

## IPE<sup>®</sup> Technology

Increased Phosphate Efficiency

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LET'S MAKE THE GREEN SWITCH

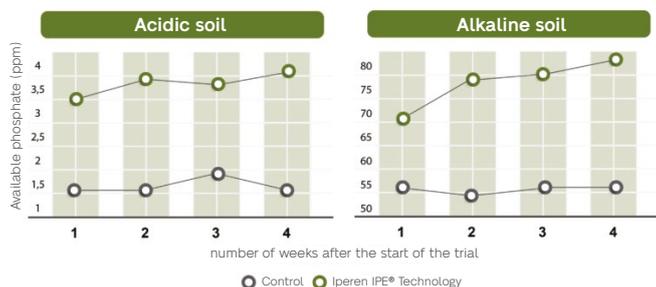
# IPE® Technology

Managing the Phosphate input of your crops is a task that can be complex. Like Micronutrients, Phosphate tends to get fixed in the soil, after which it is no longer available to the plant. Localized application helps limit this issue, yet this approach may not always be effective. In response to this challenge, we've introduced the **Iperen IPE® Technology**, developed to enhance the management of both Phosphate and Micronutrient supplies.

## Proven Effects on Efficient Use of Nutrients (NUE)

### Releases Fixed Phosphate

Effect of IPE® Technology on the ground.

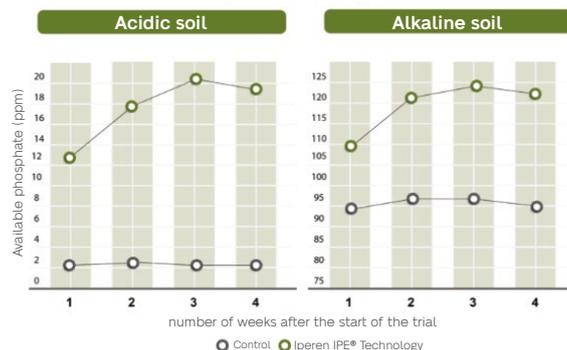


Different trials conducted on bare soil with **Iperen IPE® Technology** show a significant increase in the level of Phosphate present in the soil which is available to the plant. This parameter was measured in the soil solution, on samples from plots treated with **Iperen IPE® Technology** or untreated.

None of the plots had received a new application of Phosphate. The increase was explained by the release of Phosphate fixed in soil particles. Depending on the soil type, the rate of available Phosphate could increase up to 100%, as shown in the graphs. The effect of the IPE® Technology is obvious!

### Prevents Phosphate Fixation

Effect of IPE® Technology on the ground.

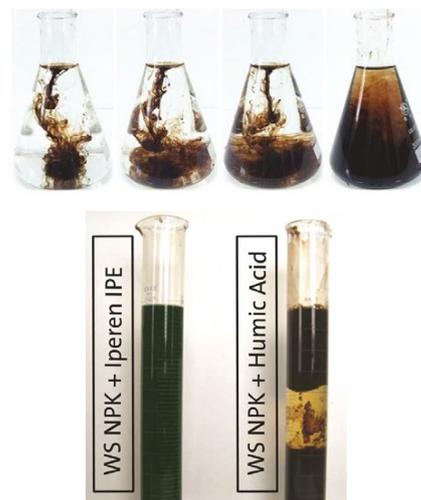


Additionally, we confirmed that the **Iperen IPE®** effectively reduces the fixation of Phosphate following next applications. In this trial, we compared a plot treated with 50 ppm of Phosphate in the form of monopotassium phosphate (200 kg/ha) to plots treated with **Iperen IPE®** in addition to 50 ppm of Phosphate. In the control plot, a large part of the Phosphate applied was quickly fixed in the soil after application. On the other hand, in plots treated with **IPE® Technology**, the quantity of available Phosphate increased significantly over a longer period of time, as shown in the graphs. New proof that more efficient use of nutrients (NUE) is possible thanks to **Iperen IPE® Technology**.

