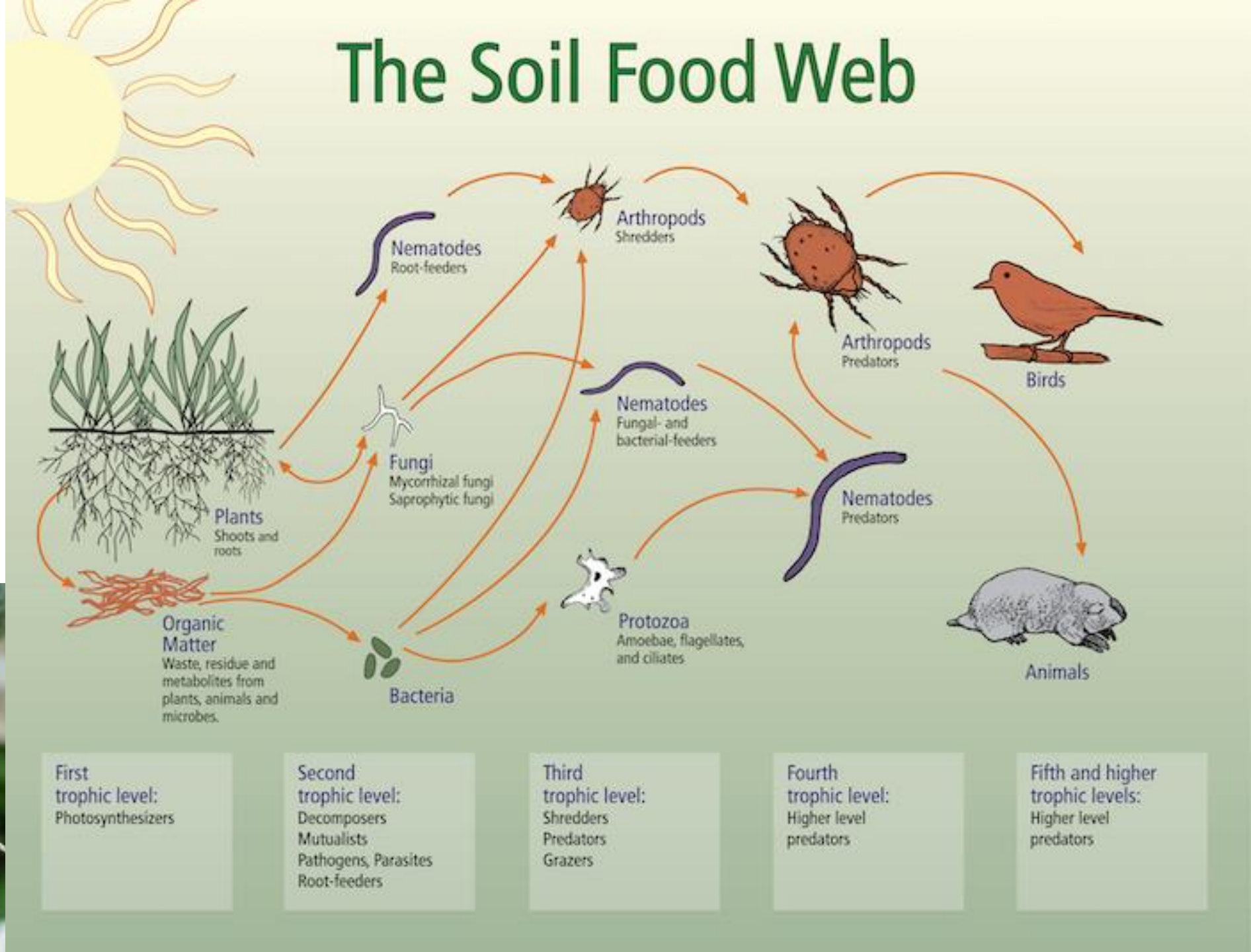
Multi species pasture

Mother nature defaults to Biodiversity

A healthy soil is a living, breathing, complex organism

