EverGraze Quickchecks

Pasture Monitoring Tools
EverGraze Quickchecks

Monitoring system for perennial pastures on farms across southern Australia

Maintaining quality persistent pastures is vital in livestock production systems, investment in pastures and grazing management systems can be expensive. Pasture can degrade very quickly without the correct management so it is essential that you monitor and assess pastures and apply the correct management techniques to maintain them.

These EverGraze Quickchecks will assist you to assess the productivity of your pasture and your grazing management system by giving you a method to measure and assess where your pastures are currently at for persistence and quality. It will provide you with information on what to measure when assessing your pastures and give you a practical template to use in the field when assessing pastures.

It is important to make an assessment of what quality and persistence your existing pasture is before making decisions on how to manage it. A combination of measurements will allow you to properly monitor if a new or old pasture is going to meet livestock requirements and remain sustainable in the long term and what management actions need to be taken to improve or maintain the pasture. Assessment of newly sown pastures is vital to measure the success of the sowing and the management to ensure success.

These EverGraze Quickchecks can also be used to monitor on farm trials of pasture species, grazing management techniques, land class fencing or other trials. Pasture persistence, composition and feed quality are important measures when conducting these types of experiments.

Decisions may be made to resow a pasture, implement a grazing strategy to increase perennial pastures in the system or control annual weeds.

EverGraze Quickchecks is a simple system that has been developed for producers to monitor soils, pastures and animals in a perennial pasture system. It is based on the Quickchecks system developed within the Land, Water and Wool project undertaken by Australian Wool Innovation and Land and Water Australia.

EverGraze Quickchecks has been customised to collect more detailed information on the composition and persistence of perennial pastures. The paddock monitoring includes sheep and beef cattle to allow for the different types of stock grazing on the Supporting Sites.

The principles used when customising the Quickchecks system to suit EverGraze are;

- Monitoring is able to be easily and quickly undertaken by the producers,
- Monitoring is able to be used consistently,
- Monitoring relates to important on-farm issues, ie pasture persistence, animal production, NRM issues,
- Equipment needed can be easily and cheaply obtained locally
- Recording is quick and easy
Monitoring plant density using fixed point grid
Measuring changes over time rather than averages for the paddocks

It is difficult and time-consuming to assess soil or pasture on large paddocks and have confidence that the values obtained are accurate. In a variable 50 ha paddock, several hundred assessments might be required to obtain an average with reasonable precision.

The alternative is to measure the CHANGE in pasture or soil parameters rather than trying to accurately measure paddock averages. To monitor change requires measurements at fewer sites in a paddock but they must ALWAYS be taken in EXACTLY the same position. This assessment system will provide an accurate indication of changes over time but a less accurate estimate of the average values for the paddock.

For perennial systems, changes in pasture and soil parameters over time are considered more important than the average values, management decisions and actions can be made based on the changes occurring in a pasture over time.

Monitoring changes in soils, pastures and animal production

EverGraze aims to increase profits by up to 50% while at the same time, improving key environmental characteristics at the site. The monitoring therefore covers soil characteristics, perennial pasture species, ground cover, green pasture present in summer and animal production over the year. Monitoring these key items should provide a good summary of the production and NRM outcomes on the Supporting Site.

List of Quickchecks avaliable

EverGraze Quickchecks 1: Setting up Fixed Point locations in paddocks

EverGraze Quickchecks 2: Soil assessment

EverGraze Quickchecks 3: Persistence of perennial species

EverGraze Quickchecks 4: Pasture conditions

% Ground cover, % Green pasture, % Legume, Feed On Offer

EverGraze Quickchecks 5; Paddock and livestock production

EverGraze Quickchecks 6; Paddock history and current observations

EverGraze Quickchecks 6; EverGraze Supporting Site Diary
EverGraze Quickchecks 1: Setting up Fixed Point locations in paddocks

What you will need?
• 1 m square weldmesh grid with 10 cm gaps
• Spray paint to mark the weldmesh
• Thirty six 2 cm square 15 cm long wooden pegs for each Supporting Site (purchase garden stakes and cut to the right length)
• Eighteen fibre glass electric fence posts or similar
• Hammer

Why do you need to setup Fixed Points?
To monitor changes in soils or pastures over time, it is essential that the measurements are undertaken at exactly the same position on each occasion (Fixed point). Otherwise, variation within the paddock can hide changes over time. Perennial plant density is a key measurement but varies widely across the paddock and changes can be picked up much sooner if the same spot is monitored compared with trying to assess persistence across the whole paddock.

