

Soil – what has it ever done for the potato industry?



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Introduction

2015

International
Year of Soils



- Potatoes – what the hell are they?
- Relevant facts about the potato industry
- Growing condition requirements
- The soils and environment of Scotland
- Using soil to make potatoes sexy!



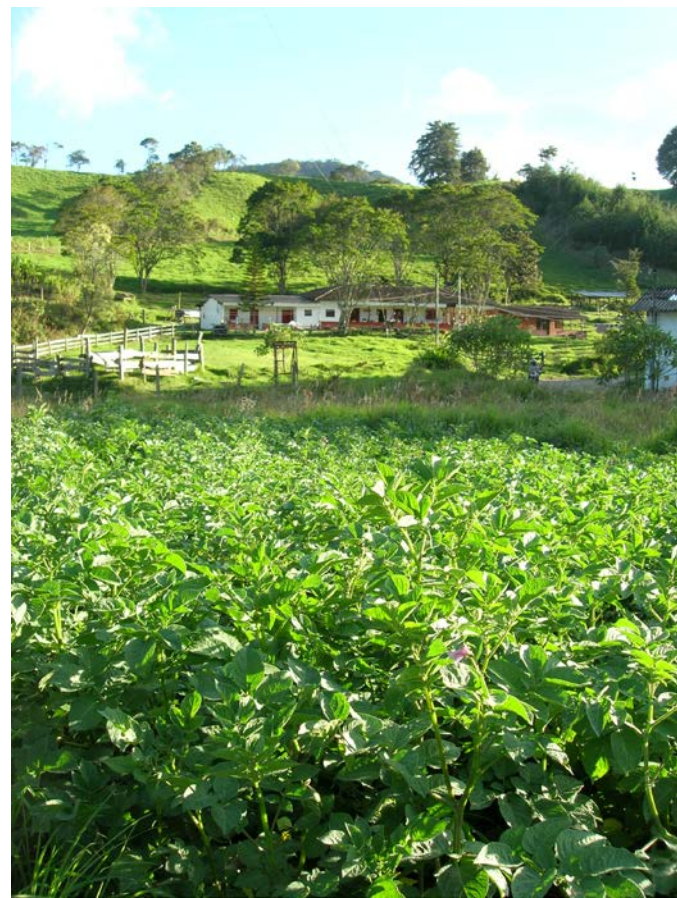
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What is a potato?

- Original varieties from the Andes
- Most popular varieties originally from south/central Chile
- Domesticated >5000 years
- Spread to Europe ~1570

Thousands of varieties exist, many wild species used for disease resistance cross-breeding





Facts about the potato industry

- World's fourth-largest food crop
- China - planted area more than doubled in last 20 years
- Average potato consumption worldwide: 33kg/year
- Average potato consumption in UK: 102kg/year (2005)
- Scotland has some of the highest yields per hectare
- Recent high retail prices – reductions in UK consumption



Growing conditions

Soil conditions

- Correct soil moisture/temp required
- Earthing up/deep ploughing – soil must not be high erosion risk
- High nutrient availability (organic matter!)
- Low to moderate pH

Environmental conditions

- Relatively cool and moist for moisture accumulation in tubers
- Full sun, long growing days
- Rotation with other crops

So which soils are low pH, provide good drainage, plenty of nutrients and moisture and stay cool during long growing days? And can be used for other crops?

