

A BALANCED FERTILIZER FOR PRUNE TREES AND LOGANBERRIES IS SOUGHT

Careful Study and Much Correspondence With High Authorities Has Resulted in Directions Which Gideon Stoltz Proposes to Follow in His Own Orchards and Vineyards, and He Gives the Information for the Benefit of All Who Are Engaged in These Important Basic Industries.

A Balanced Fertilizer for Prune Trees and Loganberries.

Editor Statesman:

Why not have prune and berry growers adopt the above heading as a slogan for the next five years and solve some of the uncertainty experiments that are being made by growers, many of which are more or less failures and if successful along some lines are kept under cover as a personal secret? This idea has been growing on me for some months and became so strong that I set myself at work to find out what I could, first for my own use and guidance. Later I took a broader view of starting such a move on a broad and open base that all who wished could participate. By putting what information I have gathered before the prune and loganberry growers thus early, we might have a real effort put forth for the 1923 crops that would give us something to check up on and better the proportions if we can for 1924.

My good wife and I made a six weeks trip to California during last November and December. Starting from San Francisco south to the border line, I made some very close observations along many lines, and I will refer here briefly to what I could see of the fruit grower's problem, and to draw some encouraging comparisons for the Willamette valley grower.

It is true that their problems differ from ours, and, as I saw them, are vastly more difficult to overcome, yet they meet them and

make the growing of prunes, oranges, walnuts and other fruits a great success. It simply takes more capital and nerve to put it over. I did not say more brains, for I am fully persuaded that the Oregon and Washington growers are the equal of all comers engaged in this line of pursuit. Yet, there seems a difference in men and women, or, putting it more properly, a difference in their and our method.

First the bare land that is suitable for prunes in California has from three to four times more value than as good if not better land here. Then when you get down into the orange and walnut district, it is from five to ten times the value of our prune and berry land.

These values carry with them the water rights installed, yet no real ownership in the water. This water is paid for in quantity used, and I was told by many in different sections that the cost amounted to something like one hundred to as high as two hundred dollars an acre per year, and a further fact, without this water neither tree nor fruit would live over one season. Then, consider that these men spend from nothing to two hundred dollars an acre for fertilizer on the best orange groves. So we find this as the outstanding fact, that the California prune and orange grower must purchase the amount of water necessary to bring his orchard up to bearing, and then grow his crop yearly. This, no doubt, varies according to the nature of the soil and the distance water must be brought.

Here is an important point. Irrigation takes a portion of the fertility from the soil every time used, and unless the land is carefully and intelligently fertilized every year, their large investment per acre would not pay even with plenty of water. So, my Oregon and Washington grower, with this picture before you, can you do less than to one and all begin to experiment and spend a few hundred dollars each year until you know what a balanced fertilizer will do for your special lay of land and your prunes and loganberries? We have fully developed a balanced ration for our dairy herds, our chickens, hogs, and horses, so why not a balanced ration for that beautiful prune tree of ours?

Some years ago the word went out among the hill orchard men to prune heavy for sizes, as to get a larger prune, the tree must have less wood, less bearing surface. This may be correct, yet I have my doubts on this. Many men prune so closely that they have small returns and some years are still troubled with small prunes. Why not feed the tree more liber-

ally so it can take care of a wide spread and at the same time have better and larger fruit? A balanced ration for a hen does not call for clipping of wings or plucking its feathers.

Now for fear I may get this too long, I will come to what I have to offer.

In my search for a basis to offer the growers to begin their experiments, I consulted with some of the men offering fertilizer and I found some who could tell me what the tree, the stem, the pit, and the prune itself needed. In consulting my friend, Mr. Harley White of D. A. White & Sons, Salem, I found him possessed of more than ordinary store of knowledge, and together we made up what seemed to be a balanced fertilizer. This I submitted to the Oregon Agricultural College by letter. This was my letter and their answer:

Letter No. 1.

