

Does this sound like you?

- As a result of the drought, you have shifted from a pasture-based feeding system to one based on purchased feeds to maintain milk production, and you want to operate a system that still allows you to readily shift back to a pasture-based feeding system when climatic conditions are favourable again.
- You are intensifying your operation by increasing the stocking rate.
- You have made a business decision to increase the investment in your facilities to allow more forages and supplement to be fed per cow.
- You want cooler cows to increase milk production and improve herd health and fertility over the summer months.
- You can get regular access to co-products (i.e. by-products) that can be cost effective feed options.

Can you afford to waste feed?

The idea of a flexible feeding system is about investing in infrastructure that will allow you to adapt to the feeds you have available.

Start by looking at some simple feeding options but think ahead.

If so, your farm may be a candidate for a Flexible Feeding System. The term Flexible Feeding System is used to cover a range of cheap or costly methods of feeding predominantly purchased feeds to cows. Other reasons to change may be the need to reduce feed wastage, reduce soil damage in wet weather or strategically feed groups of animals different diets for increased milk production and growth.



Think carefully about the advantages and disadvantages of progressing towards a Flexible Feeding System in your situation.

Advantages of a Flexible Feeding System	Disadvantages of a Flexible Feeding System
Ability to achieve higher feed intakes and better control over diets, resulting in increased milk solids	Finance and capital costs for new facilities and equipment
Ability to reduce feed wastage	You must manage manure and effluent well
Can provide passive or active cooling to reduce cows heat load during hot weather	Fixed structures can not be moved or sold
Can control wet weather damage to pastures	If not managed well, cow health problems, such as lameness and mastitis, may result
Can re-distribute nutrients from effluent on to pastures	Image and odour problems need to be avoided
Can provide high-quality, secure water volume to a feed-out facility that can be easily monitored	Work routines will have to be altered

What system best suits you?

Pasture has always been our cheapest source of feed, but there are instances when we can't rely on it to supply enough feed for the herd. If you are going to use a wider range of purchased feeds, you want to make sure the feed is eaten, not wasted. The finance and capital costs in establishing a new feeding system can be quite different depending on the choices you make. Different types of Flexible Feeding Systems can be classified into four general types.

Where are you now? What are you aiming for?

1. Temporary, relocatable



The 'I'll make best use of what I've already got' approach.

Forages or simple mixed rations are fed out on the ground, in hay rings or old tractor tyres, using existing equipment (most likely a tractor and bucket or silage cart).

- Very low capital cost for feed-out area (<\$50/cow*).
- Quick and easy to set up.
- No prepared surface for feed-out area – on pasture, bare earth or roadway.
- Feed-out facility can be readily relocated to other sites around the farm.
- Feed-out facility will have to be relocated if it rains!
- Very high feed wastage (up to 30% or higher!)
- Labour intensive.

2. Semi-permanent

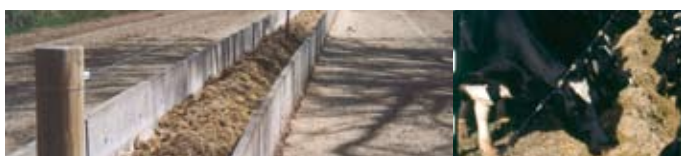


The 'I want a designated feed-out area, but I don't want to spend too much on it' approach.

Forage mixes or more complex mixed rations are fed out on a semi-permanent feed-out area with a compacted surface that has low-cost troughing, such as conveyor belting, second-hand water troughs or other materials from clearing sales, etc. May use a silage cart or mixer wagon.

- Low capital cost for feed-out area (\$50-100/cow*).
- Fairly quick and easy to set up.
- Feed-out facility can be relocated to another site on the farm (with a bit of effort) if necessary.
- Moderate – high feed wastage (15-30%).
- Labour intensive.

3. Permanent, basic but functional



The 'I want something permanent that will control my feed wastage' approach.

Complex mixed rations are fed out using a purpose-built feed-out facility with a compacted surface that has concrete feed troughs or a narrow cement strip under electric wires to reduce feed wastage. Mixer wagon usually used.

- Moderate capital cost for feed-out area (\$100-200/cow*).
- Requires more planning to set up.
- Feed-out facility is permanent, with some fixed structures.
- Moderate feed wastage (8-15%).
- Labour intensive.

4. Permanent, minimal waste, maximum control



The 'I want maximum control over my system and minimal feed wastage' approach.

