

High vs. Low Grade Fertilizers

By PROF. A. J. PATTER, Experiment Station Chemist, East Lansing, Mich.

A fertilizer may be defined as any material which when added to the soil, will furnish some form of plant food (nitrogen, phosphoric acid, or potash) to the growing plant, or will increase the supply of these in the soil.

A high grade fertilizer is one which contains the plant food in a fairly concentrated and readily available form. Nitrate of soda, bone meal, muriate and sulfate of potash, may be mentioned as examples of high grade fertilizing materials.

Low grade fertilizer is one which contains the plant food in small amounts or in slowly or difficultly available forms. As examples, the following may be mentioned: Garbage, tankage, ground leather, dried peat, untreated phosphate, rock, etc.

When these materials are sold separately it is not a difficult matter to determine what they are nor how much and how available is the plant food they are used to furnish and sold under distinctive names.

Exhaustive experiments have been made as to availability of the plant food in practically all of the fertilizing materials found on the market to-day, and such information will be gladly furnished by the state experiment station, East Lansing, Mich.

When these materials are mixed together to form the mixed fertilizer of commerce it becomes a much more difficult matter to determine as to the availability of the plant food for most of them completely lose their identity. In such cases it is impossible for the ordinary person to tell by the eye what materials were used in compounding the fertilizer.

In respect to the phosphoric acid and potash, however, we are able to give, for almost invariably the phosphoric acid is obtained from acidulated rock phosphate or bone meal, and in either case it is readily available. Practically all of the potash used in commercial fertilizers is in the form of muriate of potash, which is readily available in water there need be no fear of obtaining unavailable potash.

The materials furnishing nitrogen, on the other hand, are many and varied, and they differ greatly in nitrogen availability. There have been several methods proposed for determining the availability of the nitrogen in such organic materials, but none of them have been generally accepted, so that we are still somewhat at the mercy of the manufacturer in regard to the quality of the nitrogenous materials used in the commercial fertilizers.

There is one rule, however, that may serve to guide us in the purchase of fertilizers. Purchase only those commercial fertilizers which contain per cent. or more of total plant food.

YOURS

Yours for uniformity.
Yours for greatest leavening power.
Yours for never failing results.
Yours for purity.
Yours for economy.
Yours for every thing that goes to make up a strictly high grade, even, dependable baking powder.

That is Calumet. Try it once and note the improvement in your baking. See how much more economical over the high priced brands, how much better than the cheap and big name kinds. Calumet is highest in quality—moderate in cost.

Received Highest Award—World's Pure Food Exposition.

HARD LUCK.

PEST COMMON ON LOWLANDS

Beggar-ticks An Especial Nuisance in Pastures Lying Along Ditches or Bordering Swamps.

By R. J. BALDWIN, Michigan Agricultural Experiment Station

This weed is familiar to everybody by one or more of its numerous names, such as beggar-tick, devil's pitchfork or beggar-tick. While it does not infest cultivated fields except on low wet lands, this weed is an especial nuisance in pastures lying along ditches and swamps. The beggar-tick muck lands it produces a rank, dense growth often so high as to hide animals. Its spreading stems, which are

Practical Suggestion.

A new association proposes to have all American railroads lined with flowers and hedges, but what our railroad rights of way really need is to be lined with beggar-ticks. Beggar-tick is good wood for a pauper when trains collide?—Detroit Free Press.

WORKS WITHOUT FAITH

Faith Came After the Works Had Laid the Foundation.

A Bay State belle talks thus about coffee:

"While a coffee drinker I was a sufferer from indigestion and intensely painful nervous headaches, but after I had used Postum I am now perfectly well."

"I realized the danger I was in and tried faithfully to get relief from medicine, till, at last, after having employed all kinds of drugs, the doctor acknowledged that he did not believe it was in his power to cure me. Then I bought Postum, and I am now perfectly well."

"I was in this condition a friend induced me to try coffee and try Postum, and I did so without the least hope that it would do me any good. I did not like it at first, but when it was properly made I found it was a most delicious and refreshing beverage. I especially fond of it served at dinner, ice-cold, with cream."

"In a month's time I began to improve, and in a few weeks my indigestion ceased to trouble me, and my headache stopped entirely. I am so perfectly well now that I do not look like the same person and I have gained in flesh that I am 15 pounds heavier than ever before."

