

Green Manuring for Protected Cropping

Overview

- For – general and specific benefits
- Against – drawbacks (mainly economic)
- Options – varieties and strategies.
- Case Study – Hankham Organics

Arguments **for**...

- Soil health
- Moisture retention
- Sustainable nitrogen fixation
- Biodiversity
- Reduced external inputs
- Can be used to reduce pest and disease

Arguments against...

- Unviable use of valuable space
- Requires maintenance
- Difficult to control weeds
- May only supply a small proportion of following crops requirements
- Low nutrient leaching from protected soils
- Can harbour pest and disease

What options are there?

- Useful Varieties
- Catch cropping
- Fertility building period
- Under sowing
- Importing fertility from field grown green manures or leguminous crops

Phacelia (4 weeks)



Rotavating phacelia catch crop



Case Study – Hankham Organics

The 8 yr rotation contains 3 fertility building breaks at 2 ½ - 3 year intervals.

1 x Late October sown to overwinter, precedes spring planted peppers so incorporated late March.

2 x Early Summer sown (May/June) incorporated Aug/Sep for Autumn / Winter leaf crops.

Method

Legumes are sown using earthway seeder in rows at 10". Once established but before weeds set (3-4 weeks) the fast growing non-legume is broadcast then the inter-row space is hoed. The area is kept dry to allow weeds to die off then a quick hand weed within the rows before a good watering to germinate.

Mixtures used

- Winter – Tares sown first with about 15% rye as a row marker, will receive a pre-Christmas hoe then under sown with phacelia late Feb.
- Summer – Crimson clover / Sweet clover / mung bean sown first, under sown with Buckwheat / Amaranth.

Vetch and Rye – 10th Jan



Mung / Buckwheat Mix



Useful green manure varieties for protected cropping

Buckwheat



- Fast Growing
- Shades out weeds
- Attracts beneficial insects
- Phosphate accumulator
- Will germinate well in decomposing crop debris
- Slow to form viable seed

Green Amaranth



- Very fast growing
- Drought resistant
- Shades out weeds
- Large plant, lots of woody material if mature = possible short term N lock-up
- Will not seed in long days
- Extensive root system

Phacelia



- Fast growing
- Shades out weeds
- Flowers attract beneficial insects
- Soft tissue = rapid breakdown
- Can suffer from sclerotinia (winter)
- Must be cut before seed set

Caliente mustard



- Fast growing
- Out competes weeds
- Bio-fumigation effect
= nematode and
corky root control
- Chop and incorporate
immediately!
- Takes up part of
brassica rotation
- More useful to
monocrop systems

Mung Bean



- Fast growing N-fixer though limited nodulation observed, inoculant?
- Drought resistant
- Good germination
- Disease free

Sweet Clover



- Fast growing N-Fixer
- Relatively quick to germinate
- Extensive root system
- Rapidly nodulates when inoculant is used
- Biennial so slow to flower.

Crimson Clover



- Fast growing N-Fixer
- Relatively quick to germinate
- Good amount of foliage
- Good short term N-fix
- Easy to destroy

Yellow trefoil



- Recommended for under-sowing
- Low competition
- Can flower/seed quickly
- N-fixing value may be limited as a short term crop

Tares / Vetch



- Excellent late or Winter sown
- Probably best option for N-fixing before Summer crops
- Deep rooting
- Dense foliage