It is important to make sure that when deciding where to put fixed points you take into account the landclasses on the farm and in the individual paddocks. You should try and have a minimum of 2 fixed points per land class. To read more about how to assess the land classes on your property refer too the EverGraze Farm Mapping Notes.

Making a Fixed Point grid
• The grid is made from a 1m square of mesh with 10 cm gaps and can be obtained from rural supply stores.
• The second “ring” of the grid is painted to mark the area to monitor basal counts.
• The smaller 30x30 cm quadrants are painted to mark areas to assess Feed On Offer, % Green and % Ground Cover.

Figure 1 Fixed Point grid used for all soil and pasture measurements

How many and where to place Fixed Points?
A number of Fixed Points need to be established in each paddock. The Fixed Points are used to locate the grid shown in Figure 1.

The Fixed Points should be located across the paddocks using the following guidelines;
• Roughly map the topography and soil types across the paddocks based on visual cues, farmer experience and any obvious variations in pasture species, drainage or previous history
• If the paddock has a consistent slope, then the Fixed Points can be located down the slope.
To obtain the best measurements a minimum of 2 Fixed Points on any one soil or land class is advised.

Nine Fixed Points allow different allocation to the soils or land classes in the paddock;

Fixed Points must be marked so that they can be easily located, both the general position of the Fixed Point in the paddock and then the exact location.

**Marking the general position of the Fixed Point**
The general position of the Fixed Points must be marked so that they can be easily located.

- **Sheep**: A marker (post) needs to be placed a constant distance from the Fixed Point to allow the site to be easily found in the paddock. Fibreglass electric fence posts work well with sheep as they are flexible and sheep can’t easily rub on them.

  Marker posts need to be 2-3m from the exact fixed point location so that if sheep (especially lambs) play around the posts they will not destroy the pasture in the fixed point.

- **Cattle are attracted to any posts or pegs in paddocks.** The wooden pegs need to be driven down to 1-2 cm above the ground so they don’t pull them out. Do not use posts to mark the position of the Fixed Points as these will attract the cattle. Also, they will chew, eat and destroy most markers. The best way to mark the location is to position each Fixed Point say 15m in from a fence post. Use paint to mark posts that have an adjacent Fixed Point. GPS readings at each Fixed Point can also help location.

**Exact Fixed Point location**

- Wooden pegs 10-15 cm long, 2 cm square are driven in diagonal corners of the grid, so that only 2-3 cm is above the soil surface.

  This way, they will not be an obstacle to stock or vehicles, and will not attract livestock (Stock often “play” around taller pegs or posts in a paddock and the trampling can destroy or modify the vegetation).

  Wooden pegs are used as they will rot away if lost. Do not use metal or fibre glass pegs as these can damage tyres and will remain for many years if lost or removed by stock.
EverGraze Quickchecks 2: Soil assessment

What you will need

- 10 cm soil sampler, available from DPI or CMA staff.
- 2 Strong plastic bags for soil samples.
- 2 smaller ziplock plastic bags for paddock labels.
- Postage bag to submit soil samples.

Why monitor soils?

It is important to know the chemical fertility of the paddocks to determine the need for nutrients or lime application, to understand the initial soil fertility and be able to match pasture species and likely animal productivity.

Chemical soil fertility

Soil tests are better to be taken over different landclasses, soil types and management areas. One paddock may vary considerably in its soil type or land class. Paddocks of similar land class can be grouped together and one soil test can be taken for each group. Likewise if there are several paddocks that have two land classes a test can be taken for each land class and shared over the different paddocks.

A soil test can be taken by following a fixed transect line across a paddock and taking a soil core every 5 or 10 metres so that a total of at least 30 soil cores are collected. Care should be taken to avoid gateways, stock camps, trees and manure parches as these can greatly affect the test results. After collecting the soil cores for one test they can be mixed together and 20 random cores can be selected to send to the soil test lab.

When selecting a transect line it is advisable to map the rough route you take across the paddock, you might do this by walking a straight line between fence posts. A bit of paint on the fence posts will remind you where the transect line was for future soil tests.

Example of soil transect lines
Standard soil tests include:


It is recommended that soil tests be sent to a NASA accredited lab, this ensures that the chemical analysis of the soil tests is done under an accredited process and allows the results to be directly compared with soil tests results from other NASA accredited labs. You can enquire with your local agronomist or soil test lab to find out if they meet this criteria.

Each soil test needs to be labelled with the Property details and paddock or landclass details as well as contact details of the person submitting the test.

