

# Cover Crops, A Soil Health Approach

SASEV Virtual Table & Dried Grape  
Information day

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 **BARENBRUG**





# What are Cover Crops?

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- Any plant population grown with the main goal of protecting and enriching soil, that increases soil health over time.





# Soil Health Benefits



1. Organic carbon



2. Microbial activity



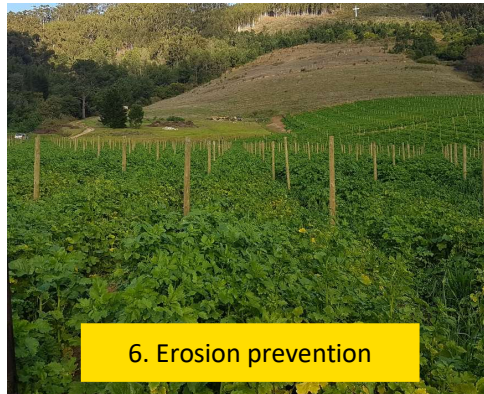
3. Aeration and Infiltration



4. Nitrogen fixation



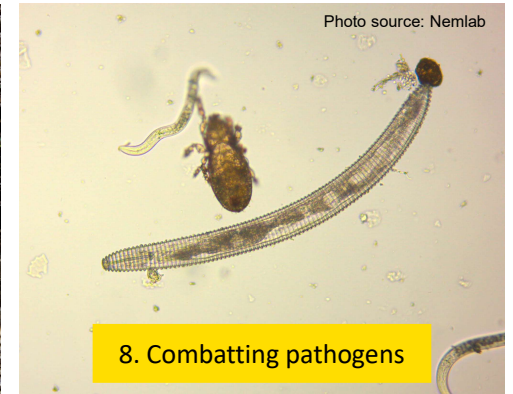
5. Weed suppression



6. Erosion prevention



7. Building structure



8. Combatting pathogens

Photo source: Nemlab



# Nitrogen Fixation

- Symbiosis
- Influencing factors
- Typically 15-40kg N/ton DM
- 7kg fixed N - covers inoculant cost\*

Species	Potential N (kg/ha)	Value (R/ha)*
Forage Peas	60 - 105	1 500 - 2 625
Vetch	55 - 170	1 375 - 4 250
Lupines	85 - 130	2 125 - 3 250
Perennial Clover	85 - 225	2 125 - 5 625
Annual Clover & Medics	80 - 150	2 000 - 3 750
Faba Beans	110 - 170	2 750 - 4 250

\* Based on R25/kg N (LAN)





# Soil Health Benefits



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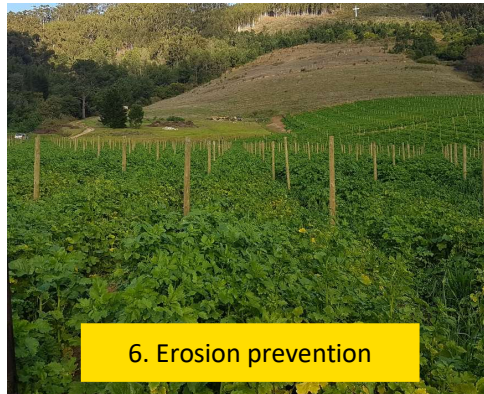
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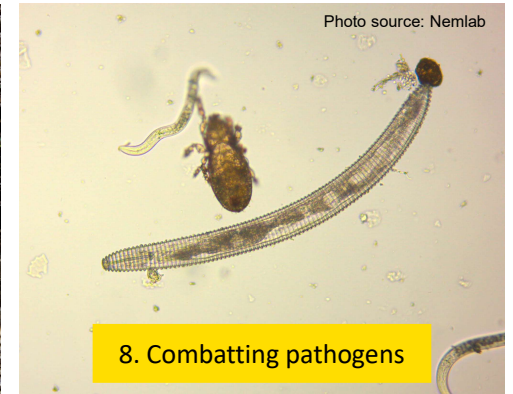
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# Integrated weed management

- Why?