Complex mixed rations prepared using a mixer wagon are fed out using a purpose-built feed-out facility, most likely with a cement surface for the cows and one or more feed alleys. It may be covered with a roof, and it may or may not also incorporate a loafing area.

- High capital cost for feed-out area (\$200+/cow*).
- Requires thorough planning to set up.
- Feed-out facility is permanent, with many fixed structures.
- Well-developed feed storage and mixing facilities.
- Low feed wastage (aim for 5-8%).
- Labour intensive.

* This cost/cow is an estimate for the feed-out area only, not the associated equipment, including carts, wagons and tractors, as these may already exist or may be borrowed, leased or purchased depending on individual preferences.

A comparison of the four types of Flexible Feeding Systems.

	1. Temporary, relocatable	2. Semi-permanent	3. Permanent, basic but functional	Permanent, min. waste, max. control
Time and effort needed to set up	Very low	Low	Moderate	High
Capital cost/cow*	Very low	Low	Moderate	High
Weather durability	Low	Moderate	Moderate-High	High-Very high
Permanency	Low	Moderate	High	Very high
Feed equipment	Tractor and bucket or silage cart	Silage cart or mixer wagon	Usually a mixer wagon	Mixer wagon
Feed wastage	Very high	Moderate - High	Moderate	Low

* This cost/cow is an estimate for the feed-out area only, not the associated equipment, including carts, wagons and tractors, as these may already exist or may be borrowed, leased or purchased depending on individual preferences.

Down to details

Once you have selected a Flexible Feeding System, consider the components of the system. This includes earthworks, buildings, structures and equipment. What needs building or purchasing? What second-hand materials can you source? What regulatory approval processes apply?

Your whole farm plan will assist in selecting the best site by analysing:

- soils and topography;
- orientation with respect to shade/wind;
- access to dairy, farm laneways, feed storage, vehicles;
- site services such as water, power, drains, channels;
- ease of effluent handling;
- proximity to waterways, houses, neighbours;
- potential to scale up in future; and
- further development that is likely around the site.

To guide your planning, consider these minimum dimensions when designing your Flexible Feeding System:

- Water
 - 120 to 150 litres/cow/day, double this in very hot weather
 - 75 mm diameter pipe to deliver 20 litres/cow/hour
 - Minimum 0.75 metre/cow water trough space.

Do I really need a mixer wagon?

A silage cart can be adequate, even if you have a high production herd, but it limits the types of feed ingredients you can use. A mixer wagon allows you to use a range of wet and dry ingredients and materials of a finer particle size, as well as long materials. Diets can be formulated more accurately.

**Mixer wagons don't produce more milk
– better feeding does.**



Aim for cost-effective and efficient infrastructure that provides a productive environment for people and cows.



- Feed space
 - Minimum 0.75metre/cow feed trough space.
- Feed area
 - 9-10 square metres/cow in feeding area
 - Minimum slope of 1:500, maximum slope of 1:20
 - 5 metre wide access track for safety.

The capital costs to set up a new Flexible Feeding System may include:

- feed-out area;
- mixer or feed-out equipment;
- tractor upgrade;
- roof over feeding area;
- cooling system;
- cleaning system;
- effluent management system; and
- feed ingredient storage bunkers, silos, tanks or pits.

What's your chosen surface?

Compacted clay is better than coarse gravel particularly once a manure/organic mat forms. Whatever the surface, it needs to be scraped or raked clean regularly.

Don't use coarse gravel for access lanes or the feed-out area – this will increase the risk of lameness, and contaminate manure.



Plan with growth in mind

From farmer experience, it is common for a short-term Flexible Feeding System to develop into a longer-term shift in the direction of the business. Focus on creating a system that is well planned with growth in mind, but flexible enough to handle the challenges each season brings.

As an example, the farm shown below started with a basic feed-out area where a fairly simple mixed diet was fed out on the ground. It developed into a permanent feed-out facility with a high capital cost to set up, but it wastes very little feed. The farm shows how careful planning in the early stages avoids costly mistakes over time.

Original feed-out facility

Site selected with an eye for growth. This gave the farm options.

Feed-out surface scraped to keep clean and reduce lameness and mastitis.



A simple mixed diet fed on the ground under electric wires.

Four years later

Feed-out area designed for safe and easy machinery access.

Effluent system prevents nutrient escape.



Mixer wagon delivers a more complex diet.

Concrete feed-out area reduces feed wastage

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