Salem, Or., Jan. 19, 1923.
Professor A. B. Cordley, secretary, State Lime Board, Corvallis, Or.

Dear Sir: I am interesting myself in formulating proper proportions for artificial fertilizer for prunes. After consulting with growers who have done some experimenting and dealers of the different articles offered in the market, I have made a proportion that is intended to support pit growth, aid tree and prune growth, and take care of sugar development.

Mixture:
2 tons superphosphate.
1 ton nitrate of soda.
½ ton potash.

When thoroughly mixed, give each tree four to five pounds.

I am submitting this to you and will ask you to give it your consideration and be free to correct if the proportions are out of balance. An early answer is desired, as February is near and we wish to use some such formula.

I will ask you to give me a mixture for loganberries, as the use of nitrate of soda straight has not proven sufficient. Nitrate makes growth of vine and berries, yet the berries are soft. Would this be a good mixture for loganberries? Respectfully yours,
—Gideon Stoltz.

Letter No. 2.

Oregon Agricultural College, School of Agriculture and Experiment Station, Corvallis, January 24, 1923.

Mr. Gideon Stoltz, Salem, Oregon.—Dear Sir:—Your letter of recent date to A. B. Cordley has been received and referred to the chemistry department of the Experiment Station for reply. In choosing an ideal fertilizer or compounding a certain kind of fertilizer it is necessary to take into consideration climatic conditions, type of soil and its reactions, and the crops to be grown. In general soils of the Willamette valley are comparatively high in potash, low in phosphoric acid, and more or less acid, depending upon whether it is hill soil or Willamette valley bottom soil. Necessarily opinion will differ regarding plant foods that should be used in various fertilizers, but the final test is observations of results obtained in the fields that have been fertilized. Without knowing definitely regarding the soil that you desire to fertilize, it is my opinion that for a general fertilizer, I would substitute the following for the mixture suggested by you:

Superphosphate, 18% — total phosphoric acid 2 tons.
Nitrate of soda, 15% — total nitrogen ½ ton.

Tankage, 4% — total nitrogen ½ ton.
Potash, 50% — potassium oxide ½ ton.

I suggest the above combination taking into consideration that the soil is fairly high in potash and consequently it is unnecessary to add an excess of this plant food. I suggest that part of the nitrogen should be in the organic form since a great need of the soils in the Willamette valley, especially for certain crops, is the incorporation of organic matter or humus which will be augmented when the tankage is used. Nitrogen in nitrate of soda is immediately available and when present in too large quantities causes excess green growth and tends to produce a poor quality of fruit.

The same formula suggested by me may be used advantageously for loganberries, although it might be preferable to substitute one-fourth ton of nitrate for the one-half ton and substitute three-fourths ton of tankage for the half ton in the above formula. These amounts should take care of the nitrogen supply, the nitrate of soda providing nitrogen for the early season's growth while the tankage which slowly changes into the available nitrogen form is taken up later by the plants.

If I can be of further assistance to you in this matter kindly advise me. Very truly yours,
—R. H. Robinson.
Oregon Experiment Station.

Letter No. 3.

Salem, Ore., January 27, 1923.
Professor R. H. Robinson, Oregon Agricultural College, Corvallis.

His, Oregon.—Dear Sir:—Your letter of January 24th at hand and I greatly appreciate your careful analysis of my letter to Professor Cordley and the spirit you met my inquiries.

The proportions you have submitted seem very attractive to me and I am sure they will receive a number of tests for this year's growing crops. I will ask you to give me the proportions in pounds that you would recommend for each prune tree. I would rather treat this as so much to a tree than so much per acre as it gives the average prune grower a better opportunity to figure the cost. Then there is another reason why it should be treated on this basis. The plantings in Oregon vary from 18 to 25 feet, hence, some have more trees to the acre than others and for that reason we should treat it by so much per tree. In the loganberries, however, you might designate your proportions per acre as the conditions are different.

