



Precision  
Agriculture



# DRIP IRRIGATION FOR COTTON HANDBOOK

June 2024 v1.0

/ Cotton Grower's Guide  
to Drip Irrigation

## / Company Summary

- Netafim has been serving the Australia and New Zealand markets since the mid 1980's before opening our subsidiary and manufacturing plant in 1992.

Our local manufacturing facility, head office and warehouse in Melbourne, Victoria produces the highest quality drip lines, PE and assembled products (such as filters, sprinklers and valves) on the market, to meet the strictest international and local standards such as ISO 9001:2015

Set apart by our products and technical services we quickly gained market share and became the largest irrigation company in the market. Today, we retain that title and we have evolved to become trusted partners of farmers, landscapers, irrigation dealers, consultants, agronomists, investors and corporate agribusinesses.

With dedicated local sales teams, technical experts, service support, agronomists, designers and product managers, we have the largest footprint and support network of any irrigation provider across Australia and New Zealand.

## / About Netafim Globally

- ✓ Over US\$1.1 billion in revenue
- ✓ Over 5,000 employees of more than 50 nationalities
- ✓ 2 million customers in over 110 countries
- ✓ 10 million hectares drip irrigated
- ✓ 20 billion drippers manufactured per year
- ✓ Over 30% global market share
- ✓ 250 registered patents, 150 pending patent applications
- ✓ Member of the UN CEO Water Mandate
- ✓ 80% owned by Orbia and 20% owned by Kibbutz Hatzerim
- ✓ Orbia has 22,350 employees and US\$8.8b consolidated annual revenue

# Netafim™

## MODNET

Drip Irrigation System



## WHAT IS MODNET?

Modnet drip irrigation systems are comprised of shallow-buried, short-term dripline, temporary Flexnet submains and mains, and are pressurized either by growers' existing pump infrastructure, or with a containerized pump station from Netafim.

The pump station contains everything required for irrigation, fertigation, and chemigation – including a diesel or electric pump, filters, fertigation kit, and easily programmable controller.

During the cotton seasons over the past 2 years, Netafim has trialled Modnet irrigation systems with cotton growers across NSW and QLD.

Compared to flood irrigation, Modnet drip systems have achieved a 19% improvement in yield (2.42bale/ha more), a 27% reduction in nitrogenous fertilizer, as well as water savings.

Growers also noticed improvements in early vigour – as soil wasn't waterlogged by drip, soil temperature wasn't drastically reduced – and wetting up was uniform, with no issues with subbing up of soil where surface crusting may inhibit penetration of irrigation water in flood blocks.

Grower feedback suggests increased yields on drip irrigation compared to flood may be as a result of improved retention.

As the crop doesn't endure waterlogging stress, this may contribute to improved retention of bolls.





Comparison above from a farm in Narromine, NSW shows cotton irrigated by Flood furrow (left), Pivot (middle) and Drip (right). The drip irrigated cotton had a faster establishment, and was not impeded by waterlogging through the season, allowing it to make more use of growing day degrees, put on more biomass, and retain more bolls.

## → Case Study: Moree

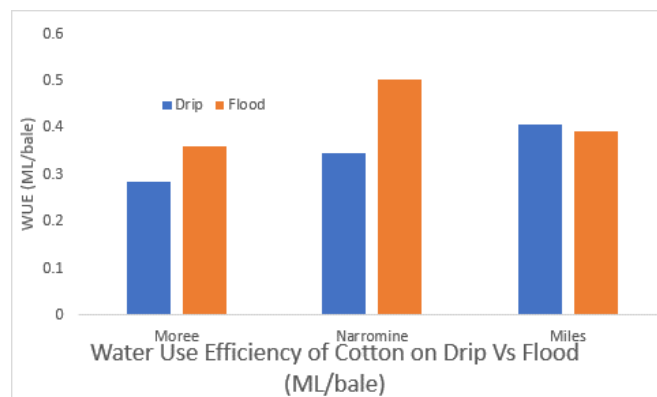
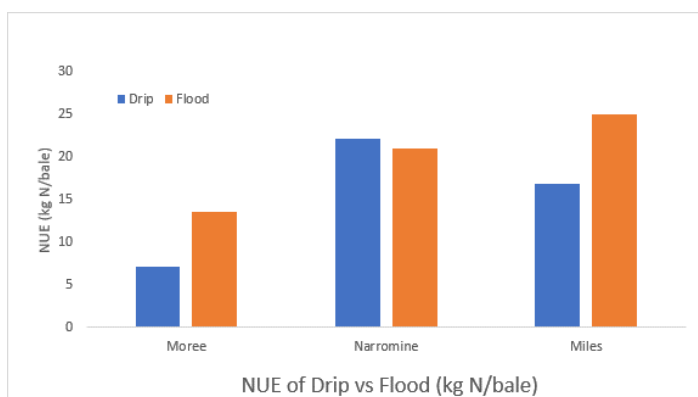
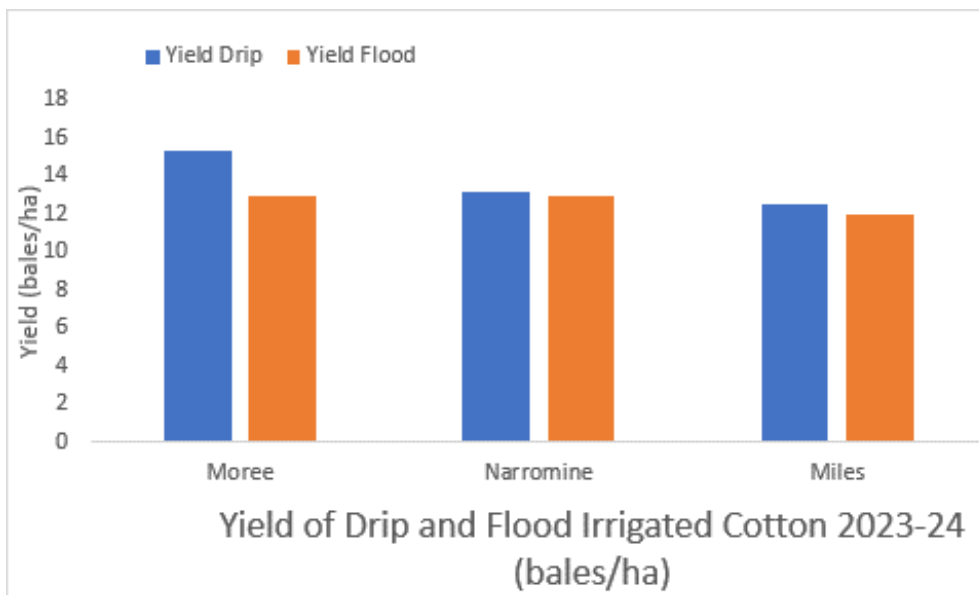
	YIELD (BALES/HA)	WATER (ML/HA)	N UNITS (KG/HA)	WUE (ML/BALE)	NUE (KG N/BALE)
<b>DRIP</b>	<b>15.32</b>	<b>4.36</b>	<b>110</b>	<b>0.285</b>	<b>7.180</b>
FLOOD	12.9	4.64	175	0.360	13.566

