

# RESEARCH WITH IMPACT

## THE CHALLENGE:

The Xinjiang region of northwest China is the largest producer of processing tomatoes in the country...in fact it is one of the largest processing tomato-growing regions of the world. About seven million tonnes of tomato fruit is produced annually, and this contributes to 70% of the China's tomato paste bound for export markets. Tomatoes require a relatively large amount of potassium (K) for adequate growth. Recently, scientists have detected declining K concentrations for soils in the region, and this is thought to be related to the amount of K removed from the field during the continual harvest of processing tomatoes as well as other crops. Falling soil K fertility is leading to a reduction in tomato yield and quality.

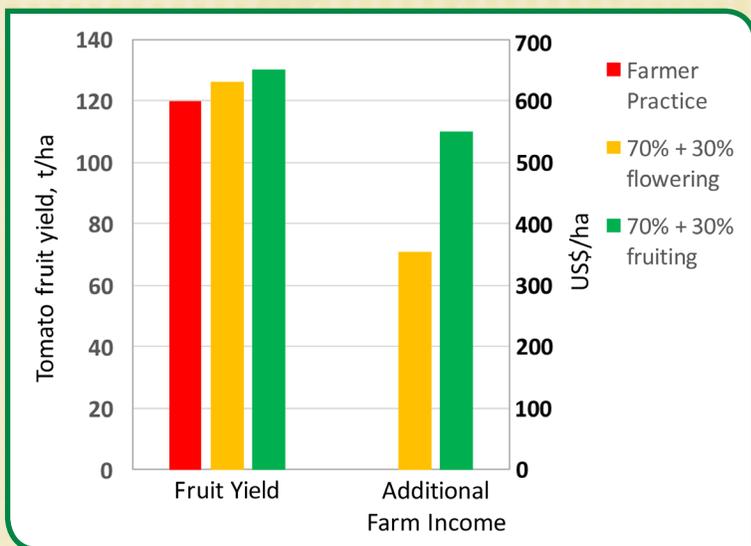
## THE SOLUTION:

The IPNI China program established a research project in cooperation with the Xinjiang Academy of Agricultural Sciences, the tomato industry, and IPNI member companies, to study the right K fertilizer sources, application rates and timings, and to assess the potential risks for any chloride imbalances that may occur if KCl use was to increase in Xinjiang.



Tomato yields were greatest when K fertilizer was split between KCl and  $K_2SO_4$  using two applications (70% before planting and 30% either at first flowering or first fruit appearance). Farmer income was maximized with this dual fertilizer application, compared with current practices.

## Improving Yield and Profitability of Processing Tomatoes in Northwest China with Potassium



the fall, following harvest of the previous crop. The remaining 30% is best spread as  $K_2SO_4$  just prior to the fruiting stage. This split application with two K sources produces more tomatoes and a greater economic return to the farmer.

## THE RESULTS:

The use of KCl resulted in similar tomato yield and quality (and profit) as fertilization with potassium sulfate ( $K_2SO_4$ ) or potassium nitrate ( $KNO_3$ ) applied at the same K rate. Applying K at a rate of 120 kg  $K_2O/ha$  produced the highest tomato yield and economic return. Split application of KCl provided greater fruit yield and profit, compared to a one-time application. It is now recommended that farmers first apply 70% of their K requirement as KCl in

This new recommendation, now regarded as the appropriate management practice for K fertilization of processing tomatoes in Xinjiang, limits any undesirable chloride accumulation in the soil and it supports production of high quality tomato paste in the processing plant. These results provide the core technical message for training materials used by local tomato farmers.



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