing season audits)
Crop grazing	<p>For audits conducted prior to the winter grazing season, the FEP Auditor should be seeking to assure themselves that:</p> <ul style="list-style-type: none"> The farmer has adequately identified all of the environmental risks and risks to mahinga kai values and has appropriate plans in place to manage these risks when stock are on the block/s. <p>Areas of consideration should include, but not be limited to those factors considered under the Block Set-up section above</p> <ul style="list-style-type: none"> When will stock be on the block Paddock set-up including the location of water troughs and supplementary feed placement Paddock entry and exit points. Grazing plan – (e.g. top to bottom etc) Presence of run-off blocks Wet weather management provisions. <p>For audits conducted during the winter grazing period the auditor should be seeking to assure themselves that the farmer has:</p> <ul style="list-style-type: none"> Not only put in place appropriate mitigation measures to manage the environmental risks, and the risks to mahinga kai values, associated with winter grazing of the selected blocks, but also Are adequately managing these risks on a day to day basis. <p>Note: Measures taken to address potential animal welfare issues may impact on a farmer's decision-making process. While not the FEP auditor's responsibility to assess the legitimacy of these measures, the auditor will need to understand the potential environmental impacts.</p>	<p>“There is a risk of xxxx contaminant loss from this block, you have put in place xxx mitigations to manage these risks. Talk me through now your grazing plan for the block”</p> <p>“What are your plans if you get a wetter than average winter”</p> <p>“I would like to take a look at blocks xxxx and yyyy. Can you tell me where you are at with the grazing of these blocks at this time.”</p> <p>“Have you run into any issues with the grazing of these blocks and how have you overcome the issues.”</p>	Block/s are strategically grazed with grazing towards waterways.	Discussion + Field assessment + Photos taken on the day	Discussion + Field assessment + Photos taken on the day
			Strips next to waterways are grazed last and sloping areas are directionally grazed to reduce overland flow.	Photos from previous season grazing + field inspection of last year's block for indication of adequacy of buffer strips	From field assessment – clear indication that buffers strips around waterways and critical source areas are of sufficient width to mitigate any runoff impacts.
			Hay/silage and straw are placed away from waterways and critical source areas.	Documented grazing management plan for staff	Discussion + Field assessment + Photos taken on the day
			Areas in paddock identified as critical source areas are grazed last, (and only if required), and when conditions are dry.	Photos from previous season grazing + field inspection of last year's block for indication of grazing practices undertaken	Discussion + Field assessment + Photos taken on the day
			Wet weather management provisions are in place to minimise adverse environmental impacts during extended wet periods.	Documented grazing management plan for staff (Included within or separate to FEP)	Discussion + Field assessment + Photos taken on the day
				Discussion (including discussions with staff involved with last season's grazing management on wet weather plans + field assessment of block set up + photos taken on the day)	
				Photos from previous season grazing + field inspection of last year's block for indication of grazing practices undertaken	

Where staff are responsible for day to day management of the grazing, there should be clear instructions for them.

This should be in the form of a grazing management plan or similar and could be included as part an overall winter grazing management plan.

⁴Animal welfare should consider shelter from the prevailing wind. Cows need at least eight hours/day lying time to ensure they remain healthy and comfortable. On a winter break fed paddock, cows need access to enough dry area to lie down and meet lying time requirements. CSAs tend to get wet and muddy, so they are not only an environmental risk but an animal welfare risk as well.

Topic area	Expectations of auditors	Example auditing questions	Target LOC Assessment Reasons for:	Typical evidence expected (Pre-grazing season audits) ⁴	Typical evidence expected (Grazing season audits)
Post grazing management¹¹	<p>The auditor should be seeking to assure themselves that the farmers post forage crop grazing plans are adequate to minimise any adverse environmental impacts.</p> <p>On lighter soils these plans may include the sowing of a cover crop to soak up excess nitrogen within the soil profile.</p> <p>On heavier soils the expectations are that fallow periods would be kept to a minimum.</p> <p>In situations where other crops (not cover crop) are grown post the winter forage crop, soil nutrient status should be determined as a guide to crop fertiliser requirements.</p>	<p>“How are you planning to manage this block/s post grazing. What are you planning to do and what are the reasons for this approach?”</p>	<p>Covercrop grown which was sown post forage crop to soak up surplus nitrogen in soil profile.¹²</p> <p>Nutrient status determined post forage crop grazing as part of follow up crop establishment and before any fertiliser is applied.</p>	<p>Discussions supported by other evidence – i.e. Overseer budget from last season, soil nitrogen test results, crop calculators</p>	<p>Discussion + Field assessment + Photos taken on the day</p>

¹¹Note: This may be better covered under Nutrient management – Targets 1 and 1a – as the main benefit of catch crops is that they soak up surplus nitrogen in the profile

¹²Note: Sowing crops is an option for some situations but not all situations and depends on soil condition and rainfall.