*Cotton grown on drip at Moree and other sites showed an increase in yield, alongside an improvement in nitrogen and water use efficiency.*

## → Gross Margin Analysis: Drip Vs Flood

	PRICE	YIELD	SOURCED IRRIGATION WATER	INCOME	EXPENSE	GROSS MARGIN (HA)	GROSS MARGIN (ML)
COTTON (DRIP)	\$760	13.7	5.45	\$11,741	\$4,160	\$7,581	\$1,391
SCENARIO	Drip Irrigated, February 2024 price						
COTTON (FLOOD)	\$760	12.6	6.95	\$10,798	\$4,784	\$6,014	\$865
SCENARIO	Flood Furrow, February 2024 price						

*Using Cotton Info's Gross Margin Analysis tool, the improvements demonstrated by drip irrigation can reduce expenses and increase gross margin/ha and gross margin/ML.*



Industry research has shown a correlation between sprinkler irrigation and disease severity, particularly with verticillium wilt. Due to lower canopy humidity, growers have observed lower incidences of verticillium in drip irrigated fields.

### Other advantages of drip:

- ✓ Reduced tractor hours, labour hours and diesel use compared to flood furrow. Drip doesn't require rotobuck areas to be formed, knocked down and re-formed for machinery to make passes through the field. Drip also doesn't require siphon changes or the seasonal labour that is sometimes required for this
- ✓ Improving yield and reducing nitrogen and water use can provide opportunities for the capture of carbon credits.
- ✓ Lower canopy humidity, and eliminating sprinklers that can wet open bolls results in reduced incidence of boll rot and quality downgrades.



Above: Verticillium wilt in cotton is exacerbated by high nitrogen, which can occur in tail drains from N travelling with water. Potassium deficiency also worsens Verticillium wilt, and waterlogging inhibits potassium uptake and water use efficiency.

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## MODNET

Drip Irrigation System

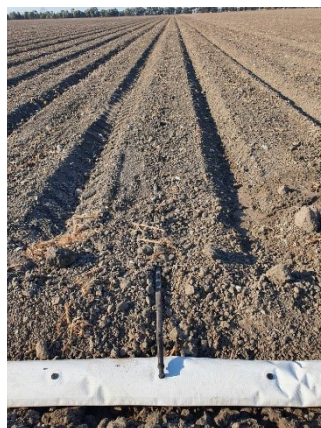


## HOW IS DRIP INSTALLED?

Installation and removal of dripline is relatively simple – dripline is installed similar to using a tyne planter. Drip can be installed at a shallow depth (2-5cm) for temporary systems, or to a depth of 20-25cm for a more permanent solution (8-25 years). For shallow-buried systems, the dripline is situated between every second pair of plant rows (one-in one-out). When removal is required, an implement with a small blade is run under the drip line to break it out of the soil, and it is then recoiled with a hydraulic recoiler and sent for recycling



Above: Coils of dripline are mounted on an implement similar to a tyne planter to bury dripline and cover back over with soil



Above: Freshly installed dripline in friable soil, attached to the portable submain supply via a simple to use elbow connector



Above: The dripline supplies water to plant rows on either side of it, situated between every second row



Above: An implement with a blade is used to break dripline out of the soil for it to be recoiled for recycling



Above: Recoiled Drip line ready to be collected and recycled.



Above: Netafim Recoiler and recoiled drip line

## → Drip System Options



Above: A fully temporary system can be used, with Flexnet supply mains and sub-mains (left) or growers can adapt existing infrastructure and add fertigation/filtration, use permanent underground submains, and only utilize temporary sub-mains (right). Both systems have shallow-buried dripline, but the system could also be adapted to be more permanent with a deeper-buried dripline



Left: Containerized pump stations with all the required infrastructure are also available to growers to either lease for a season, or purchase. The containers are fitted with filters, controllers, a diesel pump, and fertigation – the only requirements are a manifold for pressure reducing valves to attach to on the outlet, and an inlet from the water source.

**For more information, get in touch:**

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