FUTUREDAIRY information sheet

New option for autumn feed

by Rafiq Islam and Yani Garcia

FutureDairy has found that maize intercropped with brassica (forage rape) provides valuable home-grown feed for dairy cows in autumn/winter, when feed is usually short.

Intercropping involves growing two crops in the same paddock at the same time.

Maize intercropped with forage rape may be an option for irrigated paddocks in regions where maize is harvested for silage in January or early February and it is too early (too hot) to sow annual ryegrass.

A cheap maize variety or old hybrid seed can be drilled immediately after harvesting the silage crop. Sow maize at 70cm between rows. It is better to use a higher than normal sowing density, eg 110,000-130,000 plants/ha.

Forage rape seed can be broadcast with fertiliser a few weeks later, when new maize is already up, to provide some protection for the forage rape seed. Alternatively drill superficially at the same time or soon after the cheap maize is sown.

At Camden, maize intercropped with forage rape in February can be grazed or cut in March when the maize is over 1.2m high; the maize will not re-grow but the forage rape continues growing during the whole autumn and winter period.

Limited water

In situations where water is limited, the summer maize crop could be replaced with a short rotation legume such as cowpea or soybean and then followed by Autumn-sown maize intercropped with forage rape.

Compared with summer-grown maize, the legume requires about a third of the amount of irrigation water.

Soybean in particular is very ‘plastic’ meaning it can recover quite well from a dry period after some rainfall. So it may be a good opportunistic crop in dryland conditions.

An added benefit is that the summer legume would leave residual nitrogen in the soil which can be used by the nitrogen-hungry maize/brassica crop.

Trials

The FutureDairy trials were conducted at the University of Sydney’s Corstorphone research farm at Camden, NSW.

In December 2008 four plots were sown with a summer legume: cowpea, fababean, lablab or soybean. All were harvested on 20 February.

Three days after harvesting the legumes, maize was sown either as a sole crop or intercropped with either forage rape or Persian clover. In all cases the maize was harvested on 20 April.

The plots of sole maize were sown with short rotation ryegrass after the maize harvest.

Forage rape and other crops were harvested four times between late April and early October.

All crops received the same amount of water through irrigation and rainfall.

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FutureDairy researcher, Rafiq Islam in an intercrop trial of forage rape and maize in early autumn.

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Results

Summer legumes

There was no significant difference in the yields of the summer legumes. All yielded close to 8 t DM/ha in one cut, although 30% of the lablab and fababean yield was weed.

Autumn-sown maize intercropping

Maize/forage rape out yielded maize/ryegrass and maize/Persian clover. In the first harvest only, maize and forage rape yielded 7.5 t DM/ha.

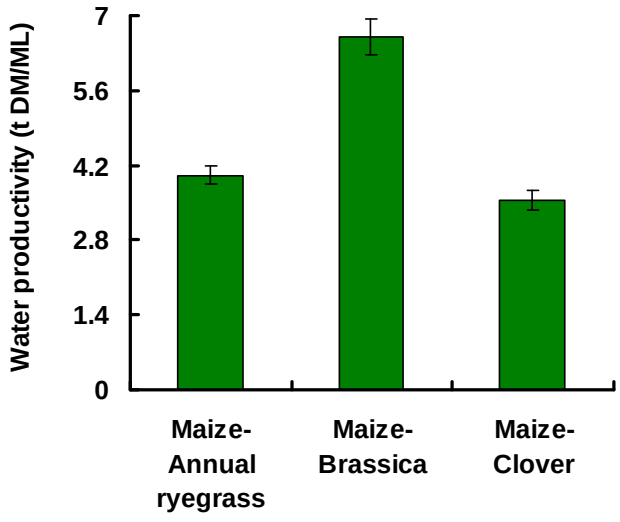
Maize/forage rape was also the most water efficient combination (see graph).

Over the autumn-winter period, Maize/forage rape yielded 17.8 t DM/ha using just 2.7ML of irrigation water, making it a very water efficient crop.

Better irrigation water use efficiency is achieved at that time of the year partly because evaporation is lower in the cooler months and partly because of higher natural rainfall in winter.

For more information

Associate Professor, Yani Garcia,
ph (02) 9351-1621
email sgarcia@usyd.edu.au.



About FutureDairy

FutureDairy aims to help Australia's dairy farmers manage the challenges they are likely to face during the next 20 years. The challenges are expected to be related to the availability and cost of land, water and labour; and the associated lifestyle issues.

Our activities are structured around two priority areas – Precision farming (including automatic milking and innovations) and Feedbase (forages and feeding). These are the areas where there are opportunities to address the challenges related to water, land and labour resources.

For Precision Farming we are investigating technologies with potential to improve farm productivity, efficiency, labour management or lifestyle. FutureDairy is pioneering the development of pasture-based farming systems that use robotic milking for larger herds. Our research is conducted at Australia's first automatic milking system (AMS) research farm, at the Elizabeth Macarthur Agricultural Institute at Camden. Since mid-2009 we have been testing a new concept automatic milking system designed specifically for Australian conditions, while continuing to further develop the farming system around the milk harvesting equipment.

Our Feedbase goal is to develop sustainable dairying systems for the future, with the intensification of home-grown feed to enable more efficient use of land, water and grain. Our trials are being conducted at the University of Sydney's Corstorphine dairy farm and Mayfarm. The investigation is complemented with modelling and component field research in areas of forage production and utilisation.

We are investigating a complementary forage system (CFS) that involves triple cropping on 35% of the farm area and growing pasture on the remaining 65%. Our target is to produce more than 25t DM/ha/y rover the whole farm area, in a sustainable way. The three crops include:

- a bulk crop (eg maize);
- a legume for nitrogen fixation (eg clover); and
- a forage to provide a pest/disease break and to improve soil aeration (eg a brassica).

FutureDairy is now in its second phase. During the first phase, we used existing technology for automatic milking to test the feasibility of robotic milking in a pasture based system. The promising results paved the way for testing a new prototype AAMS with a larger herd during phase 2.

In the first phase, our Feedbase studies tested the feasibility of a complementary forage rotation grown on a small area, both under research and commercial conditions. Phase 1 combined technical research with social research and extension research. During phase 2 we are drawing upon that learning experience to improve our linkages with major extension groups.

Contact us

Project leader:	Assoc Professor, Sergio (Yani) Garcia ph (02) 9351-1621 email: sgarcia@usyd.edu.au
Precision Farming leader	Dr Kendra Kerrisk ph 0428 101 372 email kendrad@usyd.edu.au