Table 2: FEP Auditor Guidance relating to Soils Management – Target 2 – Winter forage grazing¹³

Topic area	Expectations of auditors		Target LOC Assessment Reasons for:	Typical evidence expected (Pre-grazing season audits) ¹⁴	Typical evidence expected (Grazing season audits)
Paddock grazing	<p>The auditor should be seeking to assure themselves that the farmer has a good appreciation of the potential for damage to soil structure and soil compaction from winter forage crop grazing activities. The auditor should also be seeking to assure themselves that the farmer has plans in place to manage the actual or potential risk.</p> <p>In order to access this target, it is expected that the auditor will, in addition to having discussions with the farmer, field inspect a sample of current season and last season winter forage blocks.</p> <p>A particular factor for consideration will be whether a paddock or block has been continuously cropped year after year, and the impacts that this practice might be having on soil structure.</p>	<p>“How much of an issue is soil compaction on these soils?” “What are the factors that bring you to that conclusion?”</p> <p>“Can you tell me how you minimise the amount of soil compaction that occurs”</p> <p>“What do you do if you get a wet June and July. How do you minimise soil impacts?”</p>	<p>Provisions are in place to minimise soil damage during extended wet weather periods. (See additional comments for details)</p> <p>Back fencing used along with portable water troughs to reduce movement of animals and damage to soils.</p>	<p>Document wet weather management plan</p> <p>Discussions supported by clear evidence of other mitigation measures (e.g. designated run-off paddocks, presence of wintering pad etc)</p>	<p>Discussion + Field assessment + Photos taken on the day</p>

¹³**Soils Management - Target 2** - Farming practices are implemented that optimise infiltration of water into the soil profile and minimise run-off of water, sediment loss and erosion. It is expected that the winter grazing impacts on soil would be considered under this target, (rather than under Nutrients – target 2), in situations where there are no links to waterbodies. (Note: There are a number of other farming practices that should also be assessed under this target when determining the level of confidence applied)

¹⁴Pre-grazing season assessments – should include assessment of previous grazing season blocks as indicator of practices undertaken.

Appendix 1: Industry GMPs for winter forage grazing¹⁵

Paddock Selection

General

Appropriate paddock selection for winter cropping can be an effective way of minimising the risk of overland flow, sediment and P loss:

Often paddocks are selected for winter grazing when they need pasture renewal; however, there are a range of other factors to consider, that ultimately affect risk of run-off and contaminant loss – slope, soil type, stock class, drainage and proximity to water sources. Poor performing paddocks with high risk areas can always be renovated grass-to-grass, rather than through a cropping cycle.

The presence of slope, critical source areas and waterways increases the risk of sediment, E.coli and phosphorus loss to waterways. Careful management of these areas has been shown to significantly reduce losses.

Critical source areas

Critical Source Areas are parts of the paddock that can channel overland flow directly to waterways – transporting soil, E. coli and phosphorus to waterways (including drains). (e.g. gullies, swales, very wet areas, spring heads, waterway crossings, stock camps and vehicle access routes).

Runoff from CSAs carries sediment and nutrients to waterways. Managing these areas well is a crucial way to reduce sediment and nutrient loss from your farm.

When selecting future winter forage crops, if possible, avoid paddocks with large CSAs that will be difficult to manage. Paddocks with many CSAs may be impractical or unsuitable for wintering cropping as they create too much environmental risk or require significant time and effort to graze effectively in order to minimise run-off.

Sloping land

While flat paddocks are preferable for winter cropping, if steeper paddocks are being selected think carefully about:

1. Establishment methods (e.g. direct drilling versus conventional cultivation etc)
2. How they will be grazed (e.g. strip grazing or cut and carry etc)
3. What animals will be grazing them

For example, if a paddock is too steep to get a tractor on, it might be too steep for wintering cattle.

If sloping land is the only option available, it is important to identify critical source areas such as gullies that connect to waterways, and ideally these areas would be fenced off and left uncultivated and ungrazed.¹⁶

Waterways

Select paddocks that are a greater distance from waterways to increase the chance of contaminants being filtered before reaching the water.

Make sure winter feed crop paddocks are well away or buffered from waterways and wet areas of a paddock, to reduce the risk of topsoil, phosphorus (P) and pathogens reaching water bodies.

¹⁵Industry GMPs – all of these GMPs are taken directly from industry websites and/or industry material – the GMPs listed have not been modified or altered in anyway.

¹⁶**Note:** While industry guidance does not set a standard for the exclusion of stock from critical source areas there are clear expectations that stock will be excluded from these areas particularly in high risk situations.