One teaspoon of healthy soil contains 10 billion living things



Soil versus dirt

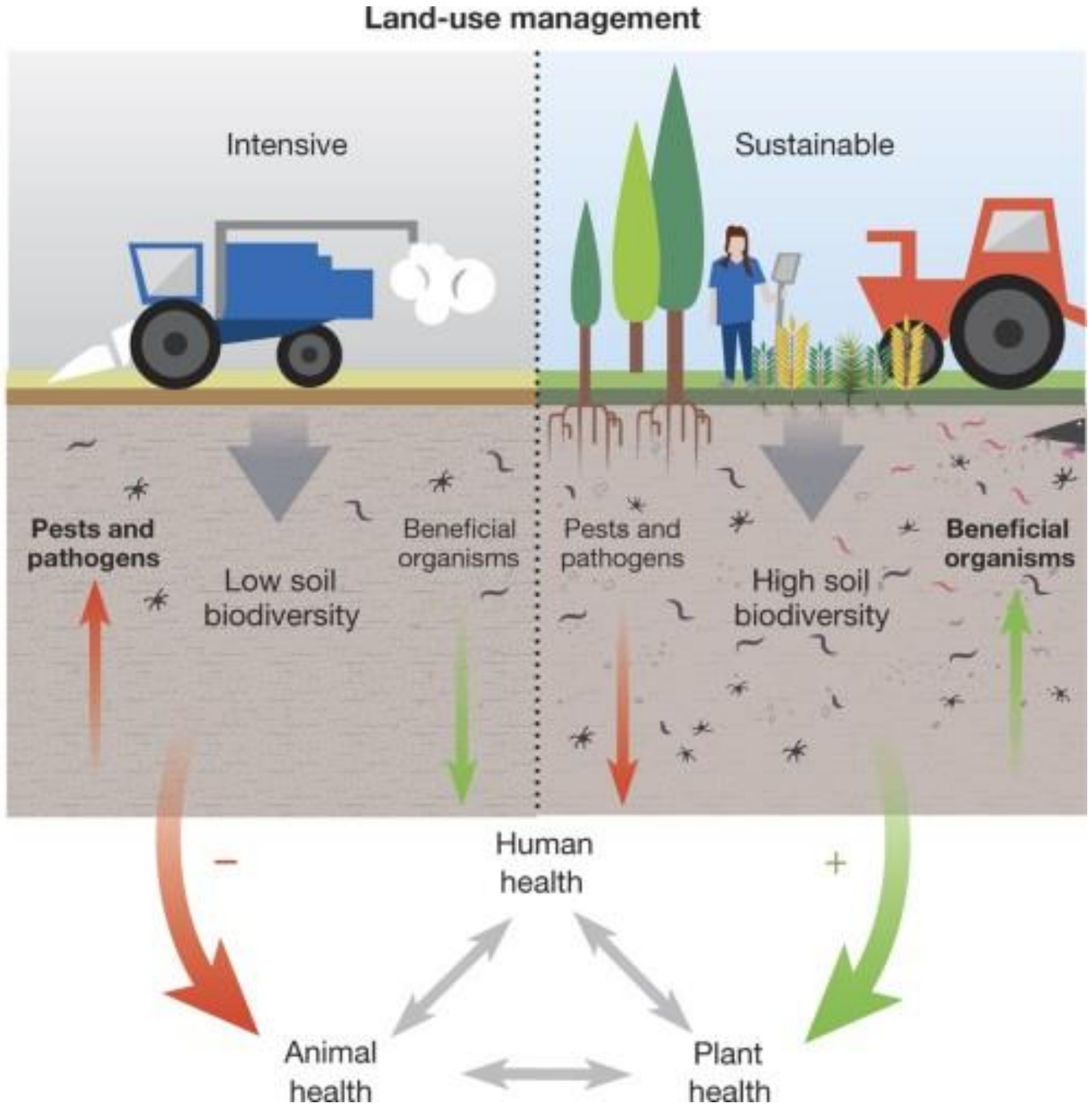
Soil:

- Soil is the top layer of material covering the earth's surface, formed from the erosion of rocks and containing minerals, organic matter, air, water, and living organisms.
- **Composition: Minerals:** Sand, silt, and clay particles.
- **Organic Matter:** Decomposed plant and animal matter, providing nutrients and improving soil structure.
- **Air:** Essential for root respiration and microbial activity.
- **Water:** Necessary for plant growth and nutrient transport.
- **Living Organisms:** Microbes (bacteria, fungi), earthworms, and other organisms that contribute to nutrient cycling and soil health.
- **Function:** Supports plant growth, filters water, regulates climate, and provides habitat for a diverse array of life.
- **Characteristics:** Rich in nutrients, well-drained, and has good structure.

Soil versus dirt

Dirt:

- **Definition:** Dirt is the lifeless form of soil, consisting primarily of minerals and lacking the essential organic matter and microorganisms that make soil fertile and healthy.
- **Composition:** Predominantly made up of sand, silt, and clay particles.
- **Characteristics:** Dry, dusty, compacted, and lacking in nutrients and living organisms.
- **Function:** Dirt is not useful for plant growth and lacks the ability to support life.



The "Green Revolution" in the 20th Century:

- add nitrogen, phosphorus and potassium (N, P, K)
- dramatically increased food production

But:

- Dramatically decreases soil function
- Suppresses the soil biology
- <u>Turns soil into dirt</u>
- Needs increased inputs to maintain production
- Expensive = decreases profit margin
- Environmental impacts
  - An estimated 70% of the N (urea) applied to pasture runs off into the waterways causing algal blooms
    - or is released to the atmosphere as nitrous oxide

Mono culture ryegrass pasture

The more species there are above the ground the more species there are below the ground

Increased number and diversity of organisms below the ground lead to:

- Increased production
- More resilience to disease and pests
- More water holding capacity
- Healthier plants
- Healthier animals
- Healthier humans

