

Planning the summer fallow

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Fallowing should be an integral part of the cane production cycle. The fallow period provides a break from the cane monoculture and has important soil health benefits. However, the strategy you use needs to be one that suits your farm management and your farm.

In any case, early spring is the perfect time to plan for the 2015 planting season. The first step in planning your fallow is to decide which blocks will be fallowed. Once this decision has been made, the type of fallow can be chosen.

There are four main options available, and your choice will be dictated by the situation in each block:

A bare, cultivated fallow

A bare, sprayed fallow

A weedy fallow

A managed legume fallow

Fallow type	Positives	Negatives	Recommended situations
Bare, cultivated fallow	<ul style="list-style-type: none"> Opportunity to conduct major earthworks No delay in planting at the end of the wet season 	<ul style="list-style-type: none"> High potential for soil erosion Frequent tillage damages soil structure and disrupts soil organisms Tillage reduces accumulation of mineralised nitrogen 	<ul style="list-style-type: none"> Only recommended when extensive earth works need to be done
Bare, sprayed fallow	<ul style="list-style-type: none"> Opportunity to control difficult weeds like nutgrass with inexpensive chemicals Beds can be formed prior to the wet season and kept clean ready for an early plant 	<ul style="list-style-type: none"> Potential for soil erosion, but because the soil is undisturbed it is not as risky as a cultivated fallow 	<ul style="list-style-type: none"> Where specific weeds are of concern
Weedy fallow	<ul style="list-style-type: none"> Easy to manage 	<ul style="list-style-type: none"> Doesn't provide an effective break from pests and diseases, especially if there is volunteer cane Doesn't control weed problems 	<ul style="list-style-type: none"> Weedy fallows are not recommended
Managed legume fallow	<ul style="list-style-type: none"> Different crop type provides a good break from cane pests and diseases (except root knot nematode) Adds nitrogen to the soil through the fixation of atmospheric nitrogen If taken to grain, provides an additional source of income 	<ul style="list-style-type: none"> Requires commitment and management to do it well Crop residues can be difficult to manage at cane planting time Growing a grain soybean crop delays cane planting until later in autumn at the earliest 	<ul style="list-style-type: none"> In all other situations, a well-managed legume crop will provide the greatest benefits

The benefits of legumes as a fallow

Fallow legumes have been shown to have a positive impact on the farming system however there are a few aspects to be considered, including:

- **Which legume will you plant:** soybeans, cow peas, lablab, peanuts or mungbeans? There's more information in this edition **in the next article, 'Legumes – the pros and cons'**.
- **When will you cultivate the fallow:** before or after the legume crop?
- **Will you take the legume crop through to grain or grow it as a cover crop?**
- **How will you manage the legume residue:** cultivate it in at the end of the crop, or plant cane directly through the standing stubble?
- **When do you want to plant your cane:** autumn or spring?

Establishing a successful legume fallow

As with all farming decisions, there are no recipes.

The table below shows two common options used for the establishment of legume fallows.

These options are to cultivate before planting the legume or to direct drill the legume through the cane trash blanket.

Option 1: Planting legumes into cultivated preformed beds	Option 2: Planting legumes directly into existing cane beds through the trash blanket
Sequence of operation	
<p>Before the wet season</p> <ol style="list-style-type: none"> 1. Cane areas to be fallowed are harvested mid-season 2. Blocks are soil tested and ameliorants such as lime are applied, if required 3. Blocks are cultivated prior to the wet season 4. Beds are formed 5. Legumes are planted into beds 6. Weeds in the legumes are managed with herbicide sprays 	<p>Before the wet season</p> <ol style="list-style-type: none"> 1. Cane areas to be fallowed are harvested green late in the season 2. Cane is killed using a herbicide 3. Legumes are direct drilled through the cane trash into the old cane mounds 4. Selective herbicides are used to control grasses and cane in the legume crop
<p>After the wet season</p> <ol style="list-style-type: none"> 1. Legumes sprayed out or harvested 2. Cane is planted into the beds with a limited amount of tillage 3. Cane is planted in autumn, if possible 	<p>After the wet season</p> <ol style="list-style-type: none"> 1. Blocks are soil tested and ameliorants such as lime are applied, if required 2. Legume crop and trash blanket are incorporated into the soil with cultivation 3. Cane is replanted, often in the spring
Benefits of the system	
<ul style="list-style-type: none"> • Allows cane to be planted early (autumn), producing bigger plant cane yields (trials in the Burdekin region have shown a 30 t/ha yield increase due to an early plant) • Less work to do at planting time as most of the soil preparation has already been done 	<ul style="list-style-type: none"> • Weed control in the legume crop is enhanced due to the trash blanket • Incorporating the trash blanket and the legume crop returns a large amount of organic matter to the system • The soil is protected from erosion over the wet season with the trash blanket • The trash blanket is easy to incorporate after the wet season as it has broken down
Considerations of the system	
<ul style="list-style-type: none"> • Difficult to incorporate the green cane trash blanket directly after harvest • Burning of the trash results in a loss of valuable soil organic matter • The soil is in a cultivated state during the wet season and more prone to erosion • Weed control in fallow legumes is reliant on chemicals • Fallow blocks need to be harvested mid-season to allow time for land preparation 	<ul style="list-style-type: none"> • As all of the land preparation takes place after the wet season, it is often not possible to complete an autumn plant (delayed planting leads to lower cane yields) • Soil ameliorants are often applied after the legume crop and therefore give no benefit to the legume crop





Which option best suits your farming system?

- Both options have benefits by including a legume in the system.
- If you grow a soybean crop, and plan to take it to grain, it is unlikely that you will be able to plant cane early as the soybean crop will most likely be harvested in May, leaving little time before the winter to plant cane.
- If you have a controlled traffic farming system you may be able to plant the legume crop through the cane trash blanket, and then using either zero or reduced tillage, replant the cane through the legume residue. Using this system you could capture the benefits of the trash blanket on the legume as well as the benefit of an early cane plant.

Above: Applying banded lime onto preformed beds following a sprayed out soybean crop. A cropping system where most of the cultivation is completed before the fallow legume crop was planted. After the lime application the beds were reformed and cane was planted.

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In this week's CaneClip Phil Patane speaks about harvesting management strategies.

We also give you the latest on Canegrubs and treatment options, results from our recent precision agriculture survey, and focus on a number of research projects in the area of soil health.

We welcome contributions and feedback at sra@sugarresearch.com.au or 1300 SRA 111 (1300 772 111).

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