Soils and aspect

If you have light or stony soils, seek advice on using catch crops to capture nutrients. Consider only grazing lighter classes of stock on heavy soils during winter.

Heavy soils are at greater risk of pugging, compaction and structural damage. If your soils are prone to pugging, consider leaving areas of the paddock in grass for animals to rest on.

Heavy soils often have a greater risk of structural damage and increased overland flow due to winter grazing. However, lighter soils may pose a risk of increased nitrogen (N) and phosphorus (P) leaching.¹⁷

In general, flat, well-drained paddocks with deep soil profiles will have less risk of both overland flow and N and P leaching.

In locations where N leaching reductions are sought, try¹⁸ to ensure crop paddocks are not located on light soil types that carry an increased risk of N leaching

In locations where P and sediment runoff are of greatest concern, try to ensure that crops are not located on poorly-drained soils and/or sloping land close to waterways.

Where possible, plant crops in areas with resilient soil types that are less prone to pugging damage. These soils will also be more resilient to winter grazing and may be able to be re-grassed earlier.¹⁹

Consider the aspect – is the paddock north or south facing? South facing paddocks may be slower to dry out and therefore more prone to pugging.

Subsurface drainage

Avoiding paddocks that have extensive networks of mole and/or pipe drainage systems will minimise the risk of rapid contaminant movement to waterways directly through the artificial drainage system.²⁰

Catchment considerations

It is also important to consider your catchment-specific water quality issues when selecting paddocks for winter feed crops.

- In catchments where nitrogen is a problem, avoid growing crops on lighter soils where there can be increased risk of N-losses through leaching.
- In catchments where phosphorus and sediment loss are the main issue, focus on the proximity to waterways.

Stock type

The grazing of lighter stock on steeper land is preferable to grazing heavier stock (; the heavier the individual animal, the greater the risk of soil damage and pugging. [Note: Deer are heavier than sheep but lighter than cattle. They can be grazed on steep slopes without the same level of soil damage as cattle due to stock size and grazing behaviour.]

What class of stock will you be grazing in that paddock? Consider how managing breeding ewes, in-calf dairy cows or weaner stags might impact on high risk paddocks. Deer are lighter than cattle and cause less soil compaction or pugging under the same soil and moisture conditions

Note: Deer feeding habits differ from sheep and cows – deer are browsers and grazers. Deer will move away from the feeding face/crop once they have fed sufficiently (allowing the less dominant animals to move in and feed).

¹⁷**Note:** While not included in this industry guidance, although P is not as well known for leaching, it does occur on lighter soils. This must also be considered as part of any overall risk evaluation.

¹⁸**Note:** Both this and the next GMP contain the word, 'try.' The inference is that if you can't comply with the GMP then it is OK. The basis should still be identifying the risk and managing this risk.

If the risk can't be adequately managed then the crop should not be grown in that paddock.

¹⁹**Note:** Planting crops on 'more resilient' soil types may reduce the pugging risk but at the same time it may increase the nitrogen leaching risk. This should be considered as part of the overall consideration of block suitability for winter grazing.

²⁰**Note:** Industry guidance doesn't not give a descriptor for 'extensive network'. For practical purposes this could be taken as >50% of the paddock.

Block set-up

Management of identified Critical Source Areas

Leave an ungrazed buffer zone around Critical Source Areas (CSAs). CSAs should not be sprayed, cultivated, sown in crop or grazed. They should be fenced off during grazing to reduce the risk of contaminating waterways

Leaving CSAs uncultivated and not planted in crop will make it easier to fence them off and reduce the amount of soil treading damage by stock. The pasture will also provide an additional filter for any runoff that occurs

Fence off CSAs to provide as much of a buffer area as possible. This type of buffer strip should be at least 10 m wide and as long as possible (will depend on landscape) *[Note: - Prescribed buffer widths may vary depending on the source of the guidance and whether or not there are regional rules on the topic]*

The faster the water is flowing into a buffer zone (i.e. the greater the slope of the paddock), the wider the buffer zone will need to be to provide time for effective filtering and infiltration

Exclude stock from waterways. Create an ungrazed buffer zone between the livestock and the waterway. About 3-5 metres is a good starting point, but this should increase with slope and instability of soil.

If you must grow winter feed crop in a paddock with a waterway, ensure there is at least a 5-metre uncropped buffer next to that waterway; the size of this buffer should increase with slope. *[Note: - Prescribed buffer widths may vary depending on the source of the guidance and whether or not there are regional rules on the topic]*

Grazing management setup

Create a grazing management plan that will reduce environmental losses by following strategic grazing principles and good management.

Work out a grazing strategy before putting up fences, thinking about the location of stock water sources. i.e. do you need portable water troughs?

