

Grass – Legume Balance

Why?

- ♣ Legumes fix N
- ♣ Complementary growth patterns –
....., results in a more uniform pasture growth pattern
- ♣ Greater

What

- ♣ Orchardgrass - alfalfa
- ♣ Ryegrass - white clover
- ♣ Wheatgrass - sainfoin
- ♣ Phalaris – subterranean clover
- ♣ Red clover - ?
- ♣ Tropical legumes (stylosanthes, siratro)
- ♣ warm season grasses

Factors affecting legume balance

- ♣ Competition for N
- ♣ Selective grazing
- ♣ Grazing Management
- ♣ Competition for light
- ♣ Seasonality (temperature optimum)
- ♣ Legume growth pattern – conducive to a patchy distribution
- ♣ Annual cycles – climate

Competition for N

- ♣ Legumes have an advantage for N uptake –
- ♣ The delay in the pathway for N transfer from legume to grass results in
 - Cycling through
 - Death and decay
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 - Direct plant-plant transfer and through soil are
- ♣ At low N,, and will be more abundant
- ♣ The legume population increases over a period of several years -
.....
- ♣ The improved soil N status shifts
- ♣ Because of the delay in N availability the legume population the equilibrium thus resulting in

Animal selectivity

- ♣ Animals are selective and due. Cattle and goats are less selective than sheep – sheep pasture will have
- ♣ What's the reason for this selectivity?
 - Higher
 - Nutritional basis – each component of the animal diet provides animals (protein vs energy)
 - Related to sward structure –

Grazing management

- ♣ The proportion of white clover is increased by (light quality and plasticity of growth)
- ♣ The opposite for
- ♣ Most legumes (white clover, red clover and alfalfa) are and will be lost in high traffic areas. There will a tendency for

Competition for light

- ♣ It was once considered that clover could be
- ♣ This has largely been
- ♣ Many legumes (red clover and alfalfa) are
- ♣ White clover can adapt its
- ♣ Clover leaves are more
- ♣ Clover leaves have a larger ratio of (0.5 vs 0.7)

P and patchiness

- ♣ In general grasses have an advantage for P uptake – due
- ♣ Under grazing, P is redistributed and N is redistributed in
- ♣ Clover and grass have a pasture and this may be driven by the (and reinforced by)

Seasonality and Climate

- ♣ The higher of most legumes than C3 grasses results in (and slower spring/fall growth) – this results in seasonal variation in legume abundance
- ♣ Legumes and grasses vary – so annual variation in legume amount may be related to