**When assessed**

Soil tests are best conducted in Autumn or Spring when pasture is actively growing. Cold temperatures, waterlogging and dry soil profiles can all affect the results of a soil test. It is important that when soil testing on an annual or biannual basis the soil tests are taken at the same time of the year.
Optional soil assessments

Soil health;

Soil health assessment is a developing science based on the need for soils to have a high carbon content contained in soil organic matter, to maintain high populations of microscopic organisms such as bacteria, fungi, and protozoa. Soil health can be assessed by a range of laboratory tests, in paddock test kits and by observation of soil characteristics.

Soil health is currently being assessed with many different systems and there is no standard used across southern states.

If you are interested in assessing soil health, two options are suggested:-

- A simple in paddock soil health assessment system, based on the system used in Quickchecks is presented in Appendix 1. This is a system that provides a subjective assessment of soil health and can easily be undertaken by a producer with help from an agronomist or catchment officer.

- An alternative is a Soil Health Assessment Kit that has been developed at the Queensland University of Technology. The kit can be used to assess a range of soil health factors such as soil respiration, infiltration, bulk density, electrical conductivity, soil nitrate etc. This kit provides a more objective assessment of soil health but requires a reasonable level of technical skills and takes some time to complete.

- Full details of QLD University soil health kit can be obtained from; Prof Peter Grace (pr.grace@qut.edu.au) Queensland University of Technology, 2 George St, Brisbane, 4000.
EverGraze Quickchecks 3: Persistence of perennial species

**What you will need**
- Fixed Point grid (see EverGraze Quickchecks Section 1)
- Pointer such as wire pin, knitting needle, etc.
- Recording Sheet – Perennial Species (see back of this section)

**Why monitor perennial species?**
Monitoring the proportion of desirable perennials in a pasture provides an understanding of whether the grazing management matches the species, if the perennial species is matched to the soil and landscape, persistence of sown perennials and the overall health and vigour of the pasture.

It is essential to make sure in that the person monitoring the pastures can identify the perennial species of interest. Put the grid down and assess what species are present and distinguishing features of different species in the pasture.

Changes in density of perennial species are probably the most critical measurement of a perennial pasture. Therefore, density can be monitored by two methods to ensure that changes in perennials are accurately determined.

1. **Growing points of perennials**
Monitoring growing points in the base of the pasture is used to assess plant persistence and changes over time. Measurements are taken at the plant base to reduce the variation caused by grazing, seasonal conditions and stage of growth. This measurement is best suited to tussocky perennial grass pastures with a well defined crown or plant base, ie ryegrass, fescue etc.

Put the grid down and assess what species are present and distinguishing features of different species in the pasture. For the species of interest (sown species, native perennials), record the number of occasions that the species of interest is directly below one of the intersections within the inner grid.

The intersections on the weldmesh are considered as cross points. Count the number of occasions that a live plant growing point is directly under one of the 81 cross-points within the inner grid. **Do not count plants under the edge row of the grid.** The best way to do this is to use a stiff wire pin to determine what is directly below the cross-point. Do not use your finger or large nails, as these are likely to overestimate basal cover. On Recording Sheet 3 – Perennial Species, place a small circle around each cross point where a growing point is directly below.

Growing points are expressed as a percentage for each species. ie 5/81 equals 6.2%. Expect low values; a good perennial grass pasture may only have growing points measured this way of 5-20%.

2. **Monitoring frequency of occurrence of perennial species**
This is a quick method to assess presence / absence of perennial species of interest. This monitoring system works better with grasses like kikuyu where there are no obvious plant crowns. Each square in the grid (ie 100) is assessed to determine if a live piece of the perennial is attached to soil in the grid. If a leaf is attached in one grid but is pushed into a second grid by the frame it is only counted in the grid where the plant is growing. For this measure, expect high values with good perennial pastures getting scores of 70% or greater.

On Recording Sheet 3 – Perennial Species, colour in the squares where the species of interest occur. Again different colours can be used for different species.
**Tips for easier assessment:**

- For ease and accuracy, the weldmesh frame needs to be located close to the soil surface.
- If plants are more than 5 cm in height and the frame is flattening the pasture, this can be overcome by welding nuts on the corners and screwing a threaded bolt 5-10 cm long in each corner.
- Perennials are best assessed after the paddock has been heavily grazed, then some regrowth has occurred about 2-4 weeks after grazing.
- Try to assess pastures when plants have about the same amount of regrowth each time.
- It is easier to recognise different species when it is sunny, rather than if cloudy, and easier to see species when the sun is higher in the sky, ie from 10 am to 4 pm
- Teams of 2 people, one assessing and one mapping work best, swap tasks regularly.
- This task is ideal for teams of 2-4 people so that everyone learns how to recognise the different perennials and the task is completed in quickly.