## Soluble in water without mixing restrictions

Products with **Iperen IPE® Technology** (Soluble NPK fertilizers + IPE® and liquid IPE®) are perfectly soluble in water without any risk of precipitation. Its low density does not cause qualitative mixing and injection problems.

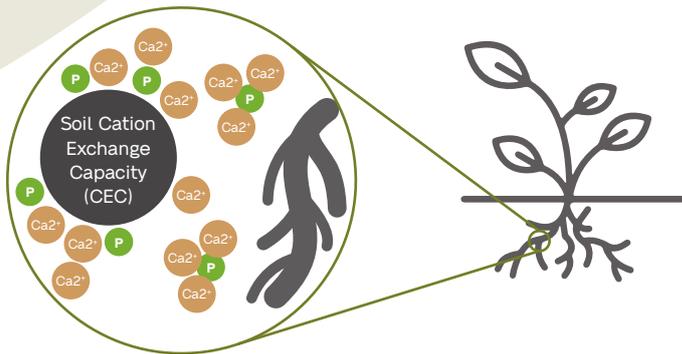
Consequently, all products in the Iperen IPE® range can be mixed with other products, even acidic ones, without the risk of blocking irrigation systems unlike many other organic substances, such as humic acids.



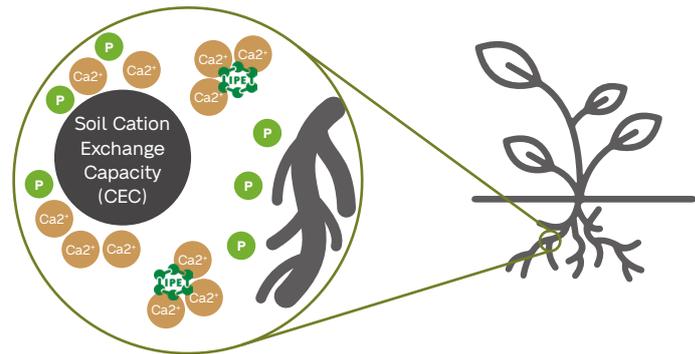
# Behavior of Phosphates in Alkaline Soils



## Without Iperen IPE® Technology



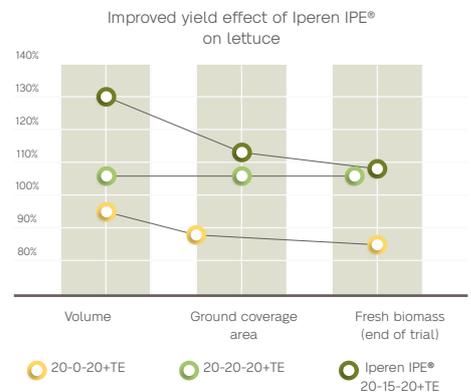
## With Iperen IPE® Technology



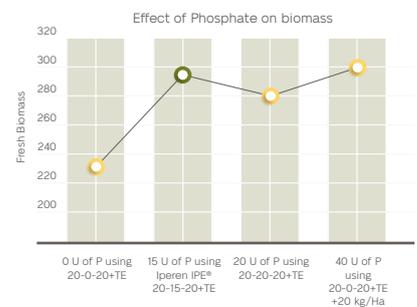
## Proven Impact on Yield – The Case of Lettuce

Several trials conducted with **Iperen IPE®** on lettuce have shown positive effects on the initial development of the plant when applied by fertigation.

In the example shown in the graph to the right, three plots were compared. One without any application of Phosphate; a second with 20 kg/ha of Phosphate; and a third with 15 kg/ha of Phosphate + IPE®. After 20 days, the volume and surface area covered by the leaves showed the highest values in the plots treated with the IPE® product. The same observation was confirmed for fresh biomass at the end of the trial, despite a 30% reduction in new Phosphate applications.

