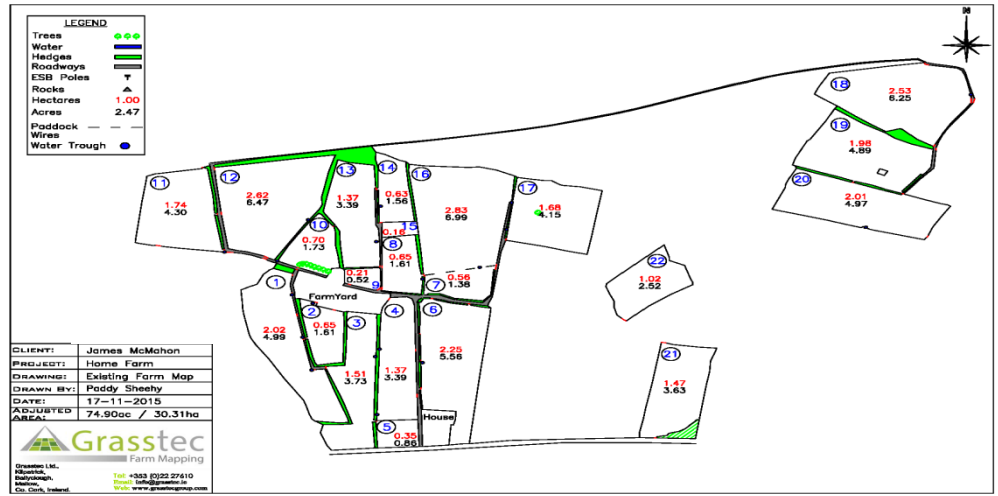
James Mc Mahon, Swans Cross, Co.Monaghan

Key Farm Drivers:

- Profit €€€
- Optimize grass in diet
  - ➢ Soil Fertility, Drainage & Reseeding
- Grass Measuring
- Silage Reserves – weather related
- High EBI Friesian (Fertile Herd)

Farm Characteristics

- Family Farm
- High Rainfall (1100)
- Drumlin type landscape



Year	Cows No's	Farm SR - LU/ha (Milking Platform)	Milk Solids (kg/Cow)	Milk Solids/ha (kg/ha)	Grass Grown (T DM/ha)
2013	95	2.03 (3.42)	386	1309	-
2014	94	2.02 (3.26)	417	1362	-
2015	92	1.97 (3.19)	445	1422	-
2016	101	2.11 (3.50)	408	1430	10.5
2017	100	2.11 (3.50)	420	1450	

Heavy Soils

James Mc Mahon – Farm Infrastructure

INFRASTRUCTURE	ADEQUACY		
	Good	Adequate	Needs Attention
Grazing			
Paddock Size			X
Farm Roadways	X		
Water troughs		X	
Milking parlour			
No. of rows	X		
Collecting Yard		X	
Drafting			X
Farmyard			
Slurry Storage		X	
Silage Slab		X	
Cubicle Spaces		X	
Head Feed Space		X	
Calf Facilities		X	
Calving Facilities		X	