"This is what Postum has done for me. I will use it and shall always do so." Name given by Postum Co., Bat Creek, Mich.

"There's a reason," and it is explained in the little book, "The Road to Wellville," in plain English."

Send your name to Postum Co., Bat Creek, Mich.

Seeds of Beggar-Ticks.

soft and succulent when young, ripen into stiff, strong bristles bearing the seeds. These seeds are held out rigidly to be run into by animals and carried away in their droppings. The seeds lodge in the wool and deprecate its value, stick in the coats of sheep and cling to clothing, thus becoming widely distributed.

The plant cannot without cultivation where the land is drained, but suppression in swamps and river bottom lands is more difficult. Early in the season it is best to cut it off at the root and burn it. It is best to cut it off at the root and burn it.

Regularity With the Feders.

Clock-like regularity in the feedings and watering of cattle on full feed is of the utmost importance. If possible the same man, even, should always do the feeding, and it is important that this be the most intelligent and trustworthy man on the farm.

It is scarcely possible for a man to get the best results from cattle unless he has no founders and "throwouts" unless he takes a personal interest in the work at hand.

Excellent Mexican Shrimps.

The shrimps from the coast of the Gulf of Mexico are of good size, generally fully three inches in length.

They are much larger than those caught on the British coast and the north Atlantic coast.

They are in fine condition the year round and may be caught in the lagoons any season of the year, with a net or by hand.

They are at least not more than a day or so during any time of the year.

W. L. DOUGLAS' TRUST PLAN

Manufacturer Thinks Government Should Change Its License System.

Large business organizations have come to believe that we can go back to old conditions. We must meet world competition. Large concerns can produce goods at lower cost than small ones. Germany favors large corporations. The method of the present national administration is to dissolve the great organizations and make them smaller, which is a backward step. There should be no limit to a corporation doing a large and legitimate business, such as would be possible under the licensing plan which I favor, writes W. L. Douglas, former governor of Massachusetts, in the Boston Herald.

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In place of the Sherman law it is my opinion there should be a department at Washington to grant licenses to all manufacturers and corporations in this country who do an interstate commerce business.

The law should be made so clear, plain and definite that it could not be misunderstood. It should require all capital to be paid in full. Semi-yearly statements should be given to the public and certified by a public accountant. There should be a board of examiners in each state to look after these reports, just as county national banks are watched by the national government. They should have the right to enter the offices and examine the records of all the directors of these companies.

CONFESSION BY THE MCNAMARA BROTHERS COMES AS A STUNNING BLOW.

GOLDEN RULE APPLIED BRINGS FORTH CONFESSION.

James, the Youngest Brother, Will Get a Life Sentence—John 14 Years—Further Confessions Expected.

The most sensational criminal trial ever started in America since the trials of the Molly Maguires or the Chicago Haymarket bombthrowers, opened at a dramatic end in Los Angeles, Cal., when James H. McNamara pleaded guilty to dynamiting on October 1, 1919, the Los Angeles Times building, in which terrible explosion 21 persons lost their lives in flames and injury, and his brother, John J. McNamara, pleaded guilty to dynamiting the Llewellyn Iron Works building in Los Angeles, which caused a fire that caused a few deaths.

The accused men had entered pleas of not guilty. They had repeatedly refused to all the world that they were innocent victims of a plot against Los Angeles men and the late William John Burns and his agents. Union labor leaders all over the United States had rallied to their defense and raised a huge defense fund—\$100,000 or more—and some of the ablest lawyers in the west had been charged of their defense. Socialists in Los Angeles had made their cause their own, and a degree that election of a Socialist mayor in the municipal election of December 2 had come to be known by the candidate being Job Hartman, one of the lawyers for the defense.

So, when the brothers changed their pleas voluntarily, though on advice of Clarence S. Barrow and Joseph Scott, two of the ablest of the lawyers, the astonishment was not confined to Los Angeles or the Pacific slope, but ran with electric flash to the four corners of the nation.

Starting as was the sudden confession of guilt on the part of the McNamara brothers, more amazing to the people of Los Angeles was the information that the brothers had brought about the surrender in a novel way.