Place troughs and supplementary feed in a dry part of the paddock well away from any waterways or CSAs. Shifting moveable feeders at the same time that breaks are shifted helps reduce pugging around the feeders. Reduce soil damage by placing water troughs and supplementary feed away from wet areas.

Set up baleage in paddocks ahead of winter. Consider machinery access for placing baleage during grazing.

To help ensure a healthy crop, consider the paddock's cropping history and whether it is prone to weeds, pests or disease, particularly those that could accumulate.

Cultivation and crop sowing

When sowing paddocks on sloping ground, try to have the crop rows going across the hill rather than top to bottom. These rows will act as mini buffers, catching soil when it travels down the hill.

Note: For deer, crop type can also make a difference. Deer will preferentially browse kale leaf and return to the stem later. The plant also has a fibrous root system that remains in the ground and lowers the risk of pugging or soil loss. While kale produces less dry matter per hectare than fodder beet, it will also have a reduced risk of soil damage and resulting contaminant loss to waterways.

Crop Grazing

Strategic grazing

Damage to soils from poor grazing management or winter crops will impact on the future productivity of that paddock.

Graze paddocks strategically. On a sloping paddock, fence across the slope and start grazing at the top of the slope. That way, the standing crop acts as a filter. Or, if there is a waterway in the paddock, start grazing at the far end of the paddock.

For cows/cattle make breaks “long and narrow” – research shows that the crop will be utilised more efficiently by cattle. *[Note: This is not recognised good practice for deer]*

For cows/cattle back-fence as much as possible – this will help minimise soil pugging and compaction damage, and thus reduce the volumes of surface runoff generated. Because deer are browsers rather than grazers, back fencing is not always used. Current good farming practice includes the use of a run-off paddock and/or placing supplemental feed away from the feeding break. This results in deer spending less time concentrated at the feeding face so there is less soil damage or concentration of contaminants.

For deer, the break length and back fencing will be dependent on the properties of the paddock and crop, animal welfare and weather.

Deer farmers observe that once deer have had their fill on the opening of a new break, the strongly social animals drift to the top of any paddock or sit down in a sheltered aspect and rest and ruminate for long periods. It is deer farmers’ experience that deer on crop maintain a different break grazing and a resting pattern than cattle and will sit out inclement conditions.

Ensure cows begin grazing the least risky parts of the paddock first to minimise the period of runoff risk. This usually means that cows should enter at the top of paddock catchments/gullies and graze their way downhill.

The buffer should ideally be left uncultivated and ungrazed to operate effectively. If this is not possible, graze the buffer last in fine weather.

Where practical, begin grazing paddocks at the point furthest from the waterway to keep the crop as a buffer area between animals and waterways or critical source areas.

The CSA should be the last break grazed in the paddock (if it needs to be grazed at all). Changing the break layouts to graze into the CSA from each side will allow this to happen

On-off graze any crop left in the CSA, ideally at a time when pugging risk is low.

Temporary electric fencing is used to break feed crops or pasture. Deer require a 4 or 5 wire system at 1.4 – 1.5m heights. Electric fencing can also be used effectively to protect and isolate sensitive areas within a paddock such as springs, CSA’s, or to direct stock away from exposed parts of a grazing paddock.

Note: Where possible, leave CSA’s ungrazed. However, if this is not possible, (because of their physical location and grazing logistics), graze these areas during periods when the weather is settled, and soil moisture conditions are such that the pugging risk is low. Ideally this would occur as late as possible in the season. Stock should only graze these areas for a few hours and then be moved off to minimise potential soil damage.

Grazing and stock condition

Look after your stock. Provide adequate feed, shelter and clean fresh drinking water. Doing this will limit stock movement and help reduce damage to crop and soil.

Grazing and feeding out

Reduce the amount of time heavy machinery is used on a paddock once it is wet to reduce soil damage. If baleage is being used, place in the paddock before grazing if possible.

Wet weather management

Ensure staff responsible for managing grazing are up-skilled with management strategies to react in wet conditions. Set up guidelines in a contract if staff from off-farm are managing grazing.

For cattle shift more than once a day with small breaks before soil begins pugging. Increase amount of supplement fed and feed out in less vulnerable areas. Back fence and use transportable water troughs and feeders to minimise hoof traffic on bare soils.

Deer breaks tend to be shifted every 4-7 days or longer rather than daily. This means that there is a less intensive grazing pattern with a generous amount of crop for the herd to spread out and feed.

Split the mob into multiple groups to reduce grazing density. Have a stand-off paddock or pad in very wet conditions.

Deer do not require the same feed transitions onto crop and are less at risk of acidosis. Soil damage at the feeding break may be mitigated by managing stand-off periods during inclement weather.

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