5 Steps to Improving Soil Fertility

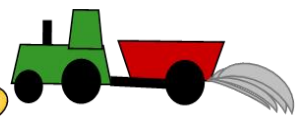
Heavy Soils

Teagasc
Agriculture and Food Development Authority

Information

1) Soil Test

2) Soil pH & Lime



Index	Description
1	Very Low
2	Low
3	Target
4	High

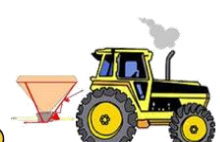
Interpretation

3) P & K Index 3

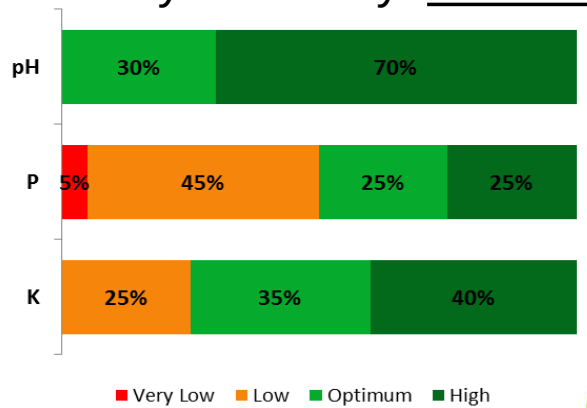
4) Slurry

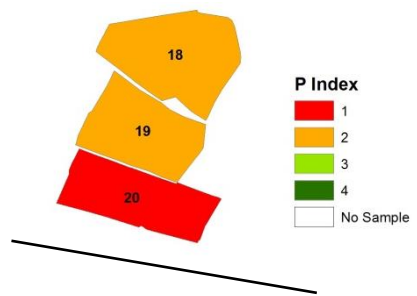
Action

5) NPKS Balance

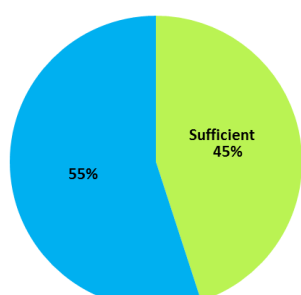


Soil Fertility Summary: McMahon's Farm





Percentage of soils with sufficient soil pH, P & K



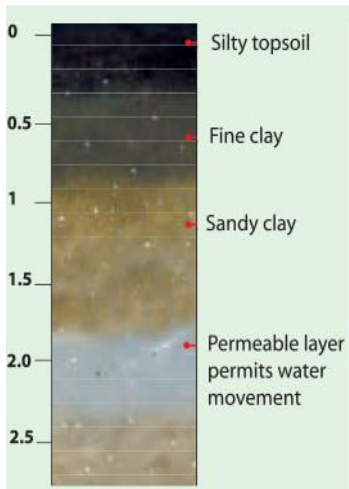
Land Drainage Design

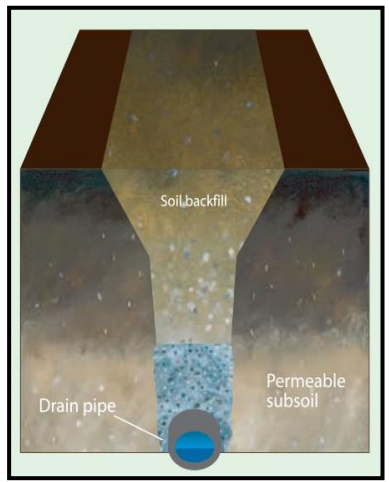
Problem Diagnosis

Soil Test pits (at least 2.5m deep)

- Design varies with soil type
- Water enters in permeable layers
- Other layers need help

Groundwater Drainage System





Tapping into permeable layer

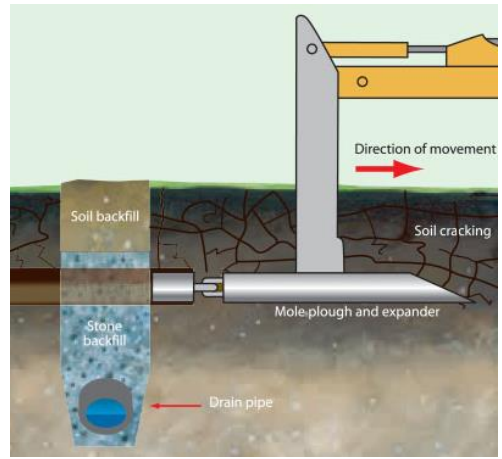
Conventional or deep pipe drains:

- Where a permeable layer will transmit water
- Where water can percolate to watertable
- Most effective way to discharge water

Shallow Drainage System

Mole/Gravel Mole drain/Subsoiling:

- Aim to fracture and crack the soil
- Effectiveness dependent on:
  - Soil clay/stone content
  - Implement used
  - Weather conditions
- In tandem with collector drains