**When assessed**

After the autumn break, 3-6 weeks after significant rains. The ideal situation is to assess the perennials when pasture has been grazed short then allowed a 2-3 week regrowth period. Different species should be able to be recognised by leaf colour, shape, texture and arrangement.

**Recording sheets**

The Recording Sheet 3 – Perennial Species can be photocopied and used for each Fixed Point. Each Fixed Point needs to be numbered and the same orientation used each time, ie recording sheet and quadrant aligned to north to allow the pasture to be “mapped” at each site.

*Growing points* - Where a live plant base is under the intersection of the weldmesh, a circle is placed on the corresponding intersect of the recording sheet.

*Frequency of occurrence* – For every 10 cm quadrant where the species of interest is present, the corresponding quadrant on the recording sheet is filled in.

Using this system means that it is possible over time to map the increase or decrease in plant density. It also reduces errors from losing your place on the counting grid and totals can be tallied at the end of the day.
EverGraze Quickchecks 3; Recording sheet – Perennial species

Example of how to fill in the sheets for perennial species

Mark the intercepts on the grid where the species of interest occur.

Shade the spaces where the species of interest are present. There will usually 3-5 times more of these than intercepts.
EverGraze Quickchecks 3; Recording sheet – Perennial species

Date:__________________________________

Catchment and Supporting Site name;____________________________________________

Paddock (Control or Innovation and local name);____________________________________

Fixed point number;__________________________________________________________

Summary of perennials
Growing points (intercepts);

__________________ (max of 81)_________________

%                           

Frequency of occurrence (quadrants)

________________ (max of 100)________________

Date;__________________________________

Catchment and Supporting Site name;____________________________________________

Paddock (Control or Innovation and local name);____________________________________

Fixed point number;__________________________________________________________

Summary of perennials
Growing points (intercepts);

__________________ (max of 81)_________________

%                           

Frequency of occurrence (quadrants)

________________ (max of 100)________________

Copy this page as required to provide sufficient recording sheets for all fixed points
EverGraze Quickchecks 4: Pasture conditions

% Ground cover, % Green pasture, % Legume, Feed On Offer

What you will need

- Fixed Point grid (see EverGraze Quickchecks section 1)
- Grid needs to be painted as shown to provide 2 smaller 30 cm square quadrants
- Good quality digital camera
- Ruler or pasture stick to provide a scale in photos
- Cards to provide a title for photo’s
- Pasture Condition Recording sheets (see back of this section)

Why monitor pasture condition?

High ground cover is important to protect the soil from erosion and add carbon to the soil. Decaying material provides nutrients for soil organisms and so improves the health of the soil. The amount of green herbage present over summer relates to how much soil water is used by the pasture. Green herbage is also the most important component of the pasture for animal production.

Feed On Offer (FOO) provides an indication of the grazing pressure being applied in the paddocks ie if paddocks are over/under grazed and will help explain changes in the persistence of perennial species.

Legume content is important to fix nitrogen for use by the perennial grasses. High legume content also increases animal production.

How to monitor pasture condition?

Use the two 30 cm x 30 cm “quadrants” marked in the Fixed Point grid shown on Figure 1. The grid is placed down at the Fixed Points so that the same pasture is assessed each time.

For each of the 30 x 30 quadrants, estimates are made of:

1. % Ground Cover

This is an assessment in each quadrant of the amount of ground with covered by plant or other organic material, ie green pasture, dead pasture, litter, dung. For consistency, ground cover is reported, ie. 75%, 85% ground cover, not 25% or 15% bare ground.

Where the ground is covered by dead material or dung, this needs to be recorded. This material can be more easily blown or washed away than attached material and so while it provides some protection to the soil, it does not provide that same quality ground cover as attached material.

2. % Green in the pasture

This is a visual assessment of the proportion of green and dead herbage in the pasture on a dry matter basis, ie if the pasture present was all cut and dried. Values are recorded as 20%, 40% green etc.

When the pasture contains a mixture of green and dead herbage it is important to look into the bottom of the pasture as the green pasture may be “hidden” by taller dead material. However, remember that green pasture if cut and dried will “shrink” and so will be a smaller proportion of the pasture than first appearance.

3. % Legume in the pasture
This is a visual assessment of the proportion of green legume in the pasture on a dry matter basis, ie if the pasture present was all cut and dried. Values are recorded as 10%, 20%, 30% legume etc.

