

# RESEARCH WITH IMPACT!

## THE CHALLENGE:

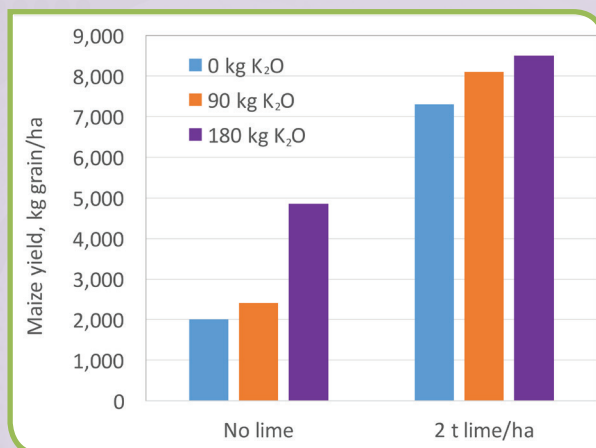
Soil acidity is a major constraint that limits maize productivity in the southern agricultural region of Chiapas, Mexico. The region's dominant sandy soils are derived from granite in a lowland tropical environment. These soils are naturally acidic, but conditions are made worse by burning plant residues, use of acidifying fertilizers, and tillage. In the 1980's, a standard recommendation was made to apply 2 t calcium hydroxide/ha (hydrated lime) to neutralize soil acidity, regardless of conditions and lime variability. Although many positive responses resulted from this practice, yield benefits were not consistent, including yield declines due to subsoil acidity and ignoring the interactions between liming and plant nutrients. As a result of this inconsistent crop response, liming has not become a routine farm practice, and soil acidity remains a serious barrier to achieving high maize yields.



## Overcoming Low Maize Yields with Lime and Potassium in Chiapas, Mexico

### THE RESULTS:

The yield boost from improved soil and nutrient management has been impressive and very encouraging. Some of research sites occurred on fields that had been previously abandoned by their owners because in their own words, "...nothing good will grow there." Farmers could not believe the growth they saw as a result of both the application of the amendments and improved plant nutrition. The data shown here from one location clearly shows that the greatest amount of corn grain was harvested when both potassium and dolomitic lime were applied together; with grain yields more than quadrupled compared with previous farmer practices. Some important questions still remain, such as measuring the residual effect of



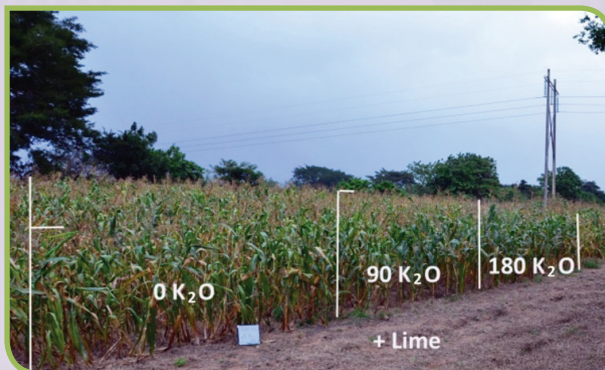
**Maize grain yields quadrupled** with the proper application of dolomitic lime and potassium fertilizer.

## THE SOLUTION:



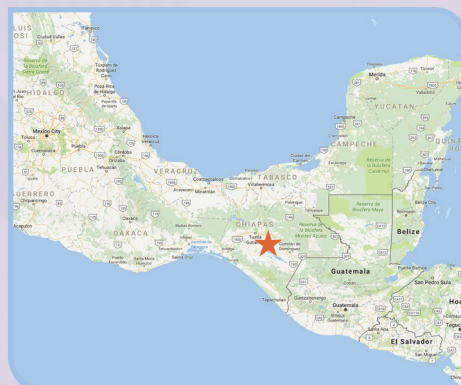
Field research and demonstration was performed in cooperation with Dr. Robertony Camas, from Mexico's Agricultural Research Institute,

to address how soil acidity continues to prevent smallholder farmers from achieving yields needed to secure their farms. The project identified the additional need for balanced nutrition, which was not addressed with the previous recommendation focused on hydrated lime application. The positive yield response from added potassium, dolomitic limestone, and gypsum were assessed with varying degrees of soil acidity. The project has now been expanded to additional sites where soils do not have limitations associated with acidity and the positive response to added potassium fertilizer are studied.



Farmers were invited to field days when they could visit the plots and learn how to improve their soils and crops with improved management.

the amendments and fertilizer in order to avoid the unnecessary expense of re-applying when it is not needed. Follow-up research will examine how the choice of specific amendments and fertilizers can be tailored to individual field conditions.



INTERNATIONAL  
PLANT NUTRITION  
INSTITUTE

Our *Research with Impact* series highlights examples of solution-driven research sponsored by IPNI.

FIND THIS PROJECT AT  
[HTTP://RESEARCH.IPNI.NET/PROJECT/IPNI-2015-MEX-59](http://research.ipni.net/project/ipni-2015-mex-59)