That the application of the golden rule and the principle of conciliation founded on religious convictions started the ball rolling toward the admission of guilt by the McNamara brothers, the theory, supported and confirmed by more than a dozen business men who participated in the movement which stands out foremost as the reason for the abrupt conclusion of the trial which was begun nearly two months ago.

LOOKING AFTER THE DETAILS.

Blings—Wings would not propose to hit a unit and get out in a boat. Dings—Why?

Blings—He stutterers and didn't want her to have a chance to get away.

USED HYPODERMICS.

Only Relief from Terrible Suffering. Thomas E. Veat, 1555 So. 12th St., Terre Haute, Ind., says: "I had no control over the urine and the pain when voiding was so great, that I often screamed. I grew worse and lay in bed for weeks, the only relief from the pain was hypodermics. I was treated by three physicians without help. I was told to get an operation was necessary. I thereupon had an operation performed and passed a gravel stone as large as a pea. The next day I passed two more and from then on improved rapidly until cured."

"When Your Back Is Lame, Remember Name—DOAN'S," 50c, all stores. Foster-Milburn Co., Buffalo, N. Y.

Many Things Not Explained.

But, despite this, a chain of unexplained incidents, including the assassination. These include the arrest of Earl H. Franklin, a defense detective, for the charge of bribing a prosecutor, the silence maintained by the prosecution as to the origin of the \$100,000 fund, the mysterious appearance at the district attorney's office of Lawrence Sullivan, a detective, and the subsequent perturbation of the prosecution when it was discovered that Sullivan's visit had become known to outsiders.

Another blow to the defense was the knowledge that the state police had a dispatch in McManis's room, which faithfully recorded every word spoken at the conference between McManis and Sullivan, who knew the facts about the McNamara brothers.

Clarence S. Barrow, chief counsel for the men, had become convinced that nothing could save the men and had accepted of the state's promise of mercy.

There is still another feature of the case which presents an interesting aspect. M. A. Schmidt and David Kaplan, indicted with the McNamara brothers, were held in jail in spite of a world-wide hunt which has been going on for a year.

It is the fact that the man confessed to having actually blown up the Llewellyn Iron works in December, 1919, and the man who shot John J. McNamara, will be brought to trial, but it is expected the state will recommend light sentences because he turned state's evidence.

The United States government and California authorities are cooperating to uncover one of the most gripping conspiracies ever conceived in the history of this country.

This was the declaration of Assistant District Attorney W. Joseph Ford, second in command to District Attorney John B. Fredricks, and the man who was arrested in Indianapolis for alleged illegal extradition of John J. McNamara.

The December term of circuit court in Pittsburg will try the case, docketed. There are 50 divorce cases. Dr. Howard Osgood of Rochester, N. Y., who was a member of the American Legion, will be the champion of the Old Testament, is dead, aged 81.

The Indian agency at Black River Falls, Wis., is abolished by orders received from Washington. The reason given is that the Winnebago tribe has practically died out, and that an agency is no longer necessary. Only 60 survivors of the branch of once powerful tribe occupying the neighborhood. The survivors are transferred to the Tomah agency, where it is estimated the number of Winnebago still remain.

The bursting of a car wheel, which caused the death of a man, was the result of the setting of the air brake, brought the eastbound Twentieth Century Limited to a standstill at Still River, Brockton, on the Lake Shore, nine miles west of Dunkirk, N. Y.

Three hundred and fifty Scandinavians of the northwest left Minneapolis, Minn., on a special train for New York, where they will embark for their homes in the old country to spend Christmas. Many of the party are from Alaska, and are carrying displaying gold nuggets at the office where they purchased their tickets.

Treatment for Insects in STORED GRAINS and SEEDS

By R. H. PETTIT, Entomologist of Michigan Experiment Station

The treatment for dried grains containing insects is comparatively easy, providing the grain is in tight bins or barrels, capable of being tightly and quickly closed. Old carpets, blankets, etc., which are infested with insects, can be treated in the same way. Measure the inside of the bin, count in the air space above the grain, and place one old pan or plates on top of the grain. Then for every cubic foot of space in the bin put in a dram of liquid kerosene bisulphide in the pans and quickly close the bin. Thus a pound of the liquid will suffice for about one hundred bushels of grain. This treatment is far more effective during warm weather than in cold. During severe cold weather the insects are dormant and resist the action of the fumes quite successfully.