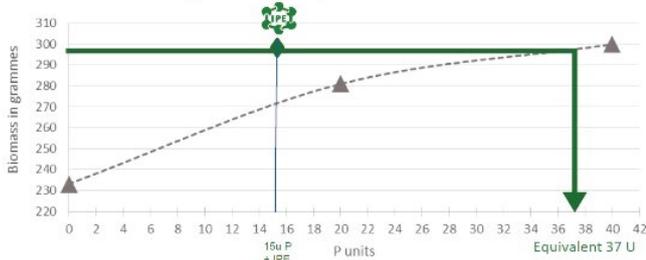


In this second trial, we compared 3 doses of Phosphate (0, 20kg, and 40kg) with a modality of 15kg Phosphate + Iperen IPE®. An increase in yield was noted with higher phosphate dosages, and particularly, the 15kg Phosphate treatment with **Iperen IPE®** achieved a yield on par with the 40kg Phosphate treatment without Iperen IPE®. This indicates that **the IPE® Technology** plays a role in preventing the applied Phosphate from becoming immobilized in the soil.



In this test, the effects of Iperen IPE® 20-15-20 + TE (15kg of Phosphate) are equivalent to the effects produced by 37kg of Phosphate. In other words, the effectiveness of Phosphate is 2.5 times greater in these conditions thanks to **Iperen IPE®**. A clear demonstration of the effects of **Iperen IPE® Technology** on the best use of nutrients. A significant saving for the grower: Better results by applying fewer Phosphates.

### Do more with less!





# IPE® Technology



## Iperen IPE® 11-44-11+TE



Crop	Date of application	Min. kg/ha/season	Max. kg/ha/season
Citrus	<ul style="list-style-type: none"> <li>• During the entire fertigation program</li> <li>• Spring application</li> <li>• Winter application</li> </ul>	150	300
Potato	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Until the tubers are filled</li> </ul>	100	200
Stone fruit	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Up to 4 weeks before harvest</li> </ul>	100	200
Vines	<ul style="list-style-type: none"> <li>• At vegetative bud break</li> <li>• Until the petals fall</li> </ul>	50	200
Fruit vegetables	<ul style="list-style-type: none"> <li>• Upon transplantation</li> <li>• Up to 4 weeks before harvest</li> </ul>	100	250
Banana	<ul style="list-style-type: none"> <li>• During the entire fertigation program</li> </ul>	200	300
Strawberry	<ul style="list-style-type: none"> <li>• Upon transplantation</li> <li>• Up to 4 weeks before harvest</li> </ul>	100	250



## Iperen IPE® 20-13-20 +2MgO + TE



Crop	Date of application	Min. kg/ha/season	Max. kg/ha/season
Fruit vegetables	<ul style="list-style-type: none"> <li>• From vegetative growth</li> <li>• Until fruit setting</li> </ul>	150	300
Potato	<ul style="list-style-type: none"> <li>• During vegetative growth</li> <li>• During tuber initiation</li> <li>• During tuber filling</li> </ul>	100	200
Strawberry	<ul style="list-style-type: none"> <li>• As of vegetative growth</li> <li>• Until fruit setting</li> </ul>	150	300
Fruit trees	<ul style="list-style-type: none"> <li>• From the end of flowering</li> <li>• Until the fruit is filled</li> </ul>	100	200
Vines	<ul style="list-style-type: none"> <li>• At floral bud break</li> <li>• Until vegetative growth</li> </ul>	100	150



## Iperen IPE® 3-15-0 Liquid



Crop	Date of application	Min. kg/ha/season	Max. kg/ha/season
Strawberry	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Until fruit setting</li> </ul>	28	42
Vegetables	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Until fruit setting</li> </ul>	30	50
Fruit trees	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Until fruit setting</li> </ul>	30	50
Vines	<ul style="list-style-type: none"> <li>• Until fruit setting</li> </ul>	28	37
Arable crops	<ul style="list-style-type: none"> <li>• From the start of the fertigation program</li> <li>• Until fruit setting</li> </ul>	30	50



*"We observed outstanding results on rooting thanks to Iperen IPE® compared to a traditional program with 20-20-20 formula. We are very satisfied with the Iperen IPE® formulas."*

Yasin El Chebbi, Agronomist, Regueb area Tunisia