

A photograph of a rural landscape under a grey, overcast sky. In the foreground, a muddy, brown floodwater channel flows through a green field. A pitchfork is stuck vertically in the center of the channel, with its tines submerged in the water. The water is turbulent around the pitchfork. In the background, there are rolling green hills, a line of bare trees, and a few distant buildings. The overall scene suggests a recent heavy rain event causing flooding in a rural area.

SOILS AND NATURAL FLOOD MANAGEMENT



Soil runoff incident

The cause?

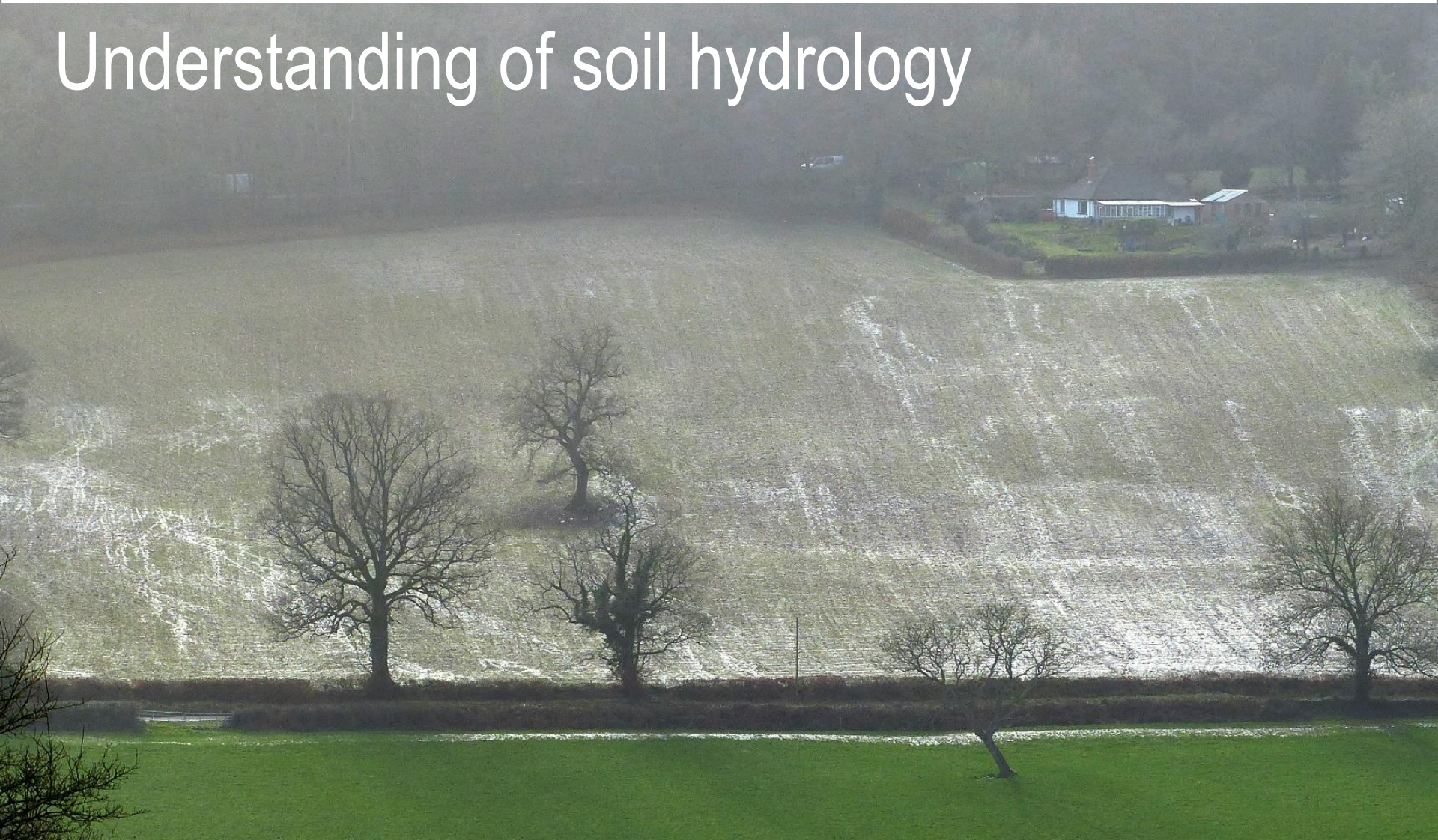
- Extreme rainfall?
- Bare soil?

The solution?

