Creation of fenced field polygons using GPS and a GIS

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Field information, like field area and perimeter length forms an integral part of the Farm Platform (FP) experiment. Especially important are the field areas, as they are required to calculate a range of parameters, like amount of applied pesticide/ha, silage yield/ha, etc. Additionally, field or catchment areas are essential for area-weighting flow (and other water properties) from the flumes at each of the 15 catchments.

By creating boundary polygons of the Fenced Fields (see bottom figure), essential field information can be calculated and stored in the FP Database. Once the field boundary has been established, other related field polygons can be created, for example FYM spreading areas (10m from water courses), cutting areas, etc. These (inner) boundaries can be particularly important when interpreting field survey data, especially when data fall inside, outside or are close to such a boundary.

In order to create the Field boundary polygons, high accuracy GPS observations of FP field fence posts, French Drains and open ditches were stored as geometries in a GIS. Using standard GIS operations, Fenced Field areas were calculated and stored with the geometries, in the geometry’s attribute table (see below).

To ensure the quality of the generated Field polygons, high resolution imagery (15 cm) was used to compare the existing fence location, which was clearly visible on the imagery, with the generated fenced field boundary (see top figure).