

Intelligent crop production

Active Farming

3C – the crop establishment concept



Auneau (F) trials site



[Overview of the results](#)

[System techniques](#)

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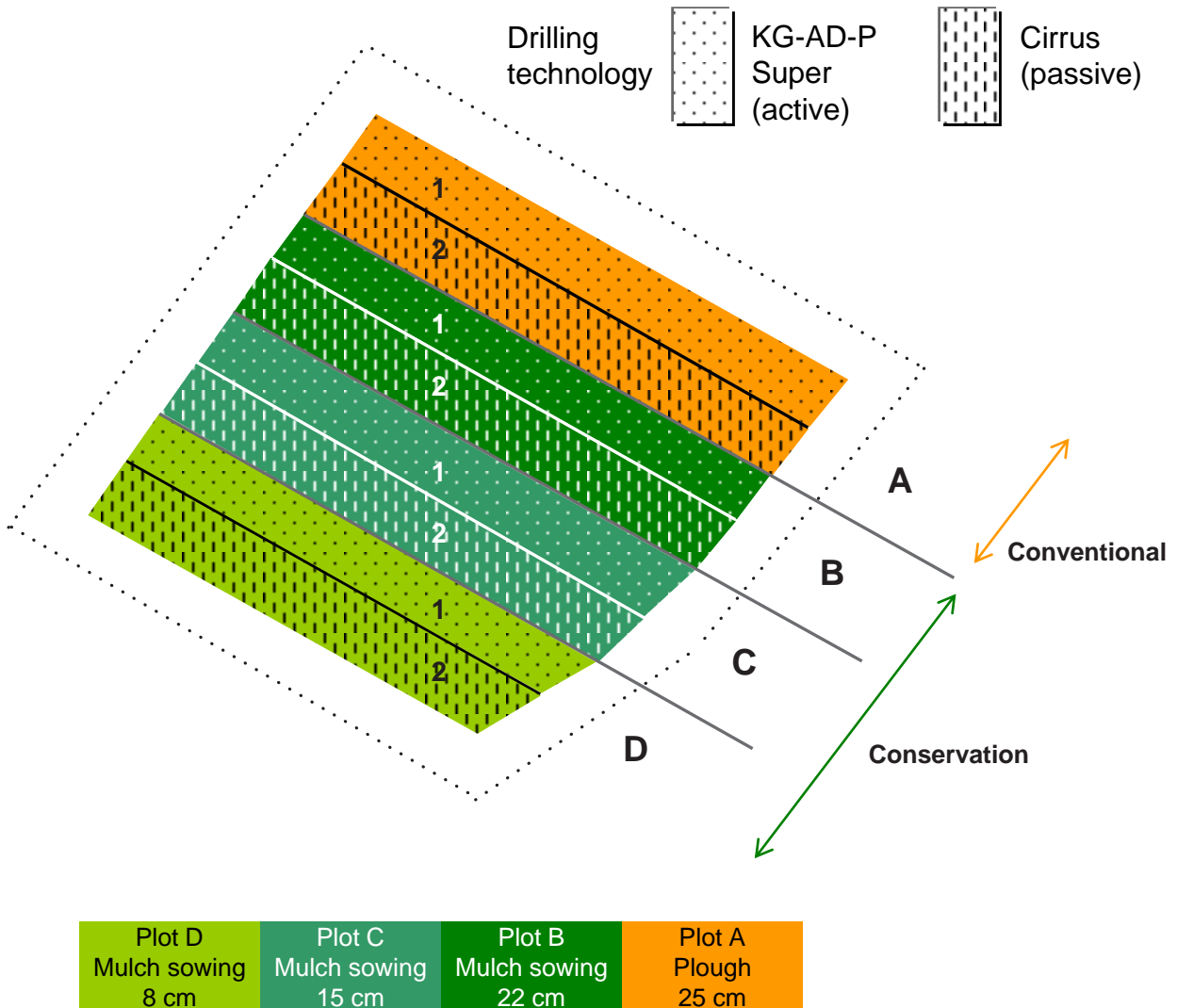


Overview of the results: Auneau trials site

Aim of the trials:

What degree of intensity of soil cultivation is necessary for the high yielding areas found in the Grand Culture in Western France?

