XCELBIO

Natural solutions for man-made problems

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Application of Xcelbio (A) in Commercial Hydroponic growing tunnels

Summary

The addition of Xcelbio (A) to the rhizo-sphere and foliage of a number of crop types is demonstrating marked beneficial effects. These include root development, plant growth stimulation, yield increase and disease resistance.
The consequences are increased production, higher quality produce and reduced chemical consumption. These factors lead to the most important benefit – increased profitability. Utilising Xcelbio (A) we have discovered and developed methodology to collect, culture and preserve a diverse biosystem of Crenarchaeota that includes many members of the species. Members of this division of the Crenarchaeota are increasingly being identified by scientists as being closely associated with plant roots.

Measured effects

An intensive test on tunnel tomatoes was performed (see picture above) where the tunnel was divided on the fertigation system into different zones in order to account for different light conditions. One set of plants received "normal" fertigation recommended by the fertiliser suppliers (controls) and the others had Xcelbio (A) added to the water supply. Where foliar applicants were made the treated plants had Xcelbio (A) added to the spray.
Comparison of treated inner rows versus control inner rows showed an increase in output per plant of 21%.
Comparison of treated outer rows (best access to light) to control outer rows showed an increase in output per plant of 8%. Over the whole tunnel the increase in yield per plant treated versus control was 16.7%. The shelf life of treated fruits were at least double that of the controls.

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Application of Xcelbio (A) in agriculture

Table grapes

A vineyard of red globe table grapes was treated from early October 2005 by addition of Xcelbio (A) to irrigation water. All other cultivation on practices such as fertilisation, pruning, thinning and spraying were kept as per previous seasons. Comparison of the total harvest from 2004/5 season to 2005/6 season gave a production increase of 75.7% per hectare. Often when high yields are obtained from "red globe" cultivars bunch uniformity and colouring suffer with the result that export quality is not achieved. In the case of the above crop 98% of produce atained export quality.

Cucumbers

The production from two adjacent cucumber tunnels was compared some years ago, with identical treatments being carried out, with the exception of one tunnel treated with Xcelbio (A). Seedlings were identical in terms of age and cultivar. The final result was a 17,7% increase in yield over the control. We have also implemented treatment on three cucumber farms that were severely impacted by fungal and bacterial diseases, which threatened the viability of the farms. Over the past couple of years many chemical treatments to the plants and water have been tried and tested without success. Xcelbio (A) was then introduced into the fertigation system. The effect on the plants has been dramatic, fungal infections have drastically reduced; powdery mildew has declined to almost insignificance without insecticide treatments. In particular root development, growth rate, leaf area and plant uniformity are greatly improved. (see picture on pg 1). The production level of the farms have soared with high quality cucumbers being produced. It is anticipated that the cropping period will be extended well beyond that ever achieved before.

Without Xcelbio (A)

With Xcelbio (A)

Both vines are the same age and cultivar and watered with same protocol

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Field projects with application of Xcelbio (A) AD digestate

Field applications evaluations of digestate from Xcelbio (A) treated AD plants are under way in three locations in Europe.

From initial results and observations it is apparent that the Xcelbio (A) treated digestate has an improved symbiotic effect in the crop rhizosphere.
Crops of wheat and maize recently harvested have shown increases in yields of up to 23% higher yields than previously achieved on the respective lands. In Austria we have already had the results of the wheat harvest which shows an increase in yield of 24%. There is also a substantial reduction in chemical fertilizer used.

Visually the crops display increased leaf area and deeper green colouration. The pictures clearly show the difference between wheat with Xcelbio (A) treated digestate and that with "normal" digestate both being applied at the same rate.

It is apparent from a UK application that the effects are more pronounced on sub-standard soils.