I feel very enthusiastic in trying to work out a properly balanced fertilizer both for loganberries and for prunes as I can see the future of our crops is going to depend upon whether we keep up our soils. Of course I recognize the fact that artificial fertilizer alone is not a safe course to follow, that it would be necessary for the fruit and berry grower to resort to other fertilizers they can get hold of and the growing of cover crops in order to keep up their land. This in addition to artificial fertilizer will enable them to grow larger fruit and more of it per acre.

I plan as soon as I can get full data on prices of fertilizer to give the entire subject matter to the press and shall ask the privilege of using your letters for that purpose.

Thanking you again for your courtesy, I am respectfully yours,
—Gideon Stoltz.

Letter No. 4.

Oregon Agricultural College, School of Agriculture and Experiment Station, Corvallis, January 29, 1923.

Mr. Gideon Stoltz, Gideon Stoltz Co., Salem, Oregon.—Dear Sir:—Your letter of recent date at hand.

In answer to your inquiries relative to the amount of fertilizer that each prune tree should receive and the time of application, will say that they vary with the age of the tree and climatic conditions. In order to make the matter as clear as possible to you I have requested that the horticultural department send you their latest bulletin describing how much a tree should receive depending upon its age. There of course enters into the question, the type of soil and its previous manurial history. If the soil is fairly rich and has been fertilized the previous year it will of course not take as much fertilizer as another tree that had received no fertilizer treatment. In this bulletin I believe that you will find satisfactory answers to your inquiries. If not, I will be pleased to offer what further assistance I can in the matter. Very truly yours,
—R. H. Robinson.

The bulletin referred to in Professor R. H. Robinson's letter of January 29th is a 48-page bulletin by Professor C. I. Lewis and others and treats on apples only, so I would suggest that different amounts be used per tree, say from three to five pounds according to size of trees, and on loganberries from 150 to 200 pounds per acre.

A valuable contribution came unsolicited from Mr. George H. Gill of the field department of King's Food Products Company of The Dalles, Oregon.

Letter No. 5.

King's Food Products Company, Dehydrated Fruits and Vegetables, The Dalles Plant, The Dalles, Oregon, February 2, 1923.

Mr. Gideon Stoltz, Court Street, Salem, Oregon.—Mr. Fred Kurtz informed me that at a recent meeting of loganberry growers at Liberty, the discussion of fertilizers was taken up in their relation to the loganberry, and Mr. Kurtz stated that you asked for information regarding the particular fertilizer which would have a tendency to firm up your loganberries and offset the soft mushy condition of the berries that prevails in some of the fields around Salem. I started to explain this to Mr. Kurtz but he requested me to write direct to you.

Before taking up the subject of fertilizers, you should understand something of soil composition, something of the growth and development of plants, and have a clear understanding of the part played in the growth and development of the plant by each of the principal parts of a complete fertilizer.

A complete fertilizer as spoken of in this article is any commercial brand containing nitrate of soda, superphosphate, and potash. Where the analysis is stated as containing 3-10-2, this would mean that it contained 2 per cent nitrate of soda, or nitrogen, 10 per cent superphosphate and 2

THE FRUIT GROWER CAN SECURE A DOUBLE PROFIT, SAYS OAC EXPERT

The Pollination of Fruit Trees Is an Important Consideration, and It Has Many Times Been Shown That Insects Furnish the Most Important Means of Distributing Pollen—Acreage of Alsike Clover Should Be Increased.

"Beekeeping for the Oregon Farmer" is the title of Extension Bulletin 282 of the Oregon Agricultural college extension service. It is by A. L. Lovett, professor of entomology, and it is dated November, 1919. Following are a few brief excerpts:)

NO FARMER SHOULD BE WITHOUT A FEW STANDS OF BEES; for with proper care and manipulation, enough honey for home consumption can be secured from one or two colonies.