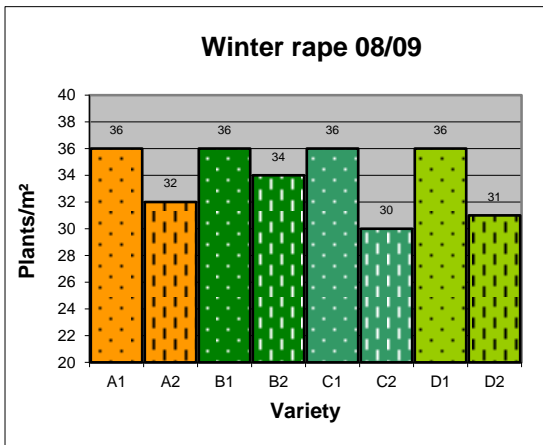
Trials structure:



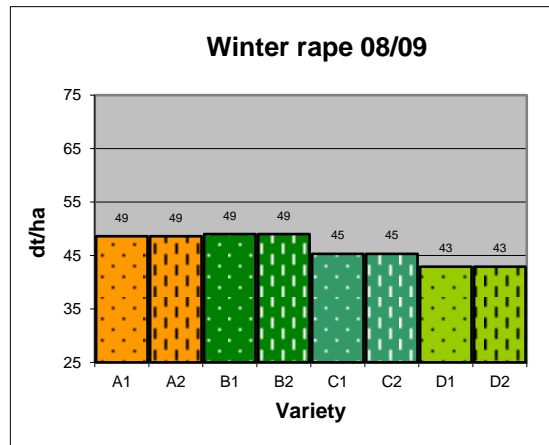
Initially, a stubble cultivation is carried out over all the plots with a compact disc harrow. Plot A is ploughed at a depth of 25 cm. In the min-till plots B and C, the soil tillage is carried out with a multi-row mulch cultivator at a depth of 22 cm and at 15 cm respectively. Plot D is worked again with the compact disc harrow at a depth of 8 cm. The different levels of intensity are also followed during drilling. In plots A1, B1, C1 and D1, an active seed drill combination is used whereas, in Plots A2, B2, C2 and D2, a passive seed drill is used.

Trials results 08/09 – 10/11:

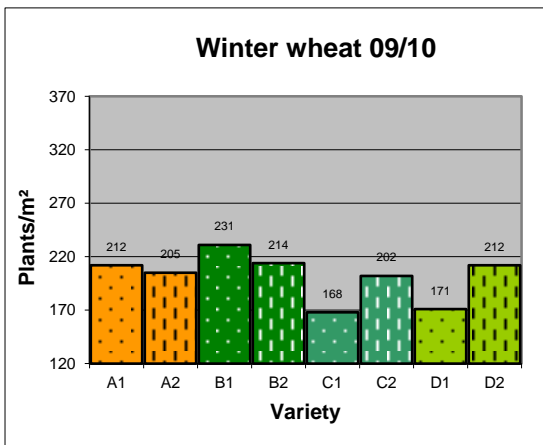
Plant emergence



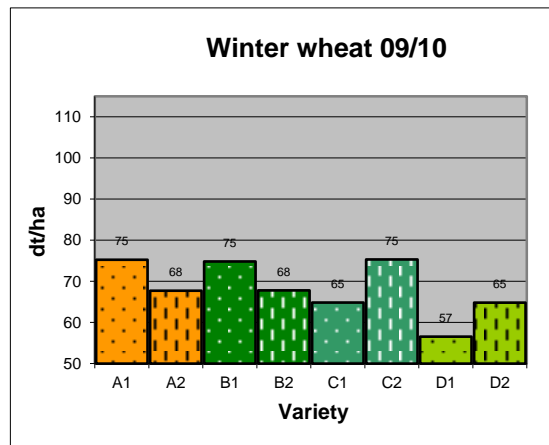
Yield



Plant emergence



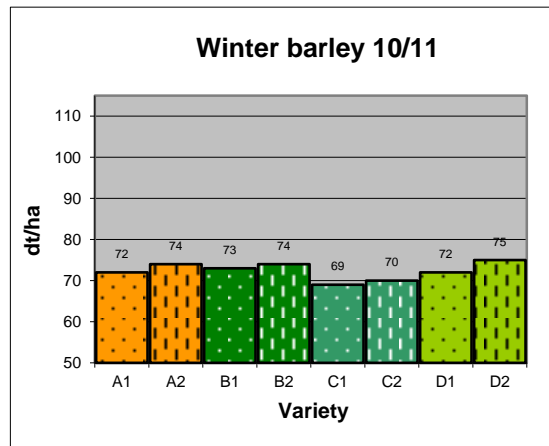
Yield



Plant emergence

Data not collected in this trials year!

Yield



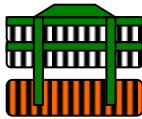
System techniques: Auneau trials site

Trial plots for tillage, seedbed preparation and sowing

	Plot A Plough 25 cm		Plot B Mulch sowing 22 cm		Plot C Mulch sowing 15 cm		Plot D Mulch sowing 8 cm	
	Plot A1	Plot A2	Plot B1	Plot B2	Plot C1	Plot C2	Plot D1	Plot D2
Stubble working	Catros, working depth 6 cm							
Tillage	Plough 25 cm		Cenius 22 cm		Cenius 15 cm		Catros 8 cm	
	Catros							
Seedbed and sowing	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus

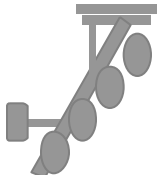
decreasing tillage intensity

Stubble cultivation



Catros in A, B, C & D

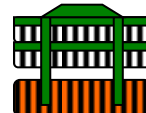
Soil tillage



Plough in A

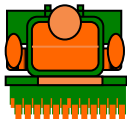


Cenius in B & C

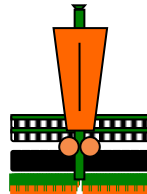


Catros in D
(and in A after the plough)

Sowing



AD-P Super in
A1, B1, C1 & D1



Cirrus in
A2, B2, C2 & D2

Fertilisation



ZA-M in A, B, C & D

Crop protection



UF in A, B, C & D

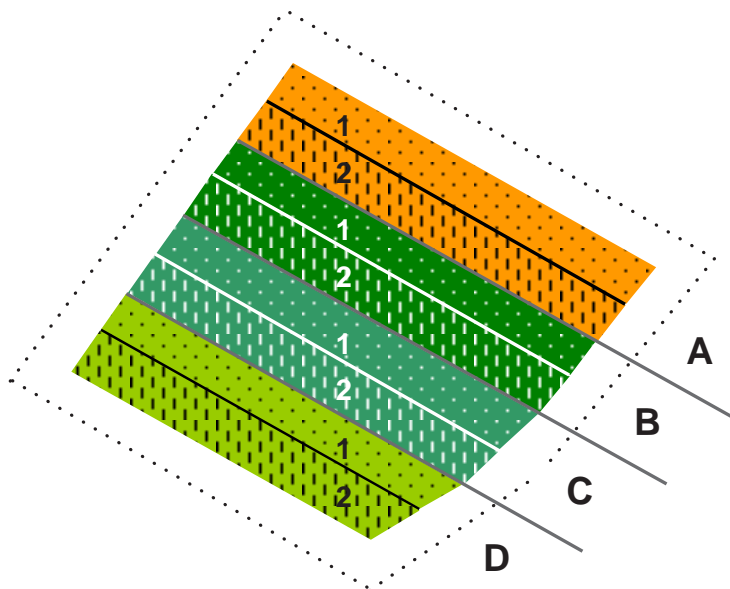
AMAZONE trials at Auneau (France)

Since 2008 there has been another AMAZONE trials site in the immediately vicinity of AMAZONE Auneau. Auneau is situated near Chartres, the capital of the Département Eure-et-Loire, on the south-western edge of the Paris basin, one of the most important arable farming regions in France.

