



## **Multiple benefits arising from novel management of agricultural ditches**

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The opportunity to modify the function and dynamics of farm ditches is very high. There are many kilometres of ditch that could offer multiple benefits to pollution control and lowering flood risk. However, there is first a perception problem to overcome, in that most farmers wish to remove water from the land quickly and are irritated by the accumulation of sediment. Hence, we have built a series of demonstration ditches where the new operation of the ditch can be shown to trap substantial amounts of sediment and nutrients and also not cause any local flooding or water logging problems. The ditch itself is radically changed in shape and is widened as much as possible and usually has a flat bottom. The ditch will also contain a series of leaky barriers that will retain flow during storm events. In very large events an overflow structure is required. These features do have to be engineered to a good level of safety to avoid failure. Sediment must also be recovered from the ditch frequently (at least annually) which again could be a role fulfilled by the farmer. We will show a number of example ditch designs and the data captured in experiments. One feature typically captures 50% of the suspended sediment, 30% of total phosphorus and 20% of the nitrate in a single storm.