If the seed or grain is more than two or three feet deep in the bin, the liquid should be poured into it at some depth in order to insure its spreading evenly and filling all the space treated. This is easily done with a piece of gas-pipe fitted with a wooden stick for a handle. Insert the pipe with the stick in place to reach down half way to the bottom of the bin, the stick withdrawn and the liquid poured down through the pipe. The stick merely prevents the pipe from becoming filled when thrust into place. The bin should remain tightly closed for twenty-four to forty-eight hours, a longer exposure is likely to injure the germinative power in some seeds.

The liquid kerosene bisulphide, on being liberated, will be quickly transformed into a gas, which being heavier than air, settles to the bottom and fills all the spaces between the seeds or kernels. The liquid costs about thirty cents for a single pound, or five pounds for a dollar. The work can be done in the daytime, and for large pounds, stores or bins of any sort. No fire must be allowed to come near the grain, and the bin should be thoroughly aired for the gas or fumes are very explosive when mixed with air. Grain should be shoveled over several times. When the bin is opened, the grain should breathe as little as possible of the fumes as they are very poisonous and will as a consequence prove death among all insect pests.

No Paying Name.

Anxious Wife—William is always so nervous and flurried when he gets up to bed.

Faustian Friend—That's strange. Being a bill, he ought to be able to collect himself.

The Home Hair Razor.

"I suppose the hairs on a man's face are numbered?"

"Yes, they are. I have counted them."

"I've got a razor that has pulled every single one of 'em."

44 Bu. to the Acre

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DEFIANCE STARCH

100% PURE POTATO STARCH. REFUSES TO BE DYEED OR STAINED. ONLY IN GENUINE BARS. SUPERIOR QUALITY.

W. N. U. DETROIT, NO. 48-1911.

CASTORIA

For Infants and Children.

The Kind You Have Always Bought Bears the Signature of Dr. J. C. Watson.

In Use For Over Thirty Years

ALCOHOL-3 PER CENT. Alveolate Preparation for Assimilating the Food and Regulating the Stomach and Bowels of INFANTS AND CHILDREN. Promotes Digestion, Cheerfulness and Rest. Contains neither Opium, Morphine nor Mineral. NOT A RAC OR CURE.

A Perfect Remedy for Constipation, Sour Stomach, Diarrhoea, Worms, Convulsions, Feverishness and LOSS OF SLEEP.

Fac Simile Signature of Dr. J. C. Watson.

THE CENTAUR COMPANY, NEW YORK.

At 6 months old 35 Doses 15 CENTS. Guaranteed under the Food and Drug Act.

Exact Copy of Wrapper.

PERFECTION SMOKELESS OIL HEATER

In every cold weather emergency you need a Perfection Smokeless Oil Heater. In your bedroom cold when you doze or snore? Do you wear pipes frozen in the collar? Is it chilly when the wind whistles around the exposed corners of your house?

Perfection Smokeless Oil Heater brings complete comfort. Can be carried anywhere. Always ready for use—toughening from the minute it is lighted.

Ask your dealer to show you a Perfection Smokeless Oil Heater or write for descriptive circular at its agency.

Standard Oil Company (Incorporated)

YOU DON'T COOK WITH THE NAME

We like the cook's test best, but the guarantee of reliability, flavor and purity that goes with the name HENKEL'S FLOUR means a lot to any housewife.

NOTE: HENKEL'S BREAD FLOUR, HENKEL'S COMMERCIAL and HENKEL'S VELVET FLOUR have years of good reputation back of them.

Rayo Lamps and Lanterns

The strong, steady light.

Rayo lamps and lanterns give most light for the oil they burn. Do not flicker. Will not blow or jar out. Simple, reliable and durable—sold at a price that will surprise you.

Ask your dealer to show you his line of Rayo lamps and lanterns, or write to any agency.

Standard Oil Company (Incorporated)

W. L. DOUGLAS

\$2.50, \$3.00, \$3.50 and \$4.00 SHOES

All Styles, All Leathers, All Widths, for Men and Women

THE STANDARD OF QUALITY FOR OVER 30 YEARS

The workmanship which has made W. L. Douglas shoes famous the world over is maintained in every pair.

If I could take you into my large factories at Brockton, Mass., and show you how carefully W. L. Douglas shoes are made, you would then realize why I warrant