FARMING FUTURES
PROFITABLE BUSINESS IN A CHANGING CLIMATE

CASE STUDY 35

FOCUS ON INNOVATIONS IN IRRIGATION

LANGMEAD FARMS

Langmead Farms is located in the Chichester area and grows vegetables and salad crops. Irrigation is key to their business. It is the only way that they can meet the exacting high standards for crop quality and timeliness required by their supermarket customers. But water is in short supply in the south east and Langmeads are most concerned about coping in a dry summer when crop production and hence water demand is at its most intense.

THE DETAIL

- **1,500 ha vegetables and salad crops** including baby leaf salad, lettuces, celery, spring onions and organic vegetables
- Grown to LEAF Marque Standard
- Grows **baby leaf salad in Spain**
- Contract with Spanish and Dutch growers to **produce out-of-season vegetables** for the UK market

Abstraction and storage

Langmeads currently abstract about 1.3 million cubic metres (286 million gallons) annually from a mix of sources – rivers, rifes (man-made drainage ditches), and groundwater under licence from the Environment Agency.

They store up to 840,000 cubic metres (185 million gallons) of winter water in 16 reservoirs strategically located across their farm sites to augment their summer abstraction licences. An extensive pipe network links the individual farms so water can be moved to where it is most needed.

Recycling wash line water

Langmeads do not like to waste water and so on one farm, which is remote from the rest, they store and recycle wash line water from a sister company – Nature's Way Foods.

The company uses mains water and water harvested from farm buildings to wash and process vegetables. This water is filtered, treated with ultra-violet light, and aerated to reduce BOD* before storing it in a lined reservoir.

This reservoir provides buffer storage so that irrigation demand in the field can be balanced with the effluent discharges from the factory. A recent butyl lined 45,500 cubic metre reservoir cost approximately £450,000.

*BOD—the Biological or Biochemical Oxygen Demand is the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material.

Boom irrigation machines

The constraints on water availability together with the high costs of pumping and storing water mean that it can cost as much as £0.80 per cubic metre. So Langmeads take every opportunity to make sure that each drop counts. Traditional raingun irrigation machines cannot meet the tight irrigation specification for crop quality and so they rely on 55 computer controlled boom irrigation machines to achieve the required high levels of application uniformity. Each machine is capable of applying 25mm of water to a strip of land 450m long and 54m wide over a period of 14 hours – similar in capacity to a traditional raingun. Low pressure (3 bar) sprinklers, located along the boom, reduce wind drift and reduce energy consumption. The typical costs for a hose reel fitted with a boom are about £28,500.

Trickle irrigation

Langmeads Chichester Farm Manager, Alex Duncan, plants 60 ha of celery with disposable trickle tape. He believes that trickle irrigation will play an increasing role for vegetable production in the future. When properly managed the system offers potential for reducing water wastage and maximising crop productivity to water – more 'crop per drop.' Trickle irrigation can be automated and is designed to apply water little and often; sometimes on a daily basis. The system operates at low pressure (0.5 bar). It significantly reduces labour input and fertilizer is injected into the irrigation water so that it reaches the plant roots directly. Trickle tape is buried just below the soil surface at the same time as the pre-germinated celery is planted. The crop is grown in beds with one trickle tape watering two rows of celery. At harvest the tape is then taken up and re-cycled.

At present an abstraction licence is not needed for trickle irrigation. But this is set to change in the next few years as the Water Act 2003 is implemented. So Alex makes sure the water he abstracts for trickle is fully monitored so that he has evidence on which to base his claim for a licence to continue abstracting in the future.

Scheduling irrigation

Making sure the right equipment is used on the farm is one thing. Managing the systems is another – deciding when to irrigate and how much water to apply to each crop. Scheduling irrigation on a day to day basis is a balance between how much water the crops need and the availability of irrigation equipment and pumps to apply it when it is needed.

To achieve this balance, Alex, his fellow managers and irrigation contractors walk the crops three times a week in order to plan how the irrigation equipment will be allocated across the various sites. He also relies on weather stations located on each farm to automatically provide data for calculating crop water requirements using a soil -water balance model. This is supported by regular soil moisture measurements using tensiometers and capacitance probes which both inform and confirm the crop water requirement calculations.

It is good irrigation practice to use more than one method of scheduling. Walking the crops, gathering meteorological data, and checking soil moisture means that Langmeads can have confidence in their irrigation systems and management practices – a 'belt and braces approach'. After all, there is too much at stake to get this wrong!

> ***"It is good irrigation practice to use more than one method of scheduling…After all, there is too much at stake to get this wrong!"***

For advice and information on how to apply this approach to your own farm, take a look at FACTSHEET 3 – GENERAL ADAPTATIONS FOR FARMERS AND GROWERS

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