Clover is very “showy” in the pasture, ie there looks to be more there than their really is. The leaves are often raised above the rest of the pasture and are horizontal so very obvious. A pasture that looks to be virtually pure clover often contains 30-40% grass under the clover!! A rule of thumb is that there may be only half the amount of clover on a dry matter basis as what appears visually.

4. Total Feed On Offer
This is an estimate of the total amount of pasture present. It includes all herbage present; green and dead, weeds, desirable species, annuals etc. Also, it includes all herbage right to ground level not just that which sheep or cattle might select. Feed On Offer (FOO) is expressed in kg dry matter per ha, ie the weight of herbage from 1 ha if it was cut and dried.

Tips when assessing pasture condition
• Two photo galleries are included with this manual and provide examples of different FOO values for common pasture types. A second set of photos gives examples of percent ground cover. It is not possible to provide examples of the wide diversity of pastures that occur at Supporting Sites. Local agriculture department or private agronomists can help finetune estimates of pasture FOO, % green, % ground cover and % legume.
• Consistent estimates across perennial pastures on farm are more important than the absolute value at each Fixed Point.
• When pastures have a mix of green and dead herbage, remember the composition is assessed on a dry matter basis. If the green was dried out, it would shrink back compared to the dead herbage that would hardly change.
• Ground cover includes anything protecting the soil surface of the soil. The soil surface needs to be carefully observed to ensure that bare ground is really bare and not covered by plant material.

Pasture Photographs
Photos provide a record of changes to pasture condition over time. They are also essential to show visitors what pastures looked earlier and are needed for reports and presentations.

Use several of the Fixed Points in the paddocks. Take shots showing;
• Close up of the pasture in one of the Fixed Point locations. Place the ruler or pasture stick vertical in the pasture to indicate the height of the pasture. Include a small card with date and property in the photo to provide a record of where the photo was taken.
• Longer photo of some distinctive feature in the paddock, ie tree or landscape with pasture in the foreground to show seasonal changes.

When to take pasture photos
• Autumn; 3-6 weeks after the opening autumn rains.
• Winter; when it would normally be expected that the pasture in the region is at its lowest availability.
• Summer; prior to the autumn break when FOO in the region is at its lowest availability.

Tips for better pasture photos
• Pasture photos are often too dark, especially in overcast conditions. Some camera’s need to be set to be slightly over-exposed to give best results.
• If the sun is low in the sky, shadows can reduce clarity. Use a flash to reduce this problem.
• Use a small card in the photo to record the date, property and treatment.
• Taking some shots up close and others from about waist high to provide a range of images.
- Windy conditions cause movement of tall pastures and blurring. A small Vee using shade cloth around a wire frame can provide shelter.

**When to assess Pasture Condition**
The minimum requirement is to assess Pasture Condition twice each year.

- **Mid summer;** February – April when ground cover and feed on offer is the lowest for the summer-autumn period.
- **Mid winter;** July - August when ground cover and feed on offer are lowest for the winter.

This is the minimum required, more frequent assessments may be undertaken if time and resources are available.
Optional pasture measurements

Pasture Quality
Improved pasture nutritive value (Metabolisable Energy, Digestibility, Crude protein content) can be an important factor in adoption of new/alternative species. Details are provided in Appendix 2 (page 30) on how to take these measurements.

Pasture growth rate
This can be very useful information to obtain. This can be done by measuring the FOO after straight after grazing and immediately prior to the next grazing.

To calculate the pasture growth rate minus the FOO measurement that was taken after the previous grazing from the FOO measurement that has been taken just before the next grazing. Divide this by the number of days between grazings. This will give you an average of the growth rate per day in kg/DM for that period of time. If this is recorded for one paddock throughout the year inbetween all grazing it will give you an estimate of pasture growth for the farm. To be really accurate the same measurement can be taken for all paddocks on the farm.
EverGraze Quickchecks 4 - Pasture condition recording sheet

% Green, % Ground cover and Feed on Offer

The following sheet can be replicated for use on as many fixed points in as many paddocks as required.

Date:

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<thead>
<tr>
<th>Paddock Name:</th>
<th>Fixed Pt 1</th>
<th>Fixed Pt 2</th>
<th>Fixed Pt 3</th>
<th>Fixed Pt 4</th>
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</table>

Indicate the main material providing ground cover other than attached/growing herbage; F = Faecal material, C = Composting detached herbage, R = Recently dead attached herbage

Comments on pasture conditions (weeds, insect damage, drainage, erosion, etc)

Pasture photo’s taken at

Copy this page as required to provide sufficient recording sheets for all fixed points
EverGraze Quickchecks 5; Paddock and livestock production

What you will need

- Livestock recording sheets (see back of this section)
- DSE tables for different types of livestock
- Calculator
- Paddock diary (see page 28)

Why monitor paddock or livestock production?

