



**Catchment Sensitive Farming
in partnership with the
Maize Growers Association
and Wessex Water**

**Case study 2: Cover crop under-sowing of maize
Brian Chandler's experience, Dorset 2014-17**

Wessex Water, with the support of Catchment Sensitive Farming (CSF), the Poole Harbour Catchment Initiative and the Maize Growers Association (MGA), have been running field demonstrations where cover crops have been under-sown and sown post-harvest in Dorset since 2015. The under/post-harvest sown crops have stabilised soils and reduced nutrient leaching and soil loss.

Who? – Brian Chandler milks dairy cows to which he feeds maize silage grown on his farm at Moreton in Dorset. Brian farms within a Nitrate Vulnerable Zone (NVZ) and has been under-sowing his maize with Italian Rye Grass (IRG) for several years.

Why? - Bare maize stubbles, if left uncropped over winter months, are vulnerable to surface water runoff, soil erosion and nutrient leaching.

Surface runoff is a particular risk if soils have been compacted as a consequence of heavy harvest machinery travelling the land when the soil is wet and structurally weak.

Nutrient leaching from bare soils can be considerable, particularly if organic manures have been applied from which nutrient continues to be released even after main crop uptake has ceased.

Under-sown cover crops will bind soil and take up nutrients as they grow, as well as improving soil organic matter levels due to the accumulation of biomass above and below ground level.

What's the problem in this catchment? The River Frome and Piddle catchment systems suffer from sediment loading and nutrient enrichment. These nutrients promote plant and algal growth, changing the species in the rivers and downstream in Poole Harbour, which is a Special Protected Area (SPA) for wintering waterfowl and waders.

What we did - During the 2016 growing season, Italian Ryegrass (IRG) and Westerwolds were under sown into growing maize in June (27th) using either an adapted Browns harrow, front mounted broadcasting machine or via a slurry tanker. Three seed rates (5, 8 and 12 kg/acre) were used. In addition cover crops were sown post maize harvest including IRG (8 & 12kg/ac), barley (40,60 & 80kg/ac), triticale (48 & 60kg/ac), Rye (48kg/ha) and wheat (60kg/ac) rates.



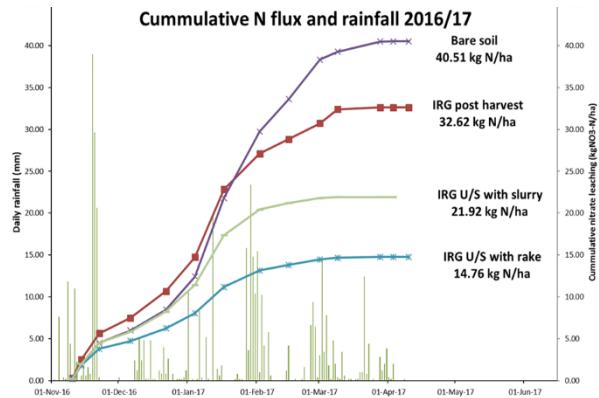
Under sowing with the adapted Browns harrow



Results - Data collected at harvest and over the following winter confirmed;

- Under-sowing had no significant impact on the yield, ME content and starch content of the maize crop
- Ground cover was established prior to the start of drainage and leaching period
- The cover crops significantly reduced the amount of Nitrogen leached compared to leaving the soils bare over the winter period as shown in the graph.

Nitrate leaching following different cover crops



Successful under sowing also:

- Ensured NVZ compliance by meeting grassland derogation requirements
- Reduced the need for field operations at a time of year when the weather and ground conditions may lead to damaged soil structure
- Reduced the likelihood of soil erosion

Farmer's response – Brian continues to undersow his maize to reduce nutrient leaching and meet his NVZ requirements. Continued effort will focus on improving soil seed contact to reduce the risk of crop failure, which in dry conditions remains as a problem.



Drilled under sown grass in maize