



## Case Study

## Agriculture Field Trial



## Field Trial in Spain

## Efficacy assessment of iron EDDHAs: Ciba® ChauFer® and Ciba® LibFer® SP chelates

An independent trial to assess the efficacy of Ciba Specialty Chemicals' Fe-EDDHA chelates – Ciba® ChauFer® and Ciba® LibFer® SP was carried out from the beginning of 2005. The trial was set up together with Nufarm España S.A. (Ciba's agriculture distributor in Spain) and assessed by the Escuela Universitaria Politécnica de la Almunia (Zaragoza).

The trial was performed on peach trees, the most common crop in the area. The peach variety was "Miraflores". The soil was typically alkaline (pH 8.05 (1:2.5 extract)) and the irrigation water relatively rich in Calcium and bicarbonates ( $\text{HCO}_3^{2-}$ ).

### Major trial objectives

The objectives of the trial were to:

- Demonstrate that o-o% is directly related with the effect of the chelate's efficacy.
- Prove that Ciba® ChauFer® can be used at a lower rate than Ciba® LibFer® SP, giving a similar result.
- Assess the efficacy of a split application compared with a "one-shot" application.

In these conditions, iron chlorosis normally appears so iron chelates are applied annually by the local farmers. EDDHA is the chelate of choice as EDTA and others are not stable enough for these conditions.

Ciba® ChauFer® is the EDDHA premium grade of Ciba Specialty Chemicals, containing EDDHA, 6% Fe and 4.8% of o,o-EDDHA. Ciba® LibFer® SP contains EDDHA, 6% Fe and 3.5% o-o (minimum). In addition, a leading market brand was used in the trial, which is EDDHA, 6% Fe and 3.2% of o,o-EDDHA.

The parameters to be measured by the trial were chlorosis by SPAD measurements, yield quantity (Kg/tree, n° fruits) and quality (fruit size). This interim report compares the performance at the first assessment which is chlorosis measured by SPAD meter.



Peach trees, Zaragoza, Spain

- Ciba® ChauFer® and Ciba® LibFer® beat leading market brand

- Split treatment with Ciba® LibFer® FP shows best results

## Treatments used in trial assessment

The treatments (see table 1) were applied during two consecutive years (2005 and 2006), in order to eliminate variables.

The application was made at the end of March 2006 and the second application of treatment 6 was made at the end of May 2006.

The trial design was in blocks of 3 trees, 6 blocks by treatment, randomly distributed in the field as it is shown in table 2.

Treatments	g/Tree
1. Control	0
2. Ciba® ChauFer®	10
3. Ciba® LibFer® FP	10
4. Ciba® LibFer® FP	14
5. Leading Market Brand	10
6. Ciba® LibFer® – 2 parts (6+4)	
1 <sup>a</sup> together with the rest	6
2 <sup>a</sup> two months after	4

Table 1

Plot Design																		
Plot number	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
Treatment 4	6	6	6	3	3	3	5	5	5	4	4	4	1	1	1	2	2	2
Treatment 5	4	4	4	5	5	5	3	3	3	6	6	6	2	2	2	1	1	1
Treatment 6	2	2	2	5	5	5	6	6	6	1	1	1	3	3	3	4	4	4

Plot Design																		
Plot number	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Treatment 4	5	5	5	6	6	6	1	1	1	2	2	2	3	3	3	4	4	4
Treatment 5	1	1	1	4	4	4	2	2	2	3	3	3	6	6	6	5	5	5
Treatment 6	3	3	3	2	2	2	4	4	4	5	5	5	1	1	1	6	6	6

Table 2

## Trial results

Table 3 shows the results of the SPAD assessments which have been statistically analyzed. These results will be updated later in the year when yield and quality results are available.

	08 May		25 May		14 June		29 June	
Control	26.66	a	19.41	a	30.78	a	28.28	a
Ciba® ChauFer® 10	31.98	b	27.8	bc	36.1	bc	34.88	bc
Ciba® LibFer® 10	32.1	b	26.56	bc	35.08	bd	32.48	b
Ciba® LibFer® 14	31.95	b	28.96	cd	35.75	bc	34.86	bc
Leading Market Brand	31.75	b	25.5	b	34.58	b	32.28	b
Ciba® LibFer® - 2 Parts	30.66	b	31.26	d	37.51	c	36.03	c

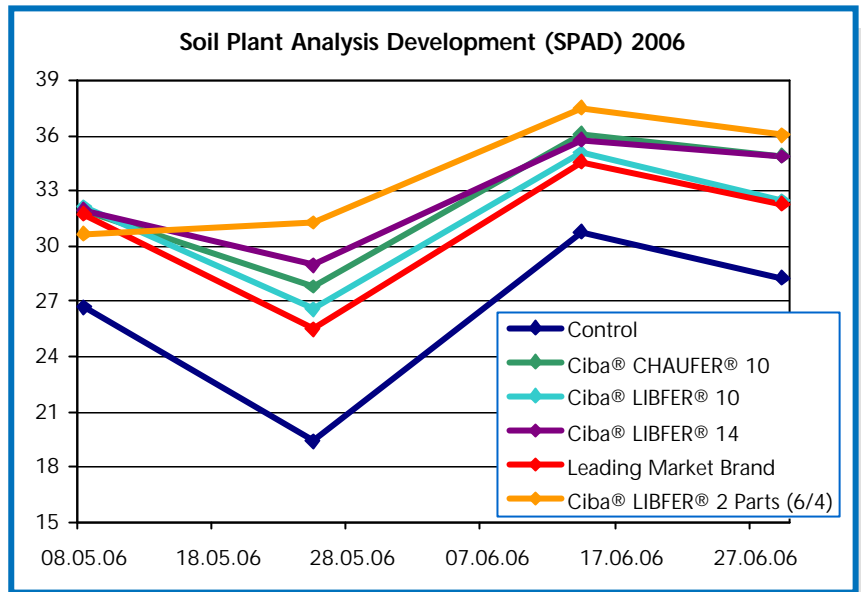
Different letters (a,b,c) mean significant difference ( $P < 0.05$ ) between treatments

Table 3

## Conclusion

At the time of writing, the SPAD data concluded:

- Ciba® LibFer® SP (6+4 g/tree) gave the best results, so a split treatment would be the recommended treatment.
- Ciba® ChauFer® (10 g) and Ciba® LibFer® SP (14g) give the same results inline with the relative o-o content.
- Both, Ciba® ChauFer® and Ciba® LibFer® (all treatments) provided a better response to iron chlorosis than the leading market brand



## Photographs

Control



Leading market brand 10g



Ciba® ChauFer® 10g



Ciba® LibFer® 10g



Ciba® LibFer® 14g



Ciba® LibFer® 6+4g



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