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MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA

INSTITUTO UNIVERSITÁRIO DE TRÁS-OS-MONTES E ALTO DOURO

PURDUE UNIVERSITY - AID PROJECT
J. L. Ahlrichs, Aug-Sept Report
IUTAD, Vila Real

Research:

Serious nutrient deficiency symptoms exist in many vineyards of the region. The symptoms were accentuated this year by the dry weather, thus it was an excellent year to observe the seriousness of the problem. No certain knowledge seems to exist of a good cure although acid toxicity (Al toxicity ?), magnesium deficiency, and boron deficiency are the most commonly suggested causes. We have selected 25 sick and healthy vines on the Quinta for careful study. With Nuno Magalhaes and Joao Coutinho, I have taken field notes on each, the foliage of each has been photographed for record and tissue samples have been taken for analysis of suspected deficient elements. Soil samples have been carefully composited from under each plant for nutrient analysis and for Al-H acidity studies. Selected soil treatments will be applied deeply and thoroughly under each plant yet this fall. $MgSO_4$, dolomitic limestone and other compounds have been arranged for so we can apply the treatments after grape harvest.

We have also selected another area of poor vines for foliar spray applications of nutrients next season. Also a small comercial vineyard near Sabrosa will be studied with soil and foliar spray treatments.

With the help of Professor Rhykerd I was able to stimulate the planning of several new fertility experiments on wheat and forages for the Quinta emphasizing longer term research for the Quinta because of the limited land available.

With the help of Professor Rhykerd in June we were able to initiate with Ana Pires a study of the adequacy of Mg in forages. This is part of our concern for whether we must use dolomitic limesone in this region. She is now analyzing her soils and plants from the first 25 corn fields. This month I helped her start her first analytical work for Mg and Ca. This winter and spring she will sample forage grasses and legumes. We expect the data to be presented at the next Portuguese Forage Conference.

I spent several days advising and helping the soil fertility group with chemistry and technique in their first experience in total nitrogen analysis on some 300 triticale samples from their field plots.

As part of an effort to learn something of the mineralogy of the regions soils I prepared 6 soil samples from the Braganca region for x-ray and infrared analysis. I then worked two days at the CSIC labs in Madrid to run the diffraction patterns and spectra. One was a mixed kaolin - smectite, several were predominantly kaolin and one prdominantly chlorite.

I reviewed and suggested changes in planned Procalfor lime plot experiments which will be done by MAP in cooperation with the IUTAD staff.

Conferences:

I attended the 7th International Clay Conference in Italy. In addition to presenting a research paper, I got new clay samples to use in our planned wine clarification work. Contact with several scientific and industrial people was made that will be helpful in our work.

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Visiting Scientists:

In early August I took Professor Rhykerd to visit our program at Covilha and then on to Lisboa for his departure. His visit was successful for us.

I helped host Professor Janick during his 2 1/2 days at Vila Real, and am following up now on his visit with our two horticulturists. He gave three excellent seminars and consulted with our staff.

Professor Albrecht Jungk, an accomplished plant nutritionist from the University of Hannover, stopped on a personal visit and I was able to get him to talk soil fertility with us for 1/2 day. His knowledge of potassium response was helpful to Ester Portela. He was able to explain why potassium response is so seldom obtained on sandy soils like many of ours, even when K soil tests are rather low.

Soil Testing:

We have been told that the new soil testing equipment from the Procalfer project has been ordered, but nothing has yet come. We did change phosphorus reading to a new Spectronic-21 last week. This enables us to read directly in ppm in the soil without making any mathematical calculations etc. The standard curve was linear to over 200 ppm so we can now read phosphorus more rapidly and without the need to dilute and rerun high testing samples.

References:

The National Agricultural Library has a special program of literature searching for AID personnel working overseas. I have applied for this and have recieved my first three computer updates which give titles of the current research articles on topics of interest to our soil fertility and chemistry people. The service also provides photocopies of articles and we are now ordering our first photocopies.

From Professor Janick I recieved a promise of a complete gift set of "Hort Science" and the added promise to advertise in the society journal for a set of the Journal of the Horticultural Society for our library at IUTAD.

Jim A.