With a clay content of more than 10% the Auneau trial site is perfectly suited for conservation tillage. An annual rainfall of about 850 mm, however, limits the scope for reduced tillage, because excessive water contents can become a limiting factor for the oxygen supply in the soil. Hence the plough is the preference for tillage on this and other sites, since oxygen supply in the soil can temporarily be secured by topsoil-deep working. On the other hand there are several farms in the Departements around Auneau which cultivate their fields without the plough after specific crop rotation.

Therefore the main question in the case of the trials in Auneau is whether and how in the long-term a change to plough-less tillage would influence this site conditions. At which working depth must mulch sowing be carried out to achieve a sufficient oxygen supply and a yield level which is at least as high as a plough tillage system?

Layout of the trial areas in Auneau



Plot A is worked conventionally with the plough, whereas plots B, C and D follow a min-till conservation tillage regime. In each case, the plots are sown with 2 varieties.

The trial setup

A plough plot with 25 cm working depth (block A) is compared with various conservation plots with 22 cm, 15 cm and 8 cm working depth during the trials in Auneau. For the sowing pass, the passive seed drill Cirrus Special is compared with active sowing combinations on the basis of a rotary harrow or rotary cultivator.

Site data

Soil	Clay loam (24% clay, 46% loam, 30% sand)
Climate	Annual rainfall: approx. 850 mm average temperature: 10.2°C
Crop rotation	Winter wheat, winter barley, winter rape

Initial results:

The location can be farmed using both conventional & conservation tillage techniques.

The required working intensity is higher in relation to the other locations; this is also indicated in the yields from the last 3 years.

The plots A and B achieve the highest yields, whereas, in the less intensively worked areas, yields drop off.

An definitive statement in favour of just conservation tillage cannot be made at the present time.

Trial plots for tillage, seedbed preparation and sowing

	Plot A Plough 25 cm		Plot B Mulch sowing 22 cm		Plot C Mulch sowing 15 cm		Plot D Mulch sowing 8 cm	
	Plot A1	Plot A2	Plot B1	Plot B2	Plot C1	Plot C2	Plot D1	Plot D2
Stubble working	Catros, working depth 6 cm							
Tillage	Plough 25 cm		Cenius 22 cm		Cenius 15 cm		Catros 8 cm	
	Catros							
Seedbed and sowing	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus	KG - AD-P Super	Cirrus

decreasing tillage intensity

Yield results (dt/ha) in comparison

	Plot A Plough 25 cm		Plot B Mulch sowing 22 cm		Plot C Mulch sowing 15 cm		Plot D Mulch sowing 8 cm	
	Plot A1	Plot A2	Plot B1	Plot B2	Plot C1	Plot C2	Plot D1	Plot D2
Winter rape 08/09								
Seed rate seeds/m ²	36 (variety Neptune)							
Seedling emergence (plants/m ²)	36	32	36	34	36	30	36	31
Yield dt/ha	49	49	49	49	45	45	43	43
Winter wheat 09/10								
Seed rate seeds/m ²	220 (variety Instinct)							
Seedling emergence (plants/m ²)	212	205	231	214	168	202	171	212
Yield dt/ha	75	68	75	68	65	75	57	65
Winter barley 10/11								
Seed rate seeds/m ²	230 (variety Cervoise)							
Seedling emergence (plants/m ²)								
Crop density (ears/m ²)								
Yield dt/ha	72	74	73	74	69	70	72	75

The yield results were determined in co-operation with PD Dr. Voßhenrich from vTI Braunschweig

Comment on trials results in Auneau

by Dr. Sven Dutzi, AMAZONEN-WERKE

With an average of 46.5 dt/ha the rape yields are, in total, at a high level, the wheat yields 2010 on a rather average level. The first two plots of soil tillage (A and B) achieve here identical yields. Therefore, also on this site stable yields can be achieved with an intensive, conservation soil tillage. With a continuing decrease in the working depth, the yield level lowers. So, the plot with the least working depth over the majority of years provides the lowest yield. This suggests that a working depth above a certain minimum is indispensable on this site.

Effects on the yield level due to the use of the different sowing technologies could not be noticed in 2009 and 2010.

So, in 2009, both seed drills were still at the same level. In 2010, however, the active and passive sowing technology registered different yields, depending on the working depth. In 2011, the passive technology tended to the highest yields. Therefore, a clear tendency cannot be derived.