

BASIC CENTRE-PIVOT SYSTEM PERFORMANCE CHECK

Fact sheet



What is a centre-pivot system performance check?

A system performance check can include checking a wide range of aspects across the irrigation system.

A basic system check can be completed by someone within the farm business. It confirms the system is operating correctly, including pressure and flow, as this is critical to system performance.

Why is a system performance check important?

- Break downs are not always a next business day fix so being aware of issues early is an advantage.
- All irrigation systems require maintenance to ensure best performance.
- Poorly maintained systems cost money (energy, labour, crop yield penalties, soils, environment).
- Preventative maintenance ensures the irrigation system remains an asset for longer.
- Pivot irrigators are a critical asset for a large part of the year (120-180 days).

What are the implications of not maintaining your centre-pivot?

If a basic performance check is not completed, you cannot validate system performance. This could result in significant and varied issues.

Cost/impact	Description
Water use	Underwatering or overwatering
Labour	Poorly maintained systems require high labour costs (constant break downs etc)
Energy	Electricity or diesel use will be higher than it should be
Production	Plant stress, crop losses or crop yield penalties
Environmental	Nutrient leaching, soil erosion, run off, soil compaction

Who can do this?

Maintaining your own infrastructure is a shared responsibility for you and your service provider. Understanding your irrigation systems performance will enable you to identify problems within your system and know when to reach out for specialist support.

Basic performance checks can be completed by any staff member on farm. An important aspect to consider is training a staff member to complete this task, as it will increase their knowledge of irrigation systems and reduce the key person risk for your business.

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What does a basic system performance check involve?

A basic system performance checklist is available to guide the process. Some key aspects to consider are pressure and flow.

Is the operating pressure at the pump and the sprinklers as it was designed? The pressures should be within +/-5% of the design pressure. If it is less, the uniformity of irrigation is affected, particularly on high ground or when the end gun is operating. The pressure should not be greater than required otherwise additional pumping costs will be incurred.

As on-farm irrigation systems become more complicated and expand, a pressure check can highlight if there are other issues with the overall system.

The *how to guide for checking pressure* resource can support you to perform a pressure test.

What if my system is not operating at the correct pressure?

There could be multiple reasons why your system is not operating at the correct pressure. Common issues are:

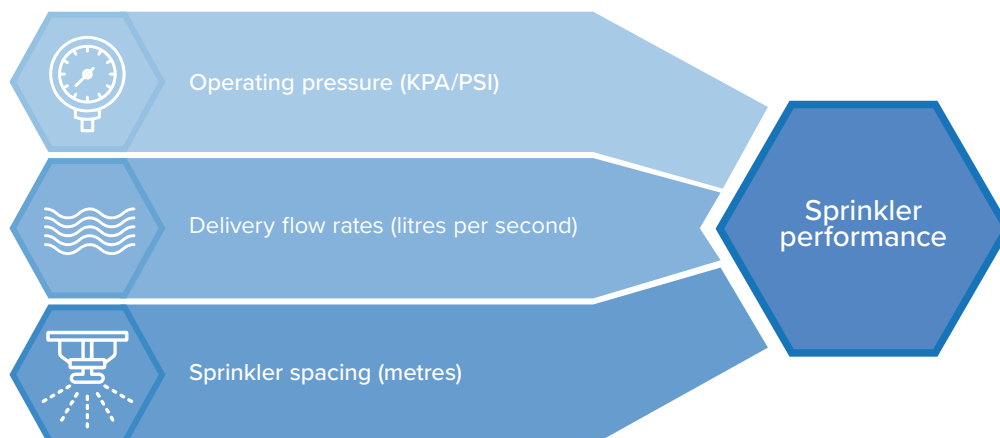
- Suction screens at the pump station are blocked with debris reducing pump performance.
- Pump is worn. Pumps which are not maintained wear out prematurely.
- Sediment and debris have built up in the centre pivot blocking regulators and nozzles.
- Poor design (incorrect pump and mainline pipes).
- A control valve is malfunctioning in the system.

The basic pressure test results can be a simple prompt to start asking further questions about the system performance and having a discussion with your supplier or advisor. It may be that actions are required to rectify system performance.

Sprinkler performance

Sprinklers represent less than seven per cent of the total cost, but are responsible for more than 70% of the irrigation performance. As the sprinkler pack and spacing are confirmed at the design stage, the basic performance check focusses on operating pressure. Water application is underpinned by the linear relationship between pressure and flow.

3 KEY DRIVERS TO SPRINKLER PERFORMANCE



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Take home messages

- A basic system performance check, including a pressure check, is an easy way to commence validating system performance.
- Preventative maintenance is essential for optimal system performance.
- Be aware of the risks and costs associated with poor system maintenance.
- Using information from your system performance check will enable you to work alongside your service providers and advisors to have your centre-pivot working at optimal performance.

Advanced centre-pivot system performance check

A more comprehensive check would involve a *catch can test*, to determine the uniformity of water application. This is generally considered too involved for farm businesses to complete and could take two people up to a day. A basic systems performance check should always be undertaken before considering a *catch can test*. There is more information about *catch can tests* in the resources below.

Further resources

- [Pre-season Checklist Centre Pivots and Laterals | Dairy Australia](#)
- [DairyNZ Guide to Good Irrigation Part 1](#)
- [Centre pivot performance check | Centre pivot and lateral move systems | Irrigation | Water | Farm management | Agriculture Victoria](#)