

## **Questions and Answers**

**Q.** If the avocado tree is an acid-soil-loving tree, would not any with lime base be detrimental?

**A.** (Schoonover) The question is based on the assumption that the avocado is an acid-soil-loving tree, which I don't think is necessarily the case. I think it does quite well in soil over a range from somewhat alkaline to reasonably acid. The nature of the soil bases is more important than acidity or alkalinity. Whether or not you could use nitrate of lime depends on circumstances. We have avocado trees growing in this area on soils that contain 2 or 3% of lime and don't show any damage from lime, but ordinarily when we get that high a lime content we get distinct damage. In those cases it probably would be wise to add fertilizer of a kind that would develop an acid reaction. On the other hand, because calcium in soluble form is leached out, we don't necessarily change the reaction by adding such material as nitrate of lime. I know of one citrus orchard where nitrate of lime has been used for the past ten years—ten pounds per tree per year, and that soil has decreased somewhat in alkalinity and is on the acid side now, despite the application of calcium nitrate. You might say "Well, it is wise to go over to ammonium sulphate. That is acid forming." Maybe, but there again we sometimes find other conditions. It might be all right for this district but in parts of Ventura county where irrigation waters are high in sulphates, it would be detrimental. You might do more damage by building the sulphates up than you would by building the calcium up a little bit.

**Q.** If land is already acid does not ammonium sulphate increase acid condition of soil?

**A.** Yes, it does but the change is very, very slow. One of the products formed in the soil is gypsum and a hundred pounds per acre of ammonium sulphate would result in development of 160 pounds of gypsum per acre.

**Q.** Small grove, water in basin, no tractor can work in orchard—what is best kind of fertilizer and what time of year to use it?

### **ASK FARM ADVISORS**

**A.** That is a special problem. Let's refer that to the Farm Advisor. (Special problems, the answers to which depend on strictly local conditions, should be referred to the farm advisor.)

**Q.** Are there any animals or fowls that will eat Bermuda grass?

**A.** (Wahlberg) Yes. Both hogs and geese will eat it.

**Q.** Why not analyze the soil?

**A.** (Schoonover) I am not going to take time to answer that. There is a very good article on that and it is the last article in the March 7, 1936 number of the Pacific Rural Press.

**Q.** How do you girdle an avocado tree?

**A.** (Hodgson) You take off the bark an eighth of an inch wide clear around the limb, either spiral or straight around—same thing.

**Q.** What percent of sulphate of ammonia is available as nitrogen?

**A.** (Schoonover) It takes study to find that out with different crops because results are somewhat variable. In Riverside, a pound of nitrogen from all materials except manure, gives the same yield of oranges. We get just as much from sulphate of ammonia as from a pound of nitrogen in any other material.

**Q.** Will application of barnyard fertilizer, after covercrop is turned under in spring, have value or disadvantage?

**A.** If you add too much organic matter at one time and that organic matter is low in nitrogen, you will have a temporary reduction in availability of your nitrogen, so the answer to that question depends in part upon how mature the cover-crop is which you turn under, and the manure you use. It is perfectly safe to do that if you are using enough commercial nitrogen to balance the carbon content.

## **RELATIVE ADVANTAGES**

**Q.** What are relative advantages of ammonium sulphate, calcium nitrate and Calnitro at this time of year?

**A.** Ammonium sulphate has all of the nitrogen in ammonium form which must be nitrified (changed to nitrate) before it will move into the root zone, whereas a nitrate will move at once. In order to make calcium or sodium nitrate effective, one application of water is required; ammonia compounds require two good rains or two applications of water with an intervening period to permit nitrification.

Calnitro has half of the nitrogen in nitrate form and half in ammonia. Half would be immediately available and the other half must be nitrified.

Calnitro is ammonium nitrate diluted with lime which is used because of the poor physical condition of ammonium nitrate.

**Q.** Applying zinc sulphate: Doesn't it run off and drip from the tree and get into the soil?

**A.** No. Dr. Parker talked about that this morning. No, it is not the runoff which is effective. If we apply it to soil, we have to apply tremendous quantities. The fixing power of the soil is so great that we might have to apply twenty or thirty pounds of zinc sulphate to the tree and by spraying we can get a result with as little as a hundredth of a pound sprayed on, and not very much of that was run-off.

**Q.** I would like to ask Mr. Schoonover if the following analysis is indicative of what fertilization program should be used—Less than 1% of nitrogen and less than 1% of phosphoric acid, less than 6% potash—was present in the fruit

## **SUPPLY SOIL DEFICIENCIES**

**A.** (Mr. Schoonover) Two things should be said; in the first place, the analysis is not indicative as to what should be applied in the way of fertilizer; that is, one shouldn't assume (unless they are farming in poor soil) that they should apply fertilizer according to what the crop takes out, because it is the function of the soil to meet the nutritional requirements of the plant. Soils fail to meet the requirements of trees in different degrees. The purpose of fertilization is to make up for deficiencies in a given soil, not to supply all the nutrients that the crop requires. Eventually, in a thousand years or so, we may have to do that, but usually we seek to find out just what the soil fails to supply. Now with respect to high content of potash in the fruit we should say this usually means the soil on which the fruit was grown, has uniformly good ability to supply potash—not that the plant requires it. Potassium is one of the elements which is used in luxury manner and excess supplies may be stored in the plants. We run into that same situation with dates grown in this country. Coachella Valley dates run higher in potassium than in other parts of the world. If the potash available is taken up in luxury consumption, I think it is not the analysis of the avocado that needs be considered.

Sometimes certain parts of the plant are taken and studied by chemical methods. That kind of analysis may furnish some information; for example, if an expressed bit of sap should be found rich in nitrates, we might be able to defer additional applications of nitrogen; if found rich in phosphates, we might be able to cut down in phosphate. The methods are not yet fully developed. We have some hopes, though, that we will have useful methods in the future.