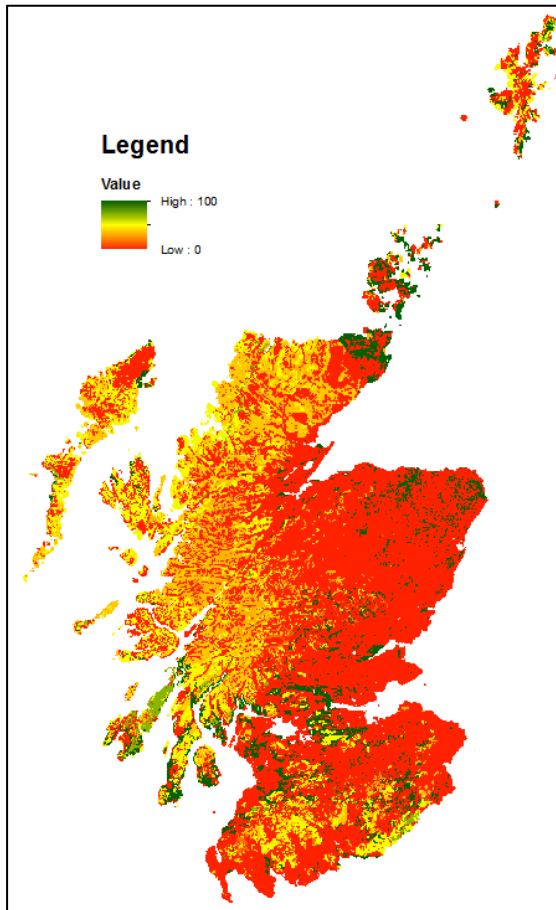


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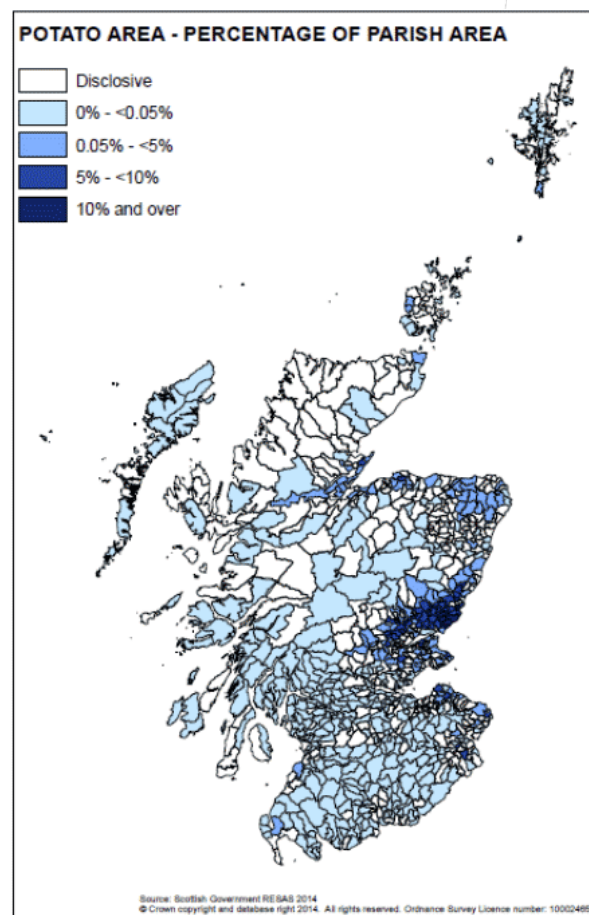


Growing conditions

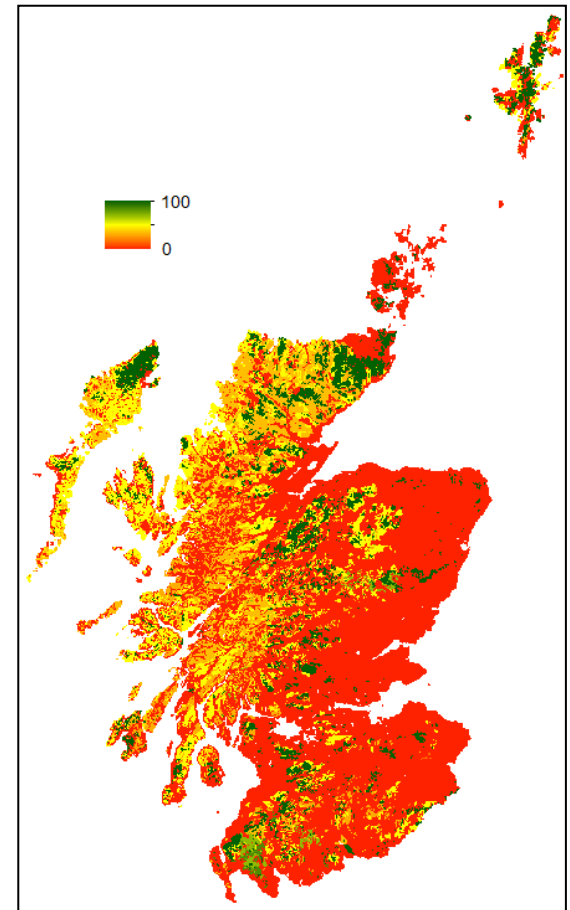
- Low pH – peat, gleys, podzols and some brown earths, particularly those with high organic matter status



Gley soils



Potato farming



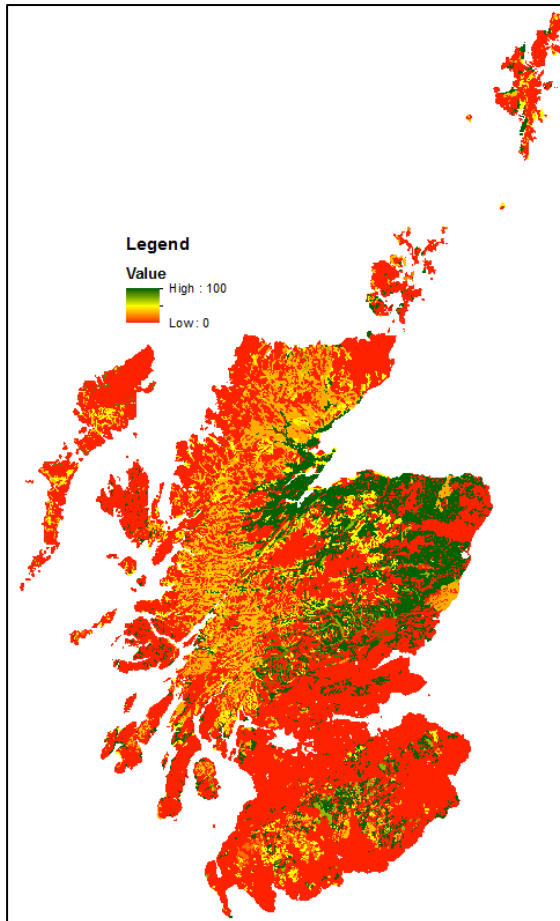
Peat

Gleys and peats - not good for potatoes!

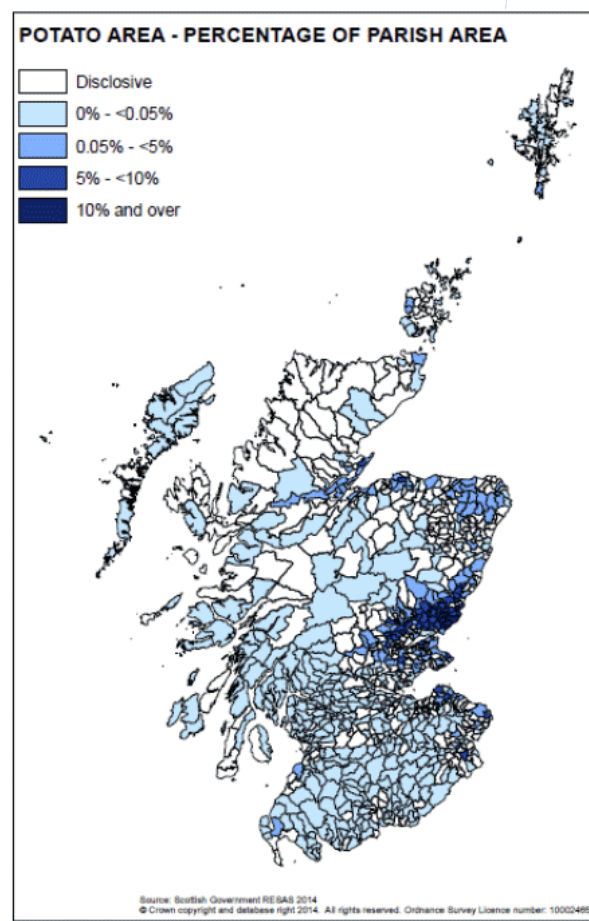


Growing conditions

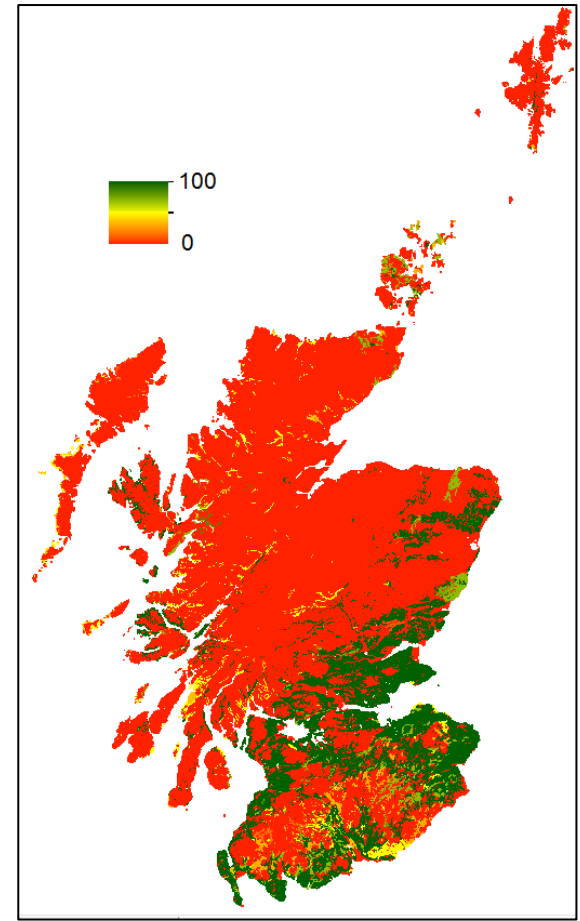
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Podzols



Potato farming



Brown Earths

Brown earths and podzols



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Growing conditions

- Good drainage – sandy, with good structure
- Erosion resistance – structure and organic matter are important



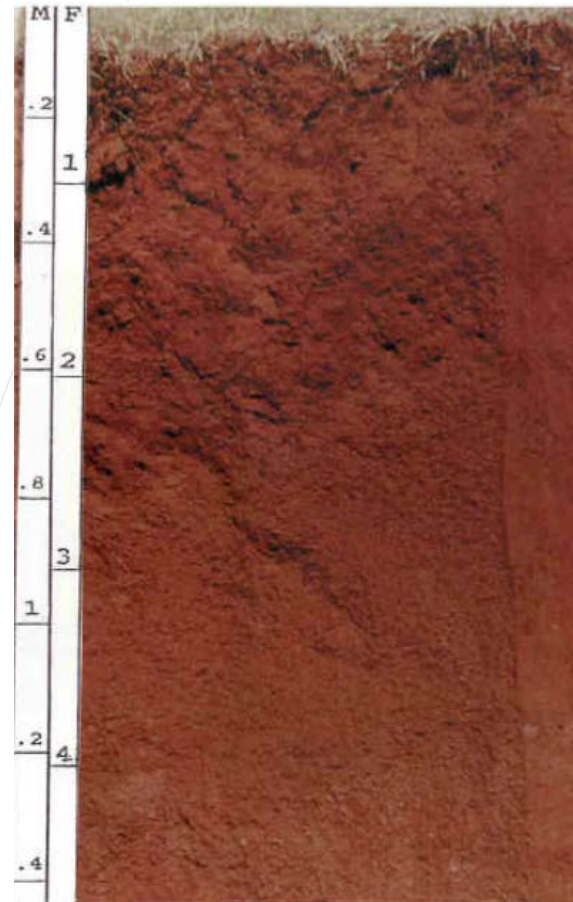
Growing conditions

- High nutrient availability – organic matter (sandy soils will lose artificial inputs fast)



Growing conditions

- Moisture availability – rainfall and organic matter
- Temperature regulation – organic matter



So.....?

High organic matter status is vital



- pH (low pH – high OM link)
- Improves structure & drainage
- Erosion & compaction reduction
- Nutrient availability
- Temperature & moisture regulation

Potatoes can be fashionable



Can we rebrand potatoes as a health food?



- Strong links between crop nutritional value and soil



Making potatoes fashionable

- **Health benefits**

Source of vitamin C, potassium and several micronutrients.

Some starch acts in the same way as fibre in the gut, with numerous health benefits.



- **Part of the five a day?**

Increase nutritional content:

- (A) Improving nutrient availability in the soil
- (B) Growing fashionable varieties in appropriate soil





Recommendations

Increase soil organic matter

Rebrand potatoes as a health food



Monitoring organic matter in soil

- There's an app for that!
- SOCIT soil organic matter app (Apple & Android)
- Take a photo of the topsoil
- Needs a colour correction card
- Response in 15-30 seconds (depends on mobile phone signal)
- What is a good topsoil OM value?

