

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text is centered on the slide.

TO DRAIN OR NOT TO DRAIN

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SOILS4LIFE

The background of the slide is a light gray gradient. It is decorated with several realistic water droplets of various sizes, scattered primarily along the top and bottom edges. The droplets have highlights and shadows, giving them a three-dimensional appearance.

**WHAT IS THE STARTING POINT FOR MAKING THE
DRAINAGE DECISION?**



INFORMATION IS THE KEY

LOOK AT THE FARM / FIELD POTENTIAL TO FIND ANY LIMITING FACTORS

NUTRITION

STONE

LIME

DRAINAGE

ETC, ETC





GATHER INFORMATION FROM VARIOUS SOURCES

BROAD SPECTRUM SOIL ANALYSIS

SOIL PITS

YIELD MAPS

SOIL MAPS

DRAINAGE MAPS

GOOGLE EARTH



BROAD SPECTRUM SOIL ANALYSIS



Analysis Results (SOIL)

Customer ROSEMAINS FARM

Distributor WALLACE OF KELSO
BOWMOUNT STREET
KELSO
ROXBURGH
TD5 7EA

Sample Ref COTTAGE FIELD

Date Received 10/07/2017

Sample No E235311

Crop NON STATED

Analysis	Result	Comments
pH	6.1	
Phosphorus (ppm)	16	(Index 2.0)
Potassium (ppm)	64	(Index 1.0)
Magnesium (ppm)	142	(Index 3.5)
Calcium (ppm)	2147	
Sulphur (ppm)	1	
Manganese (ppm)	47	
Copper (ppm)	5.2	
Boron (ppm)	1.19	
Zinc (ppm)	4.6	
Molybdenum (ppm)	0.13	
Iron (ppm)	964	
Sodium (ppm)	21	
C.E.C. (meq/100g)	15.7	
Lime Req. (t/ha)	5.0	

SOIL INSPECTION PIT



WHAT ARE THE POTENTIAL AND LIMITING FACTORS FOR COTTAGE FIELD

YIELD POTENTIAL ASSESSED FROM SOIL ANALYSIS AND SOIL PIT
=15T/HA

LIMITING FACTORS ARE CURRENTLY SULPHUR, POTASH AND
DRAINAGE WHICH ARE RESULTING IN A CURRENT YIELD AVERAGE
OF 7.5T/HA

CAN THE LIMITING FACTORS BE REMOVED?

- SULPHUR IS VERY SIMPLE TO ADDRESS WITH N+S FERTILISERS OR SULPHUR GRANULES
- POTASH AGAIN VERY SIMPLE TO ADDRESS WITH POTASH TOP DRESSINGS.
- DRAINAGE IS HAVING GREATEST EFFECT ON YIELD BUT IS MORE COMPLEX AND COSTLY TO ADDRESS

WHAT EFFECT IS THE POOR DRAINAGE HAVING ON COTTAGE FIELD

- BIG FLUCTATIONS IN AVERAGE YIELD OVER TEN YEAR CYCLE
- TOTAL CROP LOSS IN AREAS OF THE FIELD
- CULTIVATION COSTS INCREASED
- POOR DECOMPOSITION OF ORGANIC MATTER
- SOIL LATE TO WARM IN SPRING, EARLY TO SHUT DOWN IN AUTUMN
- INCREASED CROP INPUTS EG SLUG PELLETS, SEED, AG CHEM
- POOR FERTILISER AND NUTRIENT RELEASE

WHAT IS THE VALUE OF THESE EFFECTS BASED ON 8HA FIELD SIZE

• TOTAL LOSS OF 1HA OF CROP	=£1 200
• INCREASED CULTIVATION COSTS	=£ 400
• INCREASED SEED RATES	=£ 80
• INCREASED SLUG PELLETT USE	=£ 40
• INCREASED AG CHEM USE	=£160
• POOR FERT USE	=£ 80
• TOTAL	=£1 960 =£245/HA!!!!

WHAT EFFECT IS THE POOR DRAINAGE HAVING ON PRODUCTION COSTS

- OUTPUT FROM REMAINING 7HA @ 7.5T/HA = 52.5T @ £150/T =£7875
- TOTAL OUTPUT AVERAGED OVER 8HA = $52.5T \div 8HA = 6.6T/HA$ =£990/HA
- TRUE PRODUCTION COST BASED ON NATIONAL DATA = £1200/HA
- TRUE PRODUCTION COST FOR COTTAGE FIELD IS THEREFORE =£181/T
- TOTAL LOSS FOR FIELD IS $£1200 \times 8HA = £9600 - £7875$ =£1785

WHAT ARE THE OPTIONS AND COSTS FOR IMPROVING THE DRAINAGE?

