

MURRAY DAIRY SUMMER CROPPING REMINDERS

MAIZE

PLAN YOUR FEEDBASE FOR YOUR FARM SYSTEM AND NEEDS

1. Your return on investment in maize is heavily influenced by the water market and seasonal constraints, as well as your management. **Consider the climate and market outlooks for the upcoming season.**
 - Ensure that you will be able to secure water to meet your crop needs
 - Consider all your options: grow, buy or contract maize: match your decisions with your budget and your appetite for risk
2. Maize meets a very specific part of the diet. **Work with your nutritionist to develop a feed plan to ensure that the diet is balanced and milk production is maintained.**

Below is a chart showing ball park nutritional figures for different summer forage options. Nutritional value will be significantly impacted by grazing, irrigation and agronomic management.

	ME (MJ/kgDM)	CP (%)	NDF (%)
Maize (silage)*	10-12	7-8	40-50
Sorghum*	8-11	7-18 (not all digestible protein)	50-65
Lucerne (grazed)^	10-12	25-35	30-40
Tall Fescue**	10-11	14-17	45-50

* See AC Successful Summer Cropping notes

^Based on results from Accelerating Change Partner Farm measurements over irrigation seasons, 2015-17

**Based on averages in Lawson, Kelly & Rogers, 'Grazing Tall Fescue' technote (2015)

USEFUL RESOURCES

Dairy Australia
[Situation and Outlook](#)

Northern Vic Resources Manager
[Water Outlook](#)

NSW DPI
[Water Availability Outlook](#)

Dale Grey's *The Very Fast Break*
[Seasonal Climate Update for Vic](#)

USEFUL RESOURCES

Grains2Milk
[Feed Value Varies in Different Feeds](#)

3. The conservation process for maize needs to be managed carefully in order to make sure you get the highest return on your investment.

Planning both your infrastructure and management from the start will assist this.

- Aerobic spoilage during storage can result in a loss of up to 10% of your silage. Similarly, aerobic spoilage during feed out can result in an additional loss of up to 10%. These are avoidable.
- Wastage of silage during feed out, as a result of spoilage non-consumption, can be anywhere up to 50%. Measures should be taken to create a system to prevent cows trampling, camping, urinating or defecating on silage.

USEFUL RESOURCES

Accelerating Change
Successful Summer Cropping
[Corn Silage Harvest Management](#)

Dairy Australia & NSW DPI
Successful Silage
[Top Fodder](#)

ONCE YOU COMMIT, THAT'S IT.

4. If you're putting in a high-value crop, be prepared to invest time and resources to optimise yields. Growing a good maize crop is like following a recipe – timing and attention to detail are fundamental.

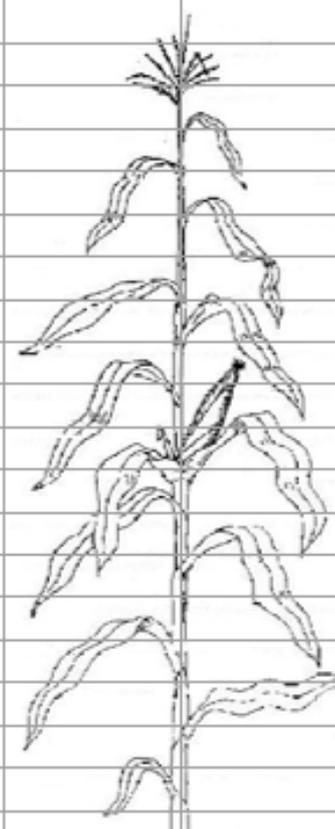
Missing steps or ingredients can lead to a flop.

- **Do your costings up front**, using the [Gross Margin spreadsheet](#) on the *Accelerating Change* website
- Where water or nutrients are limiting, maize quality and yield will be compromised. **Do not cut corners** on irrigation or nutrient application. Impact can be severe if limiting in critical stages of growth (either side of tasselling).