- Herbicide resistance ↑
- Cost of chemicals ↑
- Availability ↓
- Environmentally conscious consumers ↑

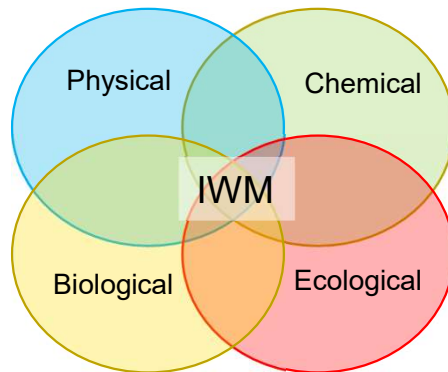


Table grapes,  
De Doorns



# Soil Health Benefits



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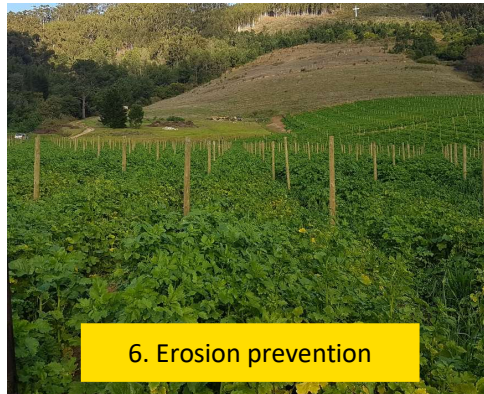
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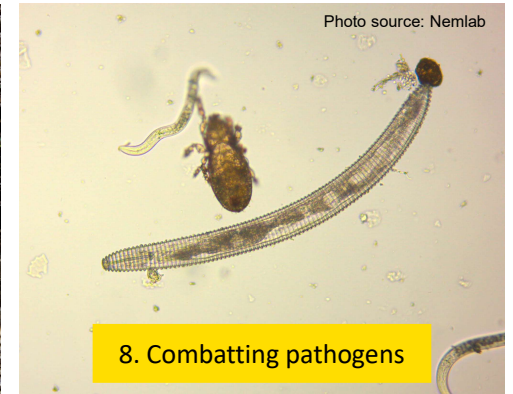
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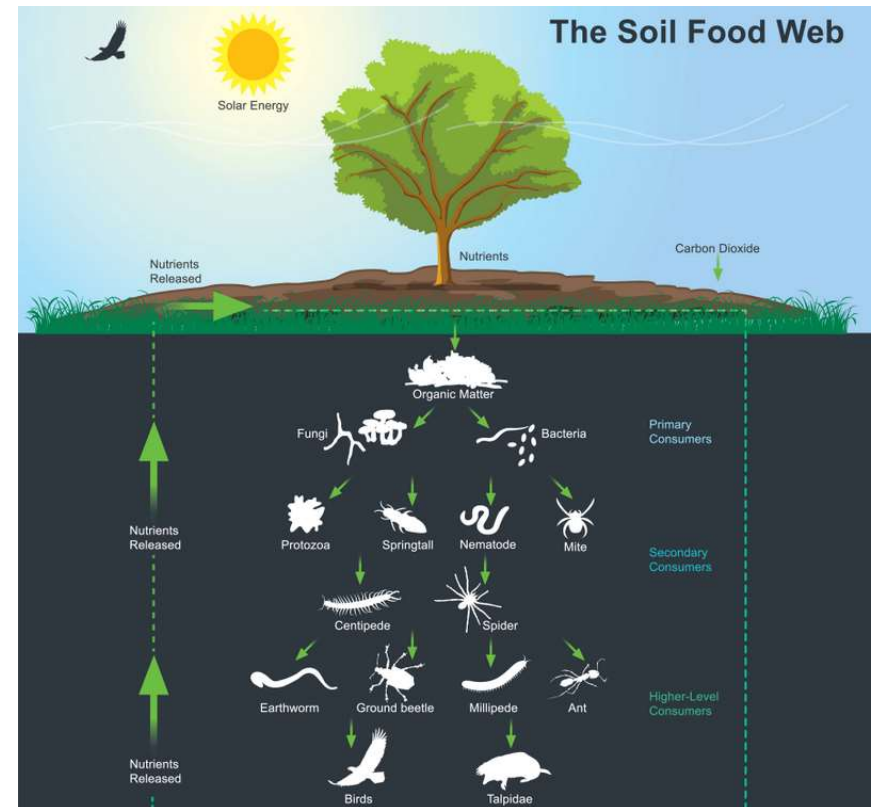
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# Combatting Pathogens

- Four management approaches:
  1. Bio-fumigation
  2. Non- and poor host cover crops
  3. Diversity and rotation
  4. Chemical (Biological?)