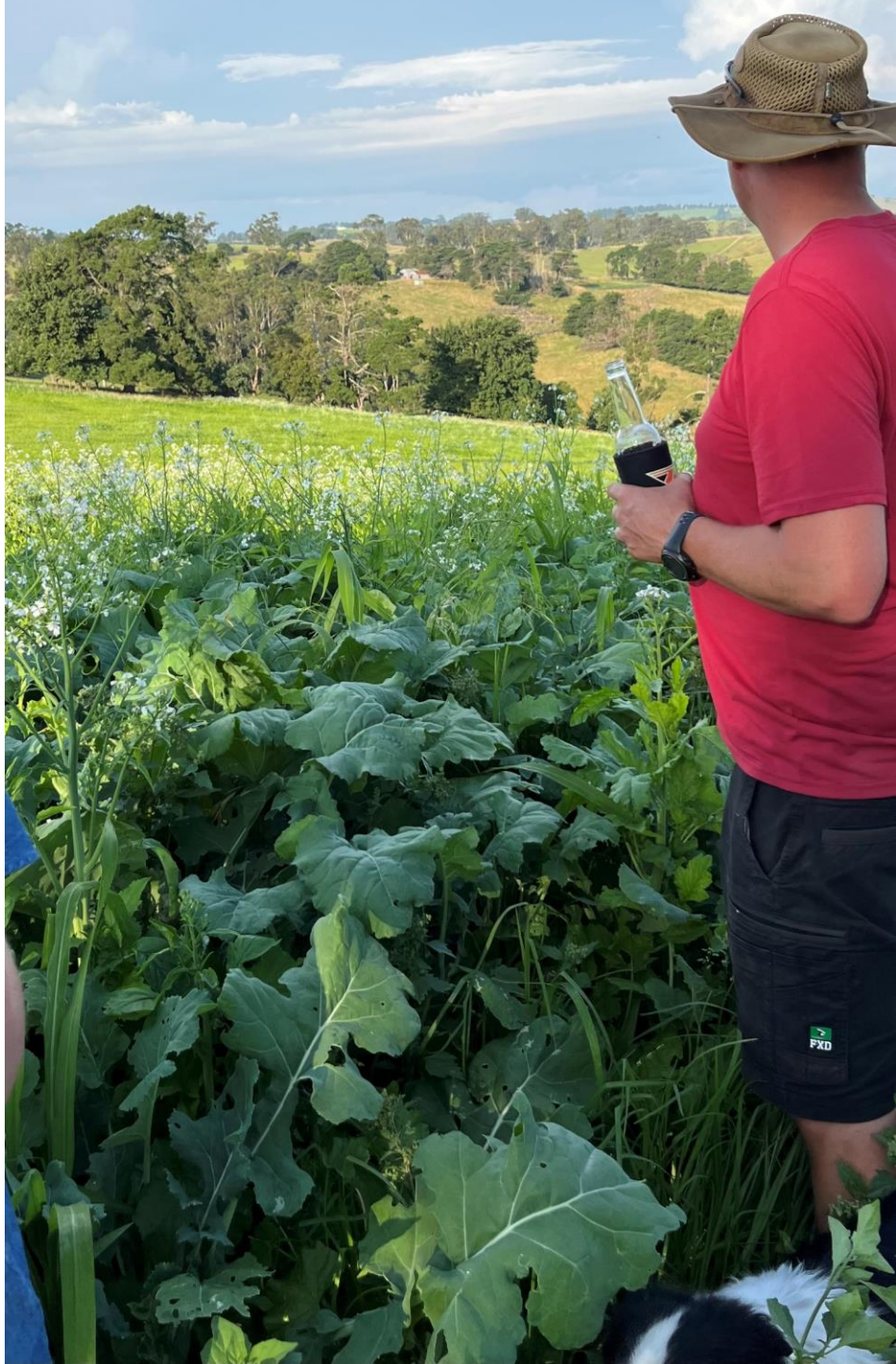

Perennial ryegrass: high N (Thamaraj)
6t Winter Multispecies
6t Summer Multispecies
60
50
40
30
20
10
0
kg/ha/day DM growth
Jan
Feb
March
April
May
June
July
August
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Dairy pasture
Caldermeade February 2025

Multi species crop at Yannathan February 2025

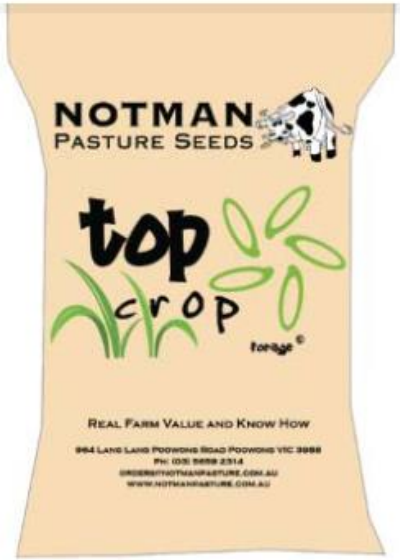
Multi species mixes

- Need at least four Families of plants:
- Grasses:
  - Rye grass, cereals
- Legumes:
  - White/red clovers, peas, vetch
- Brassicas:
  - Tillage radish, leafy turnip, rape
- Others:
  - Chicory, plantain, linseed