DITCH CLEANING AT £1 /MTR

DRAIN JETTING AT £800/DAY

FULL REPLACEMENT DRAINAGE SYSTEM AT £3,000-£5,000/HA

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WHAT IS THE COST TO DRAIN 8HA COTTAGE FIELD WITH FULL DRAINAGE SYSTEM?

BASED ON 8HA @ £5,000HA

TOTAL COST £40,000

WHAT IS THE RETURN ON THE INVESTMENT ON HA BASIS?

- CROP POTENTIAL AVERAGE OF 12T/HA WHEAT WITH AIM OF ACHIEVING 15T/HA
- 12T/HA WILL REPRESENT AN UPLIFT OF 4.5T/HA
- AT £150/T THIS REPRESENTS AN UPLIFT OF £675/HA

WHAT IS THE RETURN ON THE 8HA OF COTTAGE FIELD

- WE WILL NOW GROW A FULL 8HA OF CROP AT 12T/HA
- TOTAL OUTPUT OF FIELD IS NOW 96T AS OPPOSED TO PREVIOUS 52.5T
- 96T AT £150/T = AN OUTPUT OF £14,400.
- PRIOR TO DRAINAGE THE GROSS OUTPUT WAS 52.5T AT £150/T =AN OUTPUT OF £7875
- THIS IS AN UPLIFT OF £6525.
- AN UPLIFT OF NEARLY 90%

WHAT EFFECT THE DRAINAGE HAD ON INPUT COSTS?

- CULTIVATION COSTS REDUCED BY £50/HA = £400 TOTAL FOR FIELD
- SEED COSTS REDUCED BY £10/HA = £ 80 “ “ “
- REDUCED SLUG PELLETT USE £5/HA = £ 40 “ “ “
- REDUCED AG CHEM USE £20/HA = £160 “ “ “
- GREATER NUTRIENT EFFICIENCY £10/HA =£ 80 “ “ “
- TOTAL £95/HA =£760

WHAT IS THE ACCUMULATED INCREASE IN OUTPUT?

- INCREASE FROM INPUT SAVINGS = £760
- INCREASE FROM YIELD UPLIFT =£6525
- TOTAL =£7285
- INCREASE IN OUTPUT/HA IS NOW £910/HA
- **PAY BACK ON £5000/HA DRAINAGE INVESTMENT IS 5.5 YEARS**

WHAT EFFECT HAVE WE HAD ON COST/T PRODUCED?

- MAINTAINING THE £1 200/HA STANDARD COST OF PRODUCTION
- WE ARE NOW PRODUCING 12T/HA
- **COST OF PRODUCT IS NOW £100/T AS OPPOSED TO A LOSS MAKING £181/T.**
- THIS IS CALCULATED WITHOUT THE DRAINAGE INVESTMENT

SUMMARY

- COST/T PRODUCED REDUCED BY £81/T TO £100/T
- YIELD INCREASED BY APPROXIMATELY 90%
- WE ARE NOW PRODUCING 90% MORE CROP WITH LOWER INPUT COSTS
- WE HAVE EFFECTIVELY BOUGHT 90% MORE LAND FOR THE COST OF £5000/HA [£2000/AC]
- THE “EXTRA LAND” IS NOT COSTING ANYTHING FOR INPUTS APART FROM THE DRAINAGE.

IS DRAINAGE WORTH THE INVESTMENT?

- PAYBACK PERIOD OF 5.5 YEARS ON CAPITAL INVESTMENT
- DRAINAGE WILL KEEP WORKING FOR AT LEAST ANOTHER 20 YEARS AFTER PAYBACK PERIOD.
- EFFECTIVELY GIVING A RETURN ON INVESTMENT OF 15% PER ANNUM
- IN ADDITION THE EXTREME EFFECTS ON CASH FLOW FROM VARIABLE YEARS HAVE BEEN REDUCED.
- THERE IS POTENTIAL TO ACHIEVE EVEN HIGHER YIELD WHICH PRIOR TO DRAINAGE WERE ONLY A PIPE DREAM!