James Mcmahon- Land Drainage Design

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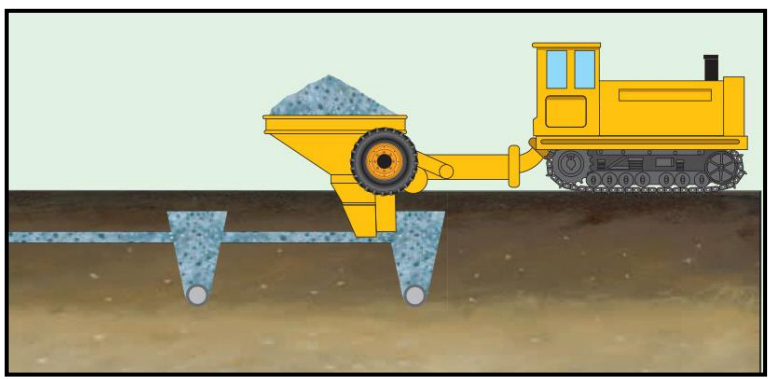
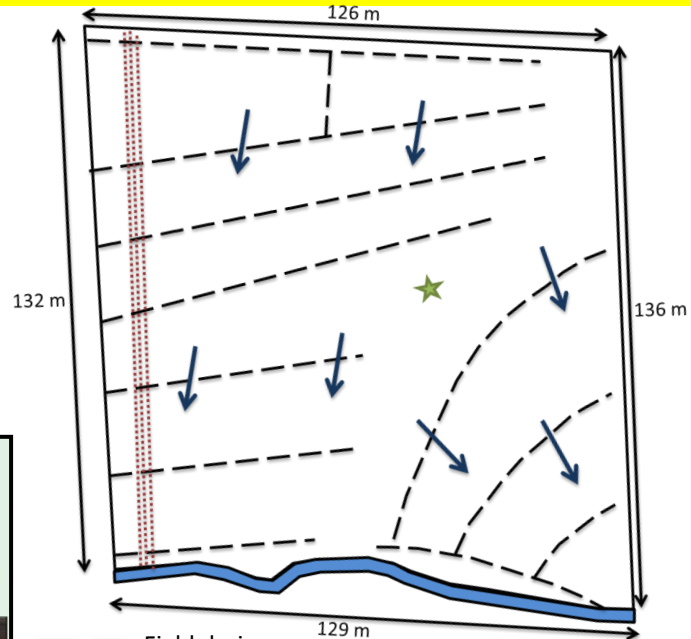




Field drains:
0.9 m depth, 18–30 m spacing

Gravel mole drains:
0.45 m depth, 1.5 m spacing

Open drain

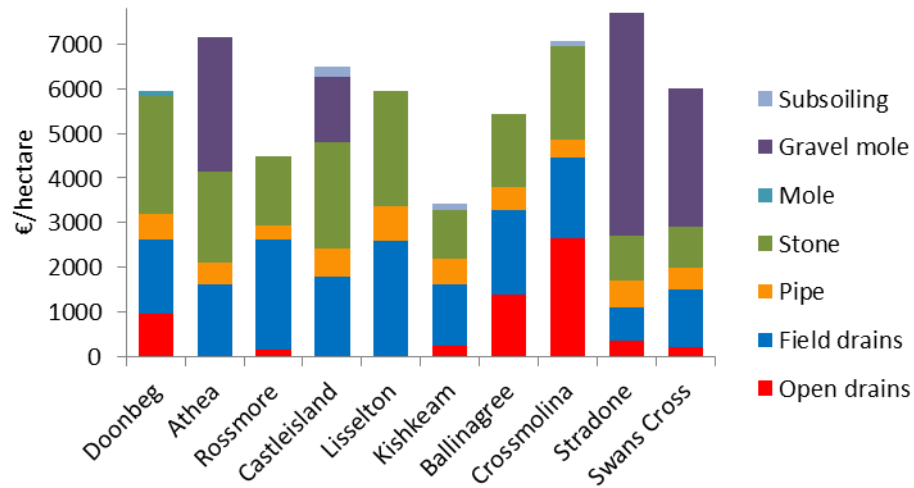
Direction of field gradient

James McMahon– Drainage Costs

Key points:

- Soil investigation
- Site appraisal
- Drainage system design

Costs	Total/ha
Open drain installation @ €40/hr (6hrs)	€240
Field drain installation @ €40/hr (32 hrs)	€1,280
Drainage pipe @ €0.90/m (520 m)	€470
Drainage stone @ €8.86/t (103 t)	€915
Gravel Mole Installation	€1,190
Gravel Mole stone @ €12.12/t (156 t)	€1,890
Drainage cost	€5,985



Decision process:

- Soil fertility
- Farm roadway and water Infrastructure
- Ryegrass pasture
- Drainage