It is important to monitor the animal production from each paddock to allow comparisons of the productivity and profitability. Actual pasture production is very difficult and costly to measure. The most practicable way to estimate production is to measure the number of grazing days obtained from each paddock over a 1-2 year period. These are converted to (dry sheep equivalents (DSE) to allow for different animals that might graze the paddock during the year. Grazing days over the year is a de facto measure of pasture production in the paddock.

To obtain correct records you need to keep accurate records of the number and type of stock, the paddock size and DSE rating of the stock that graze the paddock.

This recording system uses a 50 kg wether as the standard for calculating DSE, other systems use 45 kg wethers. The energy required (ME) to maintain a 50 kg wether at a constant weight at pasture is 1DSE, the DSE rating of other classes of sheep and cattle are compared based on their energy requirements. The DSE values provided are based on the Grazfeed program developed by CSIRO Plant Industry. Energy intake is influenced by animal liveweight, pasture quantity and quality, terrain and weather conditions and so the values provided are only a guide to energy requirements.

How to monitor paddock of livestock production?

Each time livestock enter a perennial pasture being monitored, dates need to be recorded along with the type of stock, number of stock, and estimated liveweight. This can be done on the worksheet provided later in this quickcheck. The date the stock leave the paddock is also recorded.

DSE ratings for sheep and cattle are shown in Tables 1 – 2.

Measuring weight gains

Livestock weight gains can also be a valuable measure of a paddocks performance. Stock can be measured on entry and exit from pastures to measure their liveweight gain over the period of time on the pasture. This method is not always effective over short periods of time as gut fill in livestock can heavily sway the weight of the animal at the time of weighing. Factors that affect gutfill include the time the animals have been off feed for, the availability of feed in the paddock, the time of day the animals are weighed, weather conditions and availability of water. Because of this weight gain measurements are better taken over longer periods of time and over a number of replications.

Livestock condition and reproduction can also be a measure of the value of a paddock. In particular ewe joining percentages and weaning percentages can be a good measure of production. To read more about measuring production refer to the Lifetime Ewe Management manual of the More Beef from Pastures manual.

Table 1 DSE ratings for different classes of sheep at pasture

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<th>Class of sheep</th>
<th>DSE rating at different liveweights (compared to 50 kg wether maintaining weight)</th>
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</thead>
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<td>Weaned lambs (3-6 months old)</td>
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<tr>
<td>Weight Category</td>
<td>Mature Sheep</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Maintaining weight</td>
<td></td>
</tr>
<tr>
<td>Gaining 100 g/d</td>
<td></td>
</tr>
<tr>
<td>Gaining 200 g/d</td>
<td></td>
</tr>
<tr>
<td>Dry ewes, wethers - maintaining weight</td>
<td></td>
</tr>
<tr>
<td>Dry ewes, wethers - gaining 50 g/day</td>
<td></td>
</tr>
<tr>
<td>Dry ewes, wethers - gaining 100 g/day</td>
<td></td>
</tr>
<tr>
<td>Pregnant ewes, last 6 weeks, singles – 50 g/d</td>
<td></td>
</tr>
<tr>
<td>Pregnant ewes, last 6 weeks, twins – 50 g/d</td>
<td></td>
</tr>
<tr>
<td>Ewes with single lambs at foot</td>
<td></td>
</tr>
<tr>
<td>Ewes with twin lambs at foot</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 DSE ratings for different classes of beef cattle

<table>
<thead>
<tr>
<th>Class of cattle</th>
<th>Liveweight and class of stock</th>
<th>Stage of pregnancy or lactation</th>
<th>Liveweight gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(compared to 50 kg wether maintaining weight)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dry stock 350 kg yearling</td>
<td>450 kg cow</td>
<td>550 kg yearling</td>
</tr>
</tbody>
</table>
EverGraze Quickchecks 5; Paddock production recording sheet

The following spreadsheet can be used to record grazing days. The EverGraze Feedbudget Rotation Planner is also a useful tool that can be used to record and calculate grazing days with the added bonus of calculating phosphorus fertiliser rates for individual paddocks based on their carrying capacities. To obtain a copy of the tool visit www.evergraze.com.au.