# Soil Health Benefits



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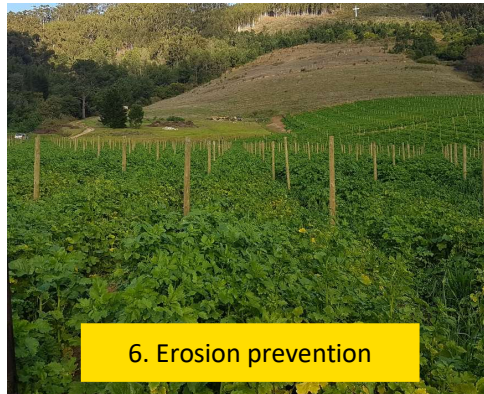
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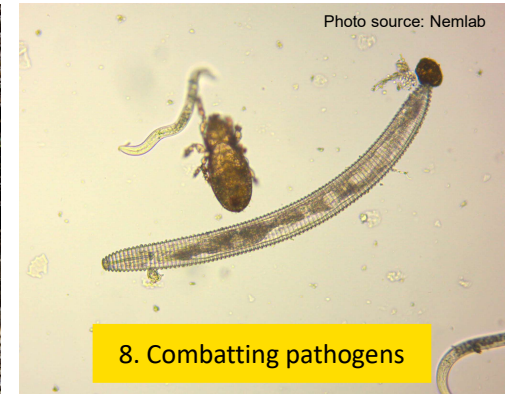
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# Natural predators and beneficial insects

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# Cover Crop Selection

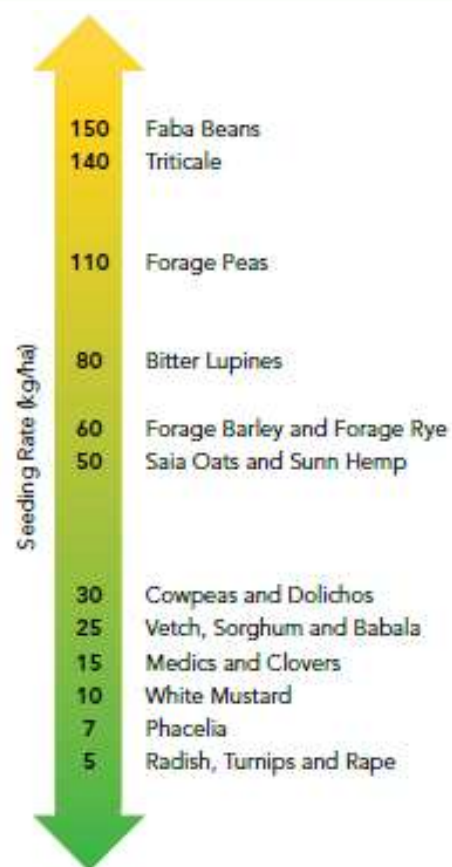
- Rainfall and irrigation
- Soil type
- Goals
  - Weed suppression
  - Forage production
  - Biomass
  - Nitrogen fixation
  - Alleviating compaction
  - Erosion prevention
  - Decoration
- Challenges/Problems
  - Very wet, low/high pH, saline, etc.
- Equipment
- Budget



Sand	Loam	Clay
Phacelia	Phacelia	Phacelia
Forage Rye	Forage Rye	Forage Rye
White Mustard	White Mustard	White Mustard
Radish	Radish	Radish
Vetch	Vetch	Vetch
Bitter Lupines	Bitter Lupines	Barley
Saia Oats	Oats	Oats
Serradella	Clover	Clover
	Medics	Medics
	Triticale	Triticale
	Faba Beans	Faba Beans
	Saia Oats	Forage Peas
	Forage Peas	

# Formulating Seed Mixtures

- Seed size and shape
- Equipment
- Compatibility





A photograph of a vineyard with rows of grapevines. The vines are covered in green leaves and some small purple flowers. In the background, there are more rows of vines and some trees under a cloudy sky. A white rectangular box is centered over the image, containing the text "Work rows".

# Work rows



# Annual Winter Options

## Grasses and Cereals

- Forage Rye
- Forage Barley
- Saia Oats
- Triticale



## Legumes

- Lupines
- Vetch
- Forage Peas
- Clovers



## Brassicas and Forbes

- Radish
- Mustard
- Phacelia





# Perennial Cover Crops

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- 'Mow and blow' throughout the season
- Maximum material production
- High fibre content = cover that lasts longer
- The idea is to replace expensive mulch and to rather produce it in the work rows
- Nutrient mining/scavenging



Apples, Kouebokkeveld





# Vine Rows

Apples, Hemel en  
Aarde Vallei



# Vine Row Options



Medics

Sub Clover

White Clover

Grazing Vetch

Turnips

Radish





# Bankies

- Grows low
- Fixes nitrogen in the rootzone
- Re-establishes via seed
- Weed suppression
- Produces a mulch

## Perennial option

Seeding rate (kg/ha)	Species	Variety
3	Medics	Santiago/Scimitar
3	Whiet Clover	Durana/Haifa
6		

## Annual option

Seeding rate (kg/ha)	Species	Variety
3	Medics	Santiago/Scimitar
3	Sub. Clover	Dalkeith
6		





# Management of open fields

- Annual winter and/or summer cover crops
- Full surface
- 1 - 2 year breaks are ideal





# The importance of quality seed

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- Newest varieties and species
- Lab reports
  - Germination requirements
  - Purity requirements







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