Multi species mixes for southern Victoria – Jade Killoran

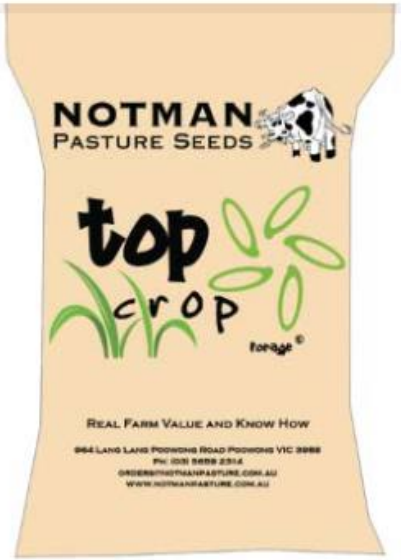
Species: autumn	Species: spring-mid Oct	Species: mid Oct on
Cereals: barley, ryecorn, wheat, oats	Forage oats, winter wheat	Millet
Ryegrass	Italian ryegrass	Corn
Perennial grasses	Vetch	Sorghum
Vetch	Red clover	Vetch
Red clover	Balansa clover	Red clover
White clover	Crimson clover	Fodder rape
Balansa clover	Fodder rape	Tillage radish
Sub clover	Tillage radish	Leafy turnip
Persian shaftal clover	Leafy turnip	Bulb/globe turnip
Crimson clover	Bulb/globe turnip	Buckwheat
Field peas	Linseed	Linseed
Faba beans	Chicory	Sunflower
Fodder rape	Plantain	Chicory
Tillage radish	Buckwheat*	
Leafy turnip	Sunflower*	
Bulb/globe turnip		
Linseed		



LONG TERM MULTI SPECIES BLEND

- **Matrix Ryegrass**
- **Kainui Cocksfoot**
- **Leona Prairie Grass**
- **Top Crop Chicory**
- **Demand White Clover**
- **Reaper Red Clover**
- **Oracle Plantain**

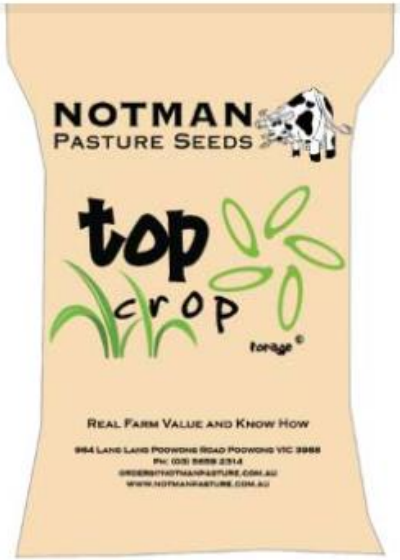
Sowing rate: 25-35kg/ha
Sow: Feb-April
Unit size: 25kg, 1000kg



WINTER MULTI SPECIES BLEND

- **Saia Oats**
- **Ed MAX Diploid Annual Ryegrass**
- **Southern Green Ryecorn**
- **Appin Leafy Turnip**
- **Paradana Balansa Clover**
- **Shaftal Persian Clover**
- **Forage Radish**

Sowing rate: 60-70kg/ha
Plant: March-June
Unit size: 25kg, 1000kg



SUMMER FORAGE MULTI SPECIES BLEND

- **Forage Millet**
- **Forage Sorghum**
- **Forage Brassica**
- **Red Clover**
- **Forage Radish**
- **Chicory**
- **Plantain**

Sowing rate: 15-20kg/ha
Plant: October-December
Unit size: 25kg, 1000kg

How Do Cover Crops Benefit Soil?

It's different for every farmer, but in general, cover crop benefits include: enhanced soil biology, improved soil structure, increased infiltration, reduced erosion, weed suppression, nutrient cycling and wildlife propagation.

Learn More...

How Do Cover Crops Benefit Livestock?

Well-planned annual cover crop mixes can provide

Dairy Winter Mix

High diversity mix leading to greater animal and soil health and performance. Builds organic matter fixes nitrogen.