Perrenial Pasture  – (Insert local paddock name) ____________________________

<table>
<thead>
<tr>
<th>Date into paddock (a)</th>
<th>Paddock size ha (b)</th>
<th>Stock type into paddock</th>
<th>Number of stock (c)</th>
<th>Estimated weight (kg) (d)</th>
<th>DSE rating of livestock (e)</th>
<th>Date out of paddock (f)</th>
<th>Grazing days per ha this grazing period GD=(e-a)/b</th>
<th>DSE grazing days/ha this grazing period (GD*d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example March 27</td>
<td>10</td>
<td>heifers</td>
<td>30</td>
<td>350</td>
<td>5.3</td>
<td>April 30</td>
<td>102</td>
<td>541</td>
</tr>
</tbody>
</table>

Total DSE grazing days/ha for year (total of all grazing events for the year)

Average DSE/ha = Total DSE grazing days/ number of days of monitoring

Comments
Stock performance better or poorer than expected?
Lamb losses?
Animal health issues? Worms, metabolic diseases?
Supplementary feeding?
EverGraze Quickchecks 6; Paddock history and current observations

What you will need

- Paddock History Recording Sheets (see back of this section)
- Diary
- Farm records, ie fertiliser applications, pasture sowing records, soil test data, information from paddock recording systems such as Paddock Action Manager

Why is it necessary to document the recent history of the paddocks at the Supporting Site?

Pasture persistence, the type of perennials that can be grown and pasture production are all influenced by both the current management being used and what has happened in the past. For example, application of lime will influence the species that will perform in the paddock for 5-10 years. Nutrient applications over the past 5-10 years effect current soil conditions and pasture performance. The choice of cultivars when the pasture was sown (ie summer or winter active) will influence pasture production.

If the paddock has been cropped extensively in recent years, it may lead to hard pans or loss of organic matter. Spraying to control thistles may reduce legume content in following years.

How and what to record?

It is difficult to specify exactly what historical information to record about each paddock. The points below indicate the type on information that might help in interpretation of how the pasture system performs

- Date and pasture species sown?
- Soil tests results over the last 10 years?
- Fertiliser, lime, gypsum application last 10 years?
- Cropping, hay or other non grazing activities?
- Herbicides, pesticides or other chemical applications last 5 years?
- Previous grazing management ie set stocking, rotational grazing etc.
- Main use of the paddock, ie lambing ewes, fattening steers, store sheep etc

Paddock Diary

Keeping a diary for your property can help maintain a record of what happens throughout the year. Each week entries in the diary could include, recording the rainfall at the property, any treatments or management applied and changes to the pastures.
EverGraze Quickchecks 6; Paddock history

This page is to record the previous history of the paddocks. The headings provided are a prompt to indicate things that should be considered but include any other relevant information.

**Perrenial Pasture** (local name)______________________________

Current pasture species?

When sown?

Current carrying capacity?

Previous soil test results?

Lime or other soil treatments applied?

Main use of paddock (stock type, finishing, fattening etc)

Production or environmental concerns?
## EverGraze Quickchecks 6; EverGraze Diary

### Perrenial Pasture:

<table>
<thead>
<tr>
<th>Week</th>
<th>Rainfall</th>
<th>Paddock treatment</th>
<th>Paddock observations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(ie fertiliser, spray, animal treatment, weed control, etc)</td>
<td>(ie autumn rains, erosion, weeds obvious, insect damage, waterlogging, pasture dried off, green shoot in summer)</td>
</tr>
</tbody>
</table>

- [ ]
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Appendix 1 EverGraze Quickchecks; Optional Soil Health assessment

This information is provided courtesy of the Land Water Wool Quickchecks program.

What you will need:

- A camera
- The Quickchecks Soil Health paddock recording sheet/s and a pencil
- Two small containers (eg margarine containers) and 1 litre of rainwater
- A commercial soil test kit (if you want to complete a chemical analysis)

1. Decide on the area of the paddock which monitoring is to take place (large area or special area/site of the paddock, see page 15)

2. Identify two fixed points a distance apart that you can monitor between (points which are likely to remain constant over a long period of time) and clearly write on the recording sheet details of the starting point, the direction of monitoring and the end point, so you can start and finish at the same area each time you monitor.

3. Monitoring will take place in a straight line between the two fixed points you have chosen.

4. Take a photo at the start of the monitoring with the starting fixed point behind you and looking towards the end fixed point. Half way along the straight line, take a photo of the soil surface, and then at the end fixed point, a photo back towards your starting point (three photos in total).

