Photo: ICEX, Carlos Navajas

Raise your glasses...
the toast is boron!

Wines from the Rioja region of northern Spain owe quite a lot to America. They are known for their distinctive 'oaky' flavor, imparted by the casks they mature in – casks made from imported American oak.

Another American import was, for the rest of the European wine industry at least, not nearly so welcome, but delivered an unexpected bonus to Rioja.

In the late 19th century, a tiny aphid-like insect called the eastern American root louse *(Phylloxera vitifoliae)* traveled to Europe, hidden in a shipment of American vines, and was to devastate vineyards across the continent. But Rioja, sheltered by the Pyrenees mountain range, escaped the scourge and attracted expert wine producers from France who brought new techniques to the area.

Another American factor comes from the Borax mine in California, U.S., for vines happen to be among the most sensitive crops to a lack of boron. Indeed vine experts have called boron deficiency 'the most serious non-parasitic vine disease known'. Adequate boron can make the difference between no grape crop and a bumper harvest.

A strange paradox is that the soil and climatic conditions which are good for vines are also rather good for boron deficiency. With wet winters and dry summers, in the poor quality, limey, chalky hillside soils of Rioja otherwise ideal for the vine, boron might be in short supply.

The main problem of boron shortage is that one of its key functions in plants is to help in the fertilization of the flowers, which later become fruits – grapes.

Pollen needs to germinate on the stigma, and grow a microscopic tube down to the ovary. Not enough boron and the tube does not develop – no fertilization, no grape.

Viticulturists dread the way this manifests itself. An apparently healthy plantation of vines in flower, but the flowers simply fall off before producing their grapes. Or maybe grapes appear, but most are small, shriveled specimens. The bunch can bear both healthy and stunted grapes, a condition known as millerandage or 'hen and chicken'. Grapes can also be badly miscolored.

All in all, a disastrous state of affairs – but happily one that can easily be avoided by the addition of boron in the form of *Fertibor®* or *Granubor®* fertilizer borates or *Solubor®* DF foliar spray, as recent field trials in Spain have demonstrated.

The first signs of inadequate boron are the key effects on flowering and fruiting and, when more severe, leaves become mottled and tendrils do not develop properly. However, the necessary boron can be supplied simply either by spray or broadcast on the soil, or by a combination of both at different times during the season.

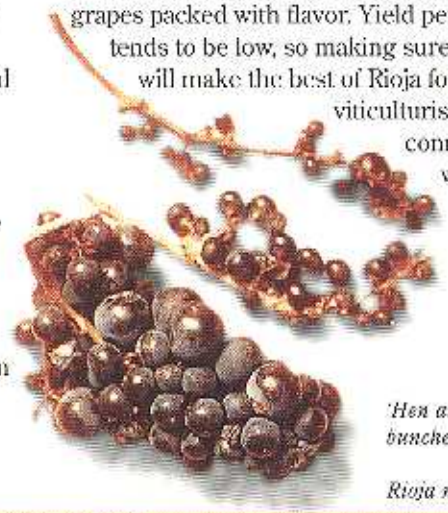
The benefits are spectacular. None of the flower or grape symptoms appear, but even better, the total yield is given a boost – even when the boron deficiency is not bad enough to produce visible symptoms. Bigger, even-sized grapes in larger bunches, and a higher yield of grapes from each vine are the results.

Better still is that regular boron treatment has been shown to be a very cost effective option. The extra yield offsets the cost of boron more than adequately. An increase of but one percent, and growers can expect better than that, will easily meet the cost of boron supplementation.

Adequate boron can make the difference between no grape crop and a bumper harvest.

The best news of all is the improvement in wine quality. Correct boron levels mean increased strength, more intense color, the right 'nose' (aroma) and less acidity.

In Rioja, like many other Spanish wine producing areas, vines are typically planted wide apart which produces grapes packed with flavor. Yield per hectare therefore tends to be low, so making sure the boron is right will make the best of Rioja for the region's viticulturists and wine connoisseurs all over the world.



'Hen and chicken' – afflicted bunches of grape

Rioja matures in casks of American

Photo: ICEX, Carlos Navajas