Ingredients

Triticale, Forage Oats, Green Globe turnip, Radish, Leafy turnip, Berseem clover, Crimson clover, Arrowleaf clover, Balansa clover, Fenugreek, Diploid ryegrass, Tetraploid ryegrass.

Planting

Sowing depth 10-30mm or broadcast into moist soil making good seed to soil contact.

Timing

March - June

Seed Rate

Suggested sowing rates ~30-35kg/ha.

Dairy Winter Mix + Perennials

High diversity mix leading to greater animal and soil health and performance. Builds organic matter fixes nitrogen.

Ingredients

Triticale, Forage Oats, Green Globe turnip, Radish, Leafy turnip, Berseem clover, Crimson clover, Arrowleaf clover, Balansa clover, Fenugreek, Diploid ryegrass, Tetraploid ryegrass, White clover, Chicory, Plantain,

Planting

Sowing depth 10-30mm or broadcast into moist soil making good seed to soil contact.

Timing

March - June

Seed Rate

Suggested sowing rates 35kg/ha.

SGLN Dairy farm demonstration site results

6 views • 1 year ago

Comments

Newest

Results

Date monitored	DM		ME		Crude Protein		Non Fibre Carbohydrates		Calcium		Wet weight (kg)		t/ha DM	
	Con	Regen	Con	Regen	Con	Regen	Con	Regen	Con	Regen	Con	Regen	Con	Regen
4/10/2022	20.8	21.6	11.47	10.96	18.9	16.5	30.8	28	0.25	0.33				
24/02/2023	18.1	17.5	9.08	9.93	14.3	15.5	23.7	38.7	0.77	1.23	0.39	0.49	2.8	3.4
3/04/2023	18.7	16.5	10.23	10.52	18.8	21.1	33.1	38.6	0.98	1.17	0.4	0.4	3.0	2.6
4/08/2023	10.3	16.1	11.09	11.52	26.4	24.8	20.8	33	0.56	0.89	0.3	0.7	1.2	4.5
25/09/2023	15.2	17.7	11.12	11.76	22	24.4	27.4	32.7	0.66	0.78	0.6	0.8	3.6	5.7
5/02/2024	14.4	12.6	9.09	10.48	13.4	18.3	24.6	41.1	0.98	1.48	0.6	1	3.5	5.0
Average	**16.2**	**17.0**	**10.4**	**10.9**	**19.0**	**20.1**	**26.7**	**35.4**	**0.7**	**1.0**	**0.5**	**0.7**	**2.8**	**4.3**

Total cost and benefits

	Conventional	Regenerative
Cost	$2,287	$1,787
Total t/ha DM	14	21
Cost per t DM	**$161**	**$84**

Videos from Smart Farming for Western Port project

- Adding Agroforestry to a Grazing Property
- Carbon Farming and Soil Carbon – Richard Eckard
- Options to Reduce Methane Losses on Farms – Richard Eckard
- Reducing Methane Emissions from Farm Dams – Martino Melerba
- Intro to Regenerative Agriculture video series – Declan McDonald
- Creating a regenerative farm business part 1: The mindset – Mark Gardner
- Creating a regenerative farm business part 2: Designing it – Mark Gardner
- Creating a regenerative farm business part 3: Looking ahead – Mark Gardner

Videos from the Enhancing Soil Biology project

- Farmers sharing their learnings
- Farmers sharing what they're doing on farm after the soil biology project
- How to enhance soil biology on farms – Dr Mary Cole presenting at project launch
- Dr Mary Cole on how to get your soil biology right and the benefits of doing this
- Dr Mary Cole on the soil food web, mycorrhizal fungi, and how healthy soil reduces weeds
- Introduction to carbon trading – Robbie Gray from Bass Coast Landcare Network
- Regenerative Grazing in the Southern Gippsland landscape – Graeme Hand
- Multispecies Pastures Part 1 – Jade Killoran
- Multispecies Pastures Part 2 – Jade Killoran