USEFUL RESOURCES

FutureDairy
Water Requirement of Maize
[Growing Maize for Silage](#) (p.14-16)

Accelerating Change
Nutrient Requirement of Maize
[Successful Summer Cropping](#) (p.12-20)

Maturity		WEEKLY REQUIREMENTS (as a percentage of total need))			
		%N	%P	%K	%Water
17 Weeks		<1	<1	--K	<1
16 Weeks		<1	1	--K	1
15 Weeks		<1	2	--K	2
14 Weeks		<1	5	--K	3
13 Weeks		2	8	--	5
12 Weeks		4	9	--	6
11 Weeks		6	11	1	8
10 Weeks		10	13	5	11
Silking		12	15	8	12
Tasseling		16	11	16	12
7 Weeks		15	10	20	11
6 Weeks		14	7	21	10
5 Weeks		11	4	16	7
4 Weeks		7	2	9	5
3 Weeks		2	1	3	4
2 Weeks		<1	<1	1	2
1 Week		<1	<1	<1	1
Emergence		<1	<1	<1	<1

PREPARE

5. Work with your agronomist to select a variety that suits your production goals.

Hybrids for silage production should be selected for:

- Yield potential over the growing season
- A CRM that aligns to your plans for winter crops or pastures. Work with the longest CRM possible for your system.
- Retention of green leaf through to harvest
- High grain yields, and high dry matter yield
- Tolerance to regional disease and pest risk. [Download](#) GRDC's *Grownotes Alert* app to receive notifications about pest and disease issues in your area

6. Select and prepare your paddock well.

Identify and assess any soil constraints as there is little you can do about them once the crop is up and running, and they could have a significant impact on crop performance. Your top soil is your horsepower and your subsoil is your water tank.

- It's critical to grow maize on **well-drained soils**. In flood irrigated systems bays that can be irrigated and drained in less than 8 hours are desirable. Consider raised beds if you experience any water logging in selected areas.
- Dig a hole and have a look at your soils, particularly the depth of your top soil and the effective root zone:
 - The more top soil you have, the higher the productivity capacity of your soil. Being aware of the amount and variability of top soil across your farm will assist you to decide where is best to plant and how to manage your soil resource. On sites where top soil is limiting, consider the impact of land-forming and cultivation which could lead to further losses, and try to balance this with the agronomic needs of your crop.
 - The effective root zone is the depth at which the presence of roots is enough that the plant is likely to extract all the available water from the soil. The shallower the root system, the smaller the 'water bucket' and less efficient the delivery of nutrients for crop uptake. A shallow root zone can indicate hostile layers and remediation options should be discussed with your agronomist.

USEFUL RESOURCES

Accelerating Change Tech Note: [Depth, Texture and Structure of A-Horizon Top Soil](#)

Accelerating Change Tech Note: [Effective Root Zone Depth and Available Water Content](#)



L: Maize roots are visibly deeper in this ripped bay

R: Maize root development is limited by subsoil constraints

The above-ground images of these bays are shown on pg.1

USEFUL RESOURCES

For more information and a summary of the workshop, visit the [Accelerating Change website](#)

Where there are hostile layers in your subsoil, **deep-ripping** can be used to shatter soils and improve structure. BUT for a deep rip to be effective the soil needs to be stabilised as well as shattered. Stability is achieved through the incorporation of organic matter, application of gypsum, and the movement of nutrients into the profile. Depending on your circumstances, this may be achieved through direct application, crop rotations, wetting and drying (a change in irrigation management) or a combination. Work with your agronomist to integrate soil management into your crop plan.

Soil test to inform your nutrient management. Pay particular attention to Nitrogen, Potassium, Phosphorus and Zinc levels. Nutrient should be applied prior to, or during sowing as it is required in early crop development. However, you should also be aware of crop needs during its rapid growth phase. Discuss this with your agronomist.

For support interpreting your soil tests, refer to [Chapter 9 of the Fert\\$mart manual](#).

Select a site not prone to weeds and get on to weed control early.

- 7. Sow on time!** The ideal soil temperature for sowing is 14°C but it is possible to plant at 12°C if the temperature is on the rise. Planting earlier will not result in higher yields, it simply takes longer for the seed to emerge.
- 8. Pre-irrigate if conditions permit.** Ideally you want to **sow into moisture**. Irrigating after sowing will cause the soil temperature to drop.
- 9. Take your time to get sowing right.** Slower sowing will result in better plant placement, good seed-soil contact, and a better rate of emergence. This means you should also keep an eye on your contractors.

