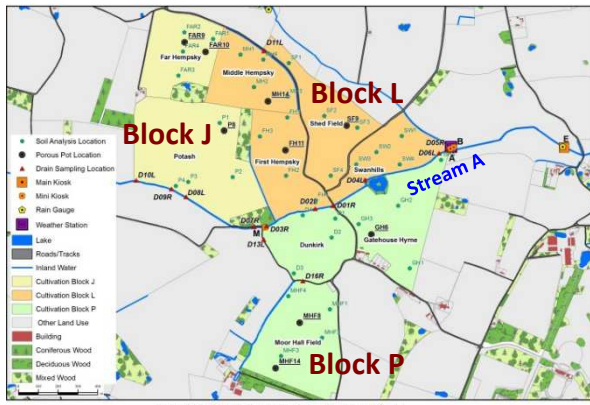


**Aims:** (i) To test the effectiveness of using a cover crop and reduced cultivation systems to decrease sediment and nutrient leaching losses, provide a 'green manure' and improve soil properties and health; and (ii) assess the farm practicalities and implications for establishment costs and arable crop yields.

## Measures fields, Salle, Norfolk



## Experimental design:

Block J: plough, cultivator and drill (= control, 41 ha)

Block P: cultivator and drill (51 ha)

Block L: direct drill (51ha)

Oilseed radish cover crop grown prior to spring beans in Blocks L and P (102 ha), north & south of Stream A.

## Data collection:

Radish leaf & root matter nitrogen. Porous pot, field drain & water course samples. Soil physical & chemical properties. Establishment costs & spring bean yields.

## Spring bean establishment details – March 2014

Field (Block)	Drilling date	Cultivator and seed drill machinery (All Väderstad make except Lemken)	Variety, seed rate (kg/ha)
Far Hempsey (J & Control)	11/3/14	NZA seedbed cultivator, Rapid	Fanfare, 225
Potash (J & Control)	11/3/14	NZA seedbed cultivator, Rapid	Fanfare, 225
Gatehouse Hyrne (P)	13/3/14	Carrier (mulcher) & Lemken, Rapid	Fanfare/Fuego, 225
Dunkirk (P)	13/3/14	Carrier (mulcher) & Topdown, Rapid	Fuego, 225
Moor Hall Field (P)	14/3/14	Carrier (mulcher) & Topdown, Rapid	Fuego, 225
Middle Hempsey (L)	12/3/14	None, Seed Hawk direct drill	Fanfare, 220
First Hempsey (L)	13/3/14	None, Seed Hawk direct drill	Fanfare, 220
Sheds Field (L)	18/3/14	None, Seed Hawk direct drill	Fuego, 215
Swanhills (L)	19/3/14	None, Seed Hawk direct drill	Fuego, 215



NZA spring tine cultivator



Lemken cultivator



Topdown cultivator



Rapid drill

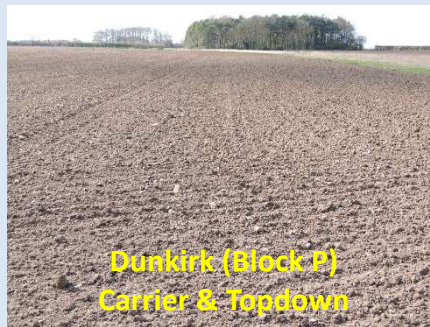


Seed Hawk direct drill

## Measures fields following completion of drilling spring beans (21 March 2014)



Potash (Block J)  
NZA seedbed cultivator



Dunkirk (Block P)  
Carrier & Topdown

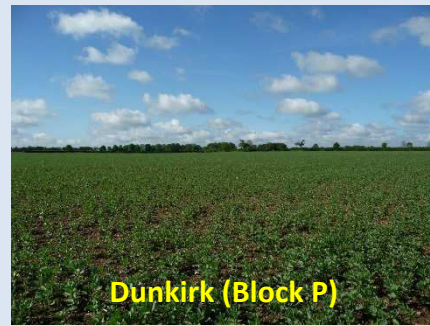


First Hempsey (Block L)  
Seed Hawk direct drill

## Spring bean growth (14 May 2014)



Far Hempsey (Block J)



Dunkirk (Block P)



First Hempsey (Block L)

## Spring bean root and nodule development (14 May 2014)



Far Hempsey (Block J)



Dunkirk (Block P)



First Hempsey (Block L)

## Spring beans (14 May 2014)

## Healthy soil (23 May 2014)

## Field visit (23 May 2014)



Dunkirk

First Hempsey

Far Hempsey



Sheds Field (Block L)



Middle Hempsey (Block L)

## Field observations 14 May 2014:

- Spring bean crop in Far Hempsey (Block J) looked even and a healthy, good crop. First Hempsey (Block L) also regarded good. Dunkirk (Block P) did not appear to have as good a plant population and plants were quite patchy in places.
- Bean roots were between 12 – 15 cm long and of the three different cropping regimes Dunkirk (Block P) showed the most fibrous root production, although some soil compaction may have caused the roots to grow in the upper soil layer. Far Hempsey (Block J) had good roots, towards the upper range of measurements.
- All plants had a good number of nitrogen fixing nodules and it was difficult to reach a definite conclusion on any difference between the systems.

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