

GRASSLAND DEVELOPMENT CENTRE CANOLFAN DATBLYGU TIR GLAS

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211.01 GRASS-CLOVER LEYS IN ORGANIC ROTATIONS

Organic farmers use crop rotations to: build soil fertility and biological activity; increase soil organic matter; control weeds; prevent disease; increase farm bio-diversity; promote animal and crop health. On the all grass farm, 'rotation' of grazing and conservation is used to benefit sward condition, animal health and nutrient balance.

ROTATION DESIGNS

There is no blueprint rotation

Examples

Norfolk four course:

Root→barley→legume→wheat

Or six course version:

Root→barley→legume→potatoes→wheat→oats

Variations on this include catch forage or vegetable crops grown between the legume leys and the cereals.

Two different rotations may be needed to accommodate the field types on the farm
Wetter western areas are better suited to a longer legume phase; often known as 'ley farming'.

GRASS CLOVER LEYS & OTHER LEGUMES

Key roles

Nitrogen fixation

Improving soil structure

Building up organic matter

Weed and disease control

High protein feed

Short 'course' (1-2 years)

Red clover with hybrid ryegrasses

Short term white clover with ryegrasses

Peas/beans/lucerne/lupins

Medium course (3-5 years)

White clover with ryegrasses

Red clover and white clover with ryegrasses.

HOW TO PLAN

1. Decide if livestock or cropping is the priority then balance the two in the system.
2. Identify the constraints including farm layout and infrastructure; fencing, tracks, water and proximity to the buildings.
3. Assess:

Land area: 'how much can be ploughed; how many fields, how much is AAP,

Soil type(s): heavy or light, fertility.

Cropping: which can you grow, what are their needs, yields, quality and value.

Grassland: area of permanent or long term leys, short or medium leys that can be included in the rotation, what stock can be supported.

Livestock: winter forage, summer grazing, and concentrate needs. Beef to sheep ratio.

Manure/slurry: quality and quantity.

Seasonal labour, machinery/contractors: requirements for cultivation and harvest.

Markets: for cash crops or surplus grain/seed

Subsidies: AAP/Tir Gofal/OFS.

USING THE LEYS –

CONSTRAINTS & OPPORTUNITIES

Grazing

- Manage to sward height guidelines for optimum production.
- Establish a clean or 'safe' grazing system for vulnerable livestock.
- Do not graze ewes on red clover six weeks either side of tugging.

Hay/silage

- Choose harvest date according to needs of quality and quantity.
- Red clover and lucerne hay are prone to leaf shatter. Consider silage instead

Arable /whole crop silage

- Palatable forage that gives good feed intakes
- Useful cover crop for an undersown ley. Cut at milky-dough stage for best yield and quality, or earlier if crop has lodged, or to protect the undersown ley.

Green manure

- Cut and mulch, or plough in before 'cash' crop.

RULES OF ORGANIC ROTATIONS

- Deep rooting crops to follow shallow.
- Nitrogen demanding crops to follow nitrogen fixing (e.g. grow cereals after clover leys).
- Crops slow to establish should follow weed suppressive crops.
- Use appropriate time intervals between similar crops (e.g. > five years between red clover crops).
- Balance cash and forage crops (e.g. no more than 50% cereals, a minimum of 20% legume leys).
- Maintain soil cover whenever possible using catch crops, green manuring or undersowing.
- Alternate autumn and spring sown crops.
- Use resistant varieties and *mixtures* when possible.

GRASS CLOVER LEYS – SHORT TERM MIXTURES

Short term red clover ley

| Species | kg / acre |
|-------------------------|-----------|
| Hybrid ryegrass (tet.) | 5 |
| Int. Perennial ryegrass | 4 |
| Red clover | 3 |
| Total | 13 |

- Suitable for ensiling and aftermath grazing for cattle or lambs.
- Can be used for cut and mulch.
- Yield 11-13t DM/ha, supports ~ 1.6-1.8 LU/ha.

Short term white clover ley

| Species | kg / acre |
|------------------------------|-----------|
| Hybrid ryegrass (tet.) | 3 |
| Int. Perennial ryegrass | 4 |
| Int. Perennial ryegrass(tet) | 3 |
| Late Perennial ryegrass | 2 |
| White clover | 1.5 |
| Total | 13.5 |

- Suitable for grazing all livestock types ensiling and hay making.
- A good substitute for a red clover ley if need to return to a short term ley before 5 years.
- Gives 9-11t DM/ha, supports ~ 1.5 LU/ha.

The seedrate of these mixtures can be:

- reduced by 2kg/acre if undersown,
- varied for variety choice.

GRASS CLOVER LEYS – MEDIUM TERM MIXTURES

Choose grass varieties with good ground cover and high persistency rating.

Medium term white clover ley

| Species | kg / acre |
|--------------------------------|---------------|
| Hybrid ryegrass (tet.) | 1 |
| Int. Perennial ryegrass | 4 |
| Int. Perennial ryegrass (tet.) | 3 |
| Late ryegrass | 3 |
| White clover (Herbs*) | 1.5 (0.75) |
| Total | 13 |

- Suitable for grazing all types of stock and for making hay or silage.
 - Select small leaf or adaptable white clover for hard sheep grazing.
 - Yield 9 -11tDM/ha, supports ~1.4LU/ha.
- *Herbs may be included; they are useful but expensive and not persistent.

Medium term red and white clover ley

| Species | kg / acre |
|--------------------------------|-----------|
| Hybrid Ryegrass(tet) | 3 |
| Int. Perennial ryegrass | 4 |
| Int. Perennial ryegrass (tet.) | 3 |
| Red clover | 2 |
| White clover | 1 |
| Total | 13 |

- Combines the high yield and quality of the red clover (which dominates in the first 2 or 3 years) with the persistence of a white clover ley which takes over in the 4-7th year.

FURTHER INFORMATION

webpage: <http://www.grassdevcentre.co.uk>