USE THE ADVICE OF SERVICE PROVIDERS

- 10. Agronomists will help you to plan and manage your crop through the season, reducing risk and helping to optimise production.**



FOR MORE INFORMATION:
MURRAYDAIRY.COM.AU
ACCELERATINGCHANGEPROJECT.COM

MURRAY DAIRY SUMMER CROPPING REMINDERS

SORGHUM & MILLET

PLAN YOUR FEEDBASE FOR YOUR FARM SYSTEM AND NEEDS

11. Identify your feed gap.

Sorghum and millet are usually direct-grazed options, available through the summer months, however they can also be conserved.

If you choose to conserve feed, particularly as silage, your infrastructure should support storage and feed out to optimise quality and minimise losses.

- Aerobic spoilage during storage and feed out can result in losses of 10% or more.
- Wastage of silage during feed out, as a result of spoilage or non-consumption, can be anywhere up to 50%. Measures should be taken to create a system to prevent cows trampling, camping, urinating or defecating on silage.

Work with your agronomist to select a variety and/or hybrid that meets your feed needs and works in your rotation.

USEFUL RESOURCES

Grains2Milk
[Feed Value Varies in Different Feeds](#)

Accelerating Change
[Successful Summer Cropping Workshop notes – opportunistic use of sorghum and millet](#)

Dairy Australia
Project 30 30
[Millet and Sorghum factsheet](#)

Dairy Australia & NSW DPI
Successful Silage
[Top Fodder](#)

12. Sorghum and millet meets a specific part of the diet.

Work with your nutritionist to develop a feed plan and identify any missing nutritional requirements to ensure the diet is balanced and milk production is maintained.

Below is a chart showing ball park nutritional figures for different summer forage options. Nutritional value will be significantly impacted by grazing, irrigation and agronomic management.

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BE PREPARED TO INVEST IN KEY AREAS

13. Although sorghum and millet can be more forgiving than maize, crop performance (and the value it brings your business) relies on good preparation, nutrient management, pest and weed control, and water availability.

Consider the climate and market outlooks for the upcoming season.

- Ensure that you will be able to secure water to meet your crop needs
- Consider all your options: grow, buy or contract feed: match your decisions with your budget and your appetite for risk

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PREPARE!

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Identify and assess any soil constraints as there is little you can do about them once the crop is up and running, and they could have a significant impact on crop performance. Your top soil is your horsepower and your subsoil is your water tank.

- Dig a hole and have a look at your soils, particularly the depth of your top soil and the effective root zone:
 - The more top soil you have, the higher the productivity capacity of your soil. Being aware of the amount and variability of top soil across your farm will assist you to decide where is best to plant and how to manage your soil resource. On sites where top soil is limiting, consider the impact of land-forming and cultivation which could lead to further losses, and try to balance this with the agronomic needs of your crop.
 - The effective root zone is the depth at which the presence of roots is enough that the plant is likely to extract all the available water from the soil. The shallower the root system, the smaller the 'water bucket' and less efficient the delivery of nutrients for crop uptake. A shallow root zone can indicate hostile layers and remediation options should be discussed with your agronomist.

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Soil test to inform your nutrient management. Pay particular attention to Nitrogen and Phosphorus levels. Nutrient should be applied prior to sowing, however you should also keep an eye on nutrient requirement throughout the growing season, especially if grazing. Discuss this with your agronomist.

For support interpreting your soil tests, refer to [Chapter 9 of the Fert\\$mart manual](#).

15. Weeds compete with crops for moisture, sunlight and nutrients. **Select a site not prone to weeds and get on to weed control early.** Start with a complete knockdown, and use a pre-emergent as required. Work with your agronomist to get weed control right.
16. **Sow on time!** Sorghum must be sown at a soil temperature of 16°C and rising. Sow early for highest yields but not before 16°C.
17. Pre-irrigating is preferred. Ideally you want to **sow into moisture.** Irrigating after sowing will cause the soil temperature to drop.

USE THE ADVICE OF SERVICE PROVIDERS

18. Agronomists will help you to plan and manage your crop through the season, reducing risk and helping to lift production.



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