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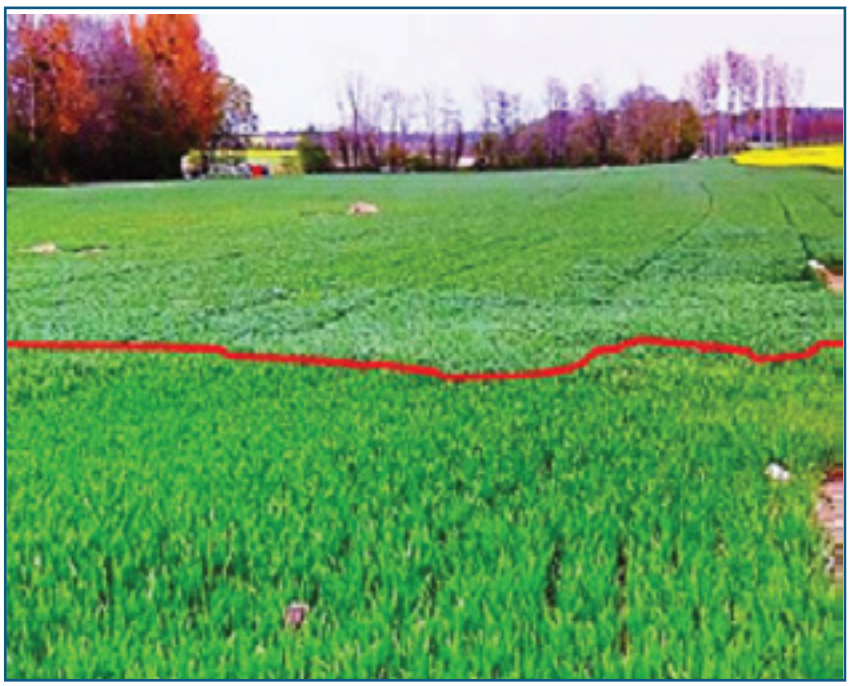
Field projects with application of Xcelbio (A) AD digestate



The pictures displayed show clearly the difference between the wheat treated with Xcelbio (A) digestate and without. This is just one of the many benefits that can achieved by enhancing an AD plant with the Xcelbio (A) biocatalyst technology.

WE NOW HAVE SIMILAR RESULTS IN:
UNITED KINGDOM, AUSTRIA AND SWITZERLAND

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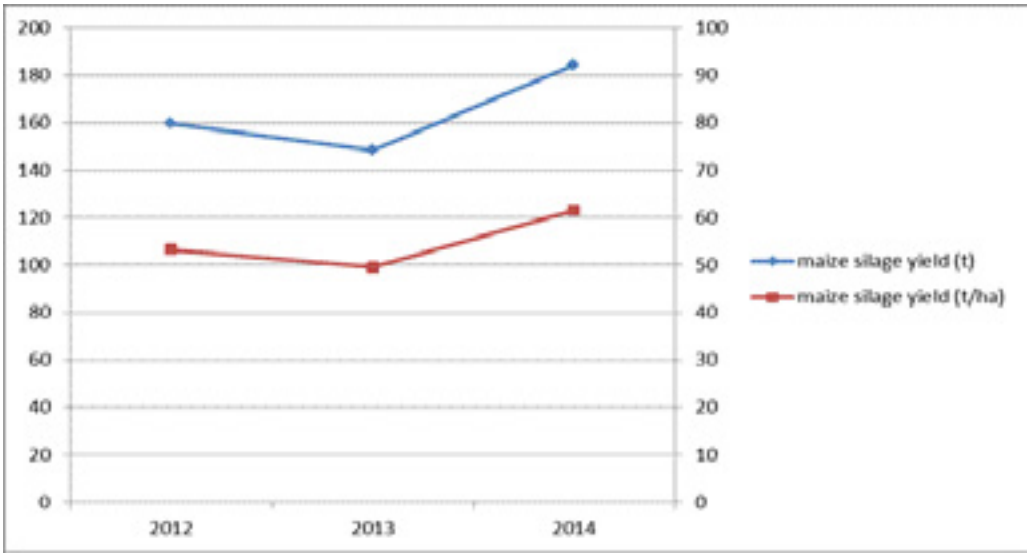
24 % increase in yield after applying Xcelbio (A)

Change of maize silage yield on 3ha field, fertilised only with biogas digestate after Xcelbio (A) was introduced into the biogas plant.

	MAIZE SILAGE	MAIZE SILAGE
YEAR	Yield (t)	Yield t/ha
2012	159.95	53.32
2013	148.54	49.51
2014	184.57	61.52
2014/2012		15.39%
2014/2013		24.26%



See reference: Environmental Microbiology (2000) 2(5), 495±505
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