5. For the Soil Health topic, only three sites along this straight line will be examined. If you can identify these sites along the straight line between the fixed points (eg at a given number of paces) and come back to this area each time, you will be able to get a good guide as to the changes that are occurring.

6. Think through the best location of these three sites. For example, if you are monitoring down a slope, you may like to have one site on the upper slope, one about the break of slope and one on the flat. You can decide on the location of the sites, based on what combination of sites will give you the best information.

7. At each of the three sites, pick a sample area 1m * 1m:
   - At each 1m * 1m, take a photo of the soil surface, a spadeful of soil and the hole after the soil was removed (three photos in total)
   - Make an assessment of the ground cover (estimate in % covered)
   - Do you see evidence of insect life on the soil surface, such as worm castings? (you may have to scratch around for this!)  
   - Dig one spadeful of soil, is there evidence of earthworms? Can you count any? (number)  
   - How does the soil smell (describe in your words)?
   - In the spadeful of soil, did the soil form clumps (aggregates) and hold together (yes/no)
   - From the spadeful of soil, take a handful of soil from half a spade depth. Place a number of small samples (pinch full) into the ice cream container of water and watch what happens. If the soil falls apart, this is called “slaking”, this is a yes/no answer.
   - Continue to watch the soil for 5 mins. If there is any muddiness in the water from the soil, this is called “dispersion”. This is a yes/no answer.
   - Look at the spade hole at 40 cm depth. Can you detect any plant roots? Score this as yes/no
     Can you detect any barrier to plant roots (hard pan, change in soil profile etc…)

8. If required you can incorporate a commercial soil test into the above, and if so, follow the instructions provided.
Digging a hole to look for root depth and life below the soil is an important aspect of the Soil Health module of Quickchecks.

Placing soil into water can give a good guide to its stability. The soil on the left has dispersed when wet, while the sample on the right remains stable when wet.

A well aggregated soil forms into clumps and allows for drainage and aeration, even when wet.

Earthworm casts on the soil surface can be monitored, particularly after
Appendix 2 EverGraze Quickchecks; Optional Pasture Nutritive value assessment

What you will need

- Shears to cut pasture to ground level
- Plastic bags for herbage samples
- FEEDTEST kits available from Hamilton (see below)

Why monitor pasture nutritive value?

Digestibility is the proportion of the pasture eaten, which is retained by the animal to maintain its body, produce meat, milk or wool and grow a foetus in pregnant females. For example, if green pasture has a digestibility of 70%, it means 70% of the pasture eaten will be used by the animal and 30% will pass out as faeces. Animals eat more of highly digestible forage and each mouthful is of higher energy value leading to faster weight gain or higher wool or milk production.

During the growing season, protein content of pasture does not normally limit animal performance but after the pasture has dried off in summer, the protein content declines and may become a limiting factor.

Samples analysed through FEEDTEST provide values for Digestibility, Metabolisable Energy and protein content.

How to collect herbage samples

- At each Fixed point, cut an area of about 5-10 sq cm right to ground level. Select the area at random within the Fixed Point do not pick good or poor areas.
- Do not wash the samples. Try to keep out of direct sun and keep cool to reduce loss of nutrients from the sample.
- Clearly label the sample with name of the Supporting Site, whether it is the Control or Innovation paddock and your contact details.
- Place the sample in a plastic bag and post to Feedtest at Hamilton. Try to post the sample early in the week so the sample is not held in the mail over the weekend.
- Pasture samples containing all material (green, dead, grass and clover) provide an overall estimate of any differences between the quality of 2 different pastures. However, if you want to determine the absolute difference between the nutritive value of 2 different species, the pasture sample needs to be sorted to ensure only green material from each species of interest is being compared. Different proportions of dead material or clover included in the samples will mask differences between the sown perennials.
- If the nutritive values are to be used in programs like Grazfeed, separate estimates of the nutritive values of the green and dead portion of the sample are required, ie pasture samples need to be sorted into green and dead components PRIOR to sending to FEEDTEST.

**FEEDTEST**

FEEDTEST provides accurate and fast feed analysis using the latest Near Infrared (NIR) technology. FEEDTEST determines the value of herbage and supplements.

FEEDTEST is easy to use. It is best to get a supply of FEEDTEST kits and use these to submit samples. Simply place your sample in the reply paid envelope provided, include the completed sample information sheet and post to FEEDTEST at Hamilton. Refer to the sampling instructions on the back of the envelope.

Contact: FEEDTEST, Private Bag 105 Hamilton, Victoria 3300
Phone 1300 655 474, email feed.test@dpi.vic.gov.au
Acknowledgements

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Disclaimer

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