North Wyke Farm Platform

Creation of fenced field polygons using GPS and a GIS
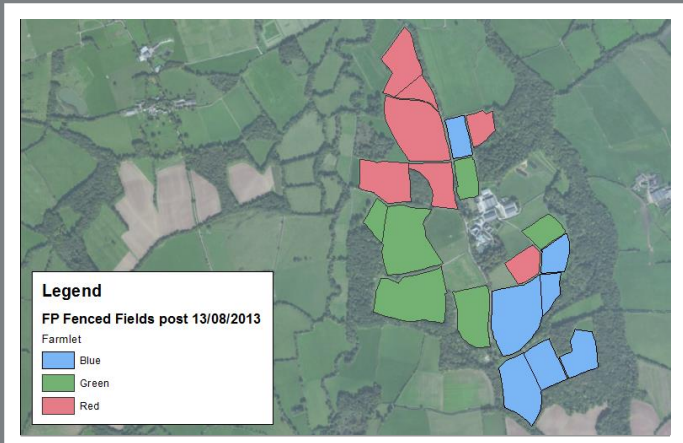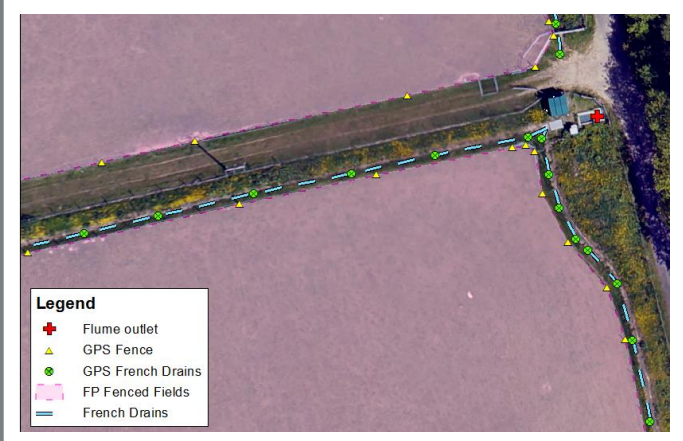
Hadewij Sint

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).

Legend
- Flume outlet
- GPS Fence
- GPS French Drains
- FP Fenced Fields
- French Drains

Legend
FP Fenced Fields post 13/08/2013
Farmlet
- Blue
- Green
- Red

FP Fenced Fields post 13/08/2013

OBJ	Shape *	Field_Name	Flume_ID	Farmlet	Area_ha	Farm_Platform	Comments	Old_FP	New_FP	Obj_Id	DB_Catchment	Shape_Length	Shape_Area
1	Polygon	Higher Wyke Moor	8	Blue	4.32	1	<Null>	1	1	1	8	847.255459	43200.000118
2	Polygon	Middle Wyke Moor	8	Blue	2.700376	1	<Null>	1	1	2	8	669.248022	27003.758057
3	Polygon	Lower Wyke Moor	7	Blue	2.599911	1	<Null>	1	1	3	7	669.260639	25999.113923
4	Polygon	Golden Rove	6	Green	3.857106	1	<Null>	1	1	4	6	820.154807	38571.064502
5	Polygon	Orchard Dean	5	Green	6.542819	1	<Null>	1	1	5	5	1078.167085	65428.186287
6	Polygon	Dairy South	9	Blue	6.441914	1	<Null>	1	1	6	9	1030.894449	64419.1448
7	Polygon	Lower Wheaty	10	Red	1.819863	1	<Null>	1	1	7	10	522.423432	18198.625191
8	Polygon	Pecketsford	1	Red	3.501638	1	<Null>	1	1	8	1	841.484193	35016.376282
9	Polygon	Great Field	2	Red	6.653351	1	<Null>	1	1	9	2	1028.041354	66533.509721
10	Polygon	Longlands East	15	Red	1.537153	1	<Null>	1	1	10	15	505.528912	15371.52932
11	Polygon	Longlands North	14	Blue	1.715821	1	<Null>	1	1	11	14	553.082743	17158.213802
12	Polygon	Longlands South	13	Green	1.748588	1	<Null>	1	1	12	13	552.908453	17485.880904
13	Polygon	Dairy North	12	Green	1.778943	1	<Null>	1	1	13	12	527.065045	17789.42707
14	Polygon	Poor Field	3	Red	3.919726	1	<Null>	1	1	14	3	808.170992	39197.255439
15	Polygon	Dairy East	11	Blue	1.75896	1	<Null>	1	1	15	11	539.654132	17589.595767
16	Polygon	Ware Park	3	Red	2.705049	1	<Null>	1	1	16	3	798.360435	27050.485812
17	Polygon	Burrows	4	Green	6.492102	1	New Burrows Field	0	1	17	4	1088.182946	64921.017509
18	Polygon	Bottom Burrows	4	Green	1.262629	1	<Null>	1	1	18	4	492.017989	12626.292521
19	Polygon	Little Pecketsford	1	Red	1.305426	1	<Null>	1	1	19	1	569.49547	13054.263605
20	Polygon	Dairy Corner	9	Blue	1.308824	1	<Null>	1	1	20	9	525.637591	13088.238084