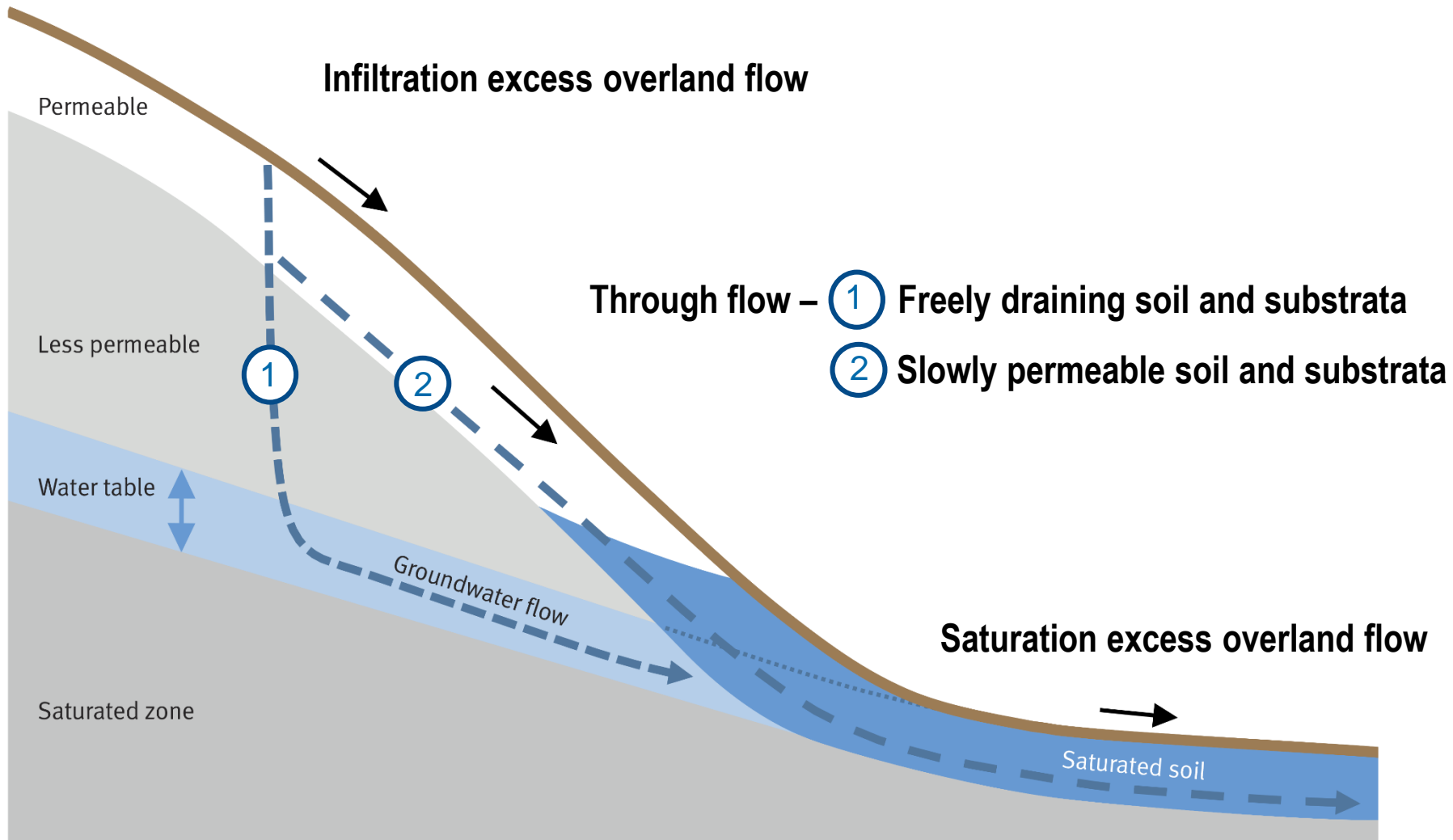
- No ploughing?
- Soil cover?



Understanding of soil hydrology



NATURAL RUNOFF PROCESSES





BROWN SOILS –
naturally well drained



GLEYSOILS –
naturally poorly drained



Poor soil structure



Good soil structure

Runoff experiments at Boscastle



60% runoff from grassland with moderate / poor soil structure
2% runoff from grassland with good soil structure



Undersown

53 litres

Chisel plough

1litre

Stubble

228 litres

Cover crop

179 litres

An aerial photograph of a rural landscape. The terrain is divided into numerous fields of different colors: brown (plowed), green (grassland or crops), and yellow (crops). A winding stream flows through the center of the image. In the bottom left, there are farm buildings and a small pond. The text labels are overlaid on the image.

Outdoor stock

Cereals

Field vegetables

Grassland

Freely draining soils



An aerial photograph of a rural landscape featuring a patchwork of agricultural fields separated by dark hedgerows. The fields vary in color, from vibrant green to golden yellow and light brown. A large, irregularly shaped field in the lower center is a bright green. To its right, a field is a pale yellow. Above that, a field is a light brown. In the top right, a field is a light brown. The landscape is crisscrossed by dark hedgerows. A large, irregularly shaped field in the lower center is a bright green. To its right, a field is a pale yellow. Above that, a field is a light brown. In the top right, a field is a light brown. The landscape is crisscrossed by dark hedgerows.

Crops

Winter grazing

Silage cutting

Wetlands

Maize

Slowly draining soils



Upland soils



Peaty soils and compaction

A landscape photograph showing a grassy field with a rocky path leading towards a distant hill. The sky is clear and blue. The path is composed of dark, wet soil and scattered rocks. The field is covered in green grass, with some areas of taller, yellowish grass. The hill in the background is covered in green grass and has a rocky peak.

Freely draining soils

Deep peats

Slowly draining soils

Upland soils

Ottery St Mary

An aerial photograph of a rural landscape in Ottery St Mary. The image is overlaid with four semi-transparent colored regions outlined in white. A large yellow region on the right is labeled 'Drainage Subsoiling Timeliness'. A green region in the center-left is labeled 'Winter grazing'. A small blue region to the left of the green one is labeled 'Wetlands'. A dark green region at the bottom is labeled 'Forest tracks'. The background shows a mix of green fields, a small village in the upper center, and a dense forest at the bottom.

Wetlands

Winter
grazing

Drainage
Subsoiling
Timeliness

Forest tracks



- Know the soil type
- Know the state of soil structure
- Short term & long term solutions