A fruit grower can secure a DOUBLE PROFIT from his bees in the honey and wax obtained and in the added value given his fruit through cross-pollination. The pollination of fruit trees is an important consideration in the west; it has many times been shown that insects furnish the most important means of distributing pollen to self-sterile plants, and that of these the honey bee is probably the most important. Though it is probably the exceptional season when honey bees are of much service in pollinating red clover, many other field crops are benefited. As the acreage of alsike clover increases there will be a real field for the bees, both for pollination and for the collection of fair excess of excellent honey. Honey is a product which occurs in nature in the shape of nectar in the flowers of plants, and is made available for our use only through the aid of bees. Wax, a secondary consideration, is a product of the bees themselves and is produced from glands within the

body of the worker bee.

"Until a few years ago commercial beekeeping was considered generally unprofitable in the Willamette valley and coast districts because of excessive spring rains. A few men here and there were succeeding, but many were hardly holding their own."

Due principally to new honey plants, but partly to improved methods in handling the bees, this condition is rapidly changing and, particularly in the Willamette valley, the average yields, considered for a period of years, will exceed those of ANY REGION EXCEPT SOUTHERN OREGON. Improved methods of handling will improve the conditions in the coast region as well. Honey plants are plentiful, including maple, vetch, fireweed, French pink, alsike clover and white clover. The development of special manipulations to get the bees in condition to harvest the maximum yields from the numerous nectar flowers will transform these questionable districts into profitable apian sections.

Honey is most delicious, wholesome and nutritious food. It should cease to be regarded as a delicacy and become a staple article of diet. It is more readily assimilated than sugar and can be substituted for sugar in cookery and on the table. Excellent recipes for its use may be obtained by writing to the Oregon Agricultural college, or sending to the United States department of Agriculture for Farmers' Bulletin 653.

element in plant nutrition. Its function is to build up the vegetable part of the plant. Therefore if too much nitrate is applied it forces a large luxurious sappy growth. The fruit will be delayed in ripening and will be soft mushy berries of poor flavor.

Superphosphate contains sixteen to seventeen per cent of soluble or available phosphoric acid. This plant food has the function of causing fruitfulness. Its action promotes the formation of flowers and seeds while nitrogen delays the process of ripening and phosphate has a tendency to hasten it. So where vines are gross and sappy an application of available superphosphate will do much to correct this tendency and restore the balance.

Potash usually runs 50 per cent pure. Potash plays an important part in the structure of plants. Nitrogen promotes the growth of leaves but with this element alone they would lack substance. Potash adds strength, assists in forming the fibre of the plant, makes sound fruit-bearing wood, etc. Potash forms the base of fruit acids and flavors and is active in the formation of starch and sugar; while superphosphate is active in forming the seed, potash appears to be responsible for forming the pulp of the fruit.

I believe that this will give you a clear idea of the part played by each of the different fertilizers in plant growth, but I do not believe that any article dealing on fertilizers for your soil would be complete unless lime was also included. As the organic or vegetable matter mentioned above decays in the soil, it throws off an acid which is detrimental and poisonous to most plant growths. Where an application of lime is made this counteracts the acid contents in the soil and makes them sweet. Since the plant growth can develop and do best on a non-acid soil, it is reasonable to presume that lime would be good to apply as a base to any commercial fertilizers used. Lime also has a tendency to break down the mineral deposits in the soil and make them available to the plant.

In applying fertilizer to your loganberries, and of course this applies to any sort of berries or tree fruit, do not apply it as a surface dressing but plow or cultivate it into the ground. Surface dressings of fertilizers have a tendency to cause the feeding roots of the plant to work near the surface and as summer advances the ground dries below them causing them to die, which will have a more injurious effect on the plant than the good derived from your application of fertilizer.

A good many farmers carry the belief that farm manure is a complete fertilizer, that is, that the plant food in it are about equally distributed. Analyses however show this to be untrue; that there is a heavy per cent of nitrogen

and a relatively small per cent of phosphoric acid and potash. So, where this manure is applied to the loganberries, it should be supplemented or added to by commercial brands of superphosphate and potash.

In the purchase of commercial brands of fertilizers, it always pays to buy a high grade fertilizer. All the commercial brands of fertilizers contain what is known as a filler, which is usually sand. All low grades, or cheap fertilizers, contain more of this filler than the high grades, and as considerable freight and handling charges pile up on fertilizers in their distribution from the manufacturer to the distributor, and from the distributor to you, in the end you pay for this freight. So we find that the high grade fertilizers, even though the first price is considerably higher than the low grades, are the most economical to use.

If there any points above which we have failed to make clear to you, please advise and we will be glad to go into further detail.—Yours very truly,
—Geo. H. Gill,
Field Department.

With Jaws and Hammers of Steel

Into a steel-lined pit, like a huge inverted bell with upright clapper, crash six tons of limestone and shale from a dump car.

The long process of crushing and grinding necessary in cement making begins.

Slowly, steadily, the great clapper of the gyratory crusher travels a circular path — crunches the huge chunks of stone to inch-and-a-half fragments.

The fragments pour out below on their way to the grinding mills.

In the first mill, a hundred hinged hammers pound and crush the rock to particles the size of sand.

Next, the materials go to the tube mill—a cylinder as big as a locomotive boiler, half filled with steel balls. As it revolves, it lifts the charge of steel and rock and tumbles it down again and again. An hour of this yields a powder finer than flour.

All this is only part of the grinding required. The powder is burned to glass-hard clinker—and then the grinding process starts all over again.

A jaw crusher cracks the clinker; balls hammer it to the fineness of sand.

And again, for an hour, the mass tumbles about in another tube mill, grinding and rubbing together clinker, steel balls and gypsum. Then you have cement.

To meet standard specifications, 78 per cent of the finished cement must pass through a sieve having forty thousand holes per square inch, which is finer than the finest silk.

To obtain a ton of finished cement, a cement plant grinds to this fineness two tons of raw materials, including coal, and a ton of glass-hard clinker—three tons altogether to make one ton of portland cement.

Crushing, grinding and pulverizing are among the more than eighty operations in cement making.

PORTLAND CEMENT ASSOCIATION

A National Organization to Improve and Extend the Uses of Concrete

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OUCH! BACKACHE! RUB LUMBAGO OR STIFFNESS AWAY

St. Jacob's Oil stops any pain, so when your back is sore and lame, or lumbago, sciatica, or rheumatism has you stiffened up, don't suffer! Get a small trial bottle of old, honest St. Jacob's Oil at any drug store, pour a little in your hand, and rub it right on your aching back; and by the time you count fifty the soreness and lameness is gone. Don't stay crippled! This soothing, penetrating oil needs to be used only once. It takes the pain right out and ends the misery. It is magical, yet absolutely harmless, and doesn't burn the skin. Nothing else stops lumbago, sciatica, backache or rheumatism so promptly. It never disappoints.—Adv.

Auction Sale

SATURDAY, 1 P. M.

A Big Lot of Goods for Saturday Selling

1 overstuffed davenport, 3 rockers, 1 library table, 5 room sized rugs, 1 book case, 3 stand tables, 4 pictures, 1 Morris chair, 3 extension tables, 2 sets diners, 1 organ, 1 buffet, sewing table, 3 heaters, 3 Congoleum rugs, 2 ranges, 2 magazine racks, 2 kitchen cabinets, 3 kitchen tables, several remnants linoleum, 5 iron beds, 5 sanitary springs, 2 coil springs, 4 mattresses, 2 dressers, 3 commodes, 2 cots, 3 bedroom rugs, wash bowls and pitchers, 2 clocks, dishes, utensils, tools, musical instruments, 1 settee, baby carriage and thousands of articles too numerous to mention.

AUCTIONEER'S NOTE—Lodging house proprietors, hotel keepers, logging camps, and new comers, will find these sales an economical way to purchase furniture. Don't miss one. New furniture as well as used.

STIFF'S AUCTION HOUSE

Court and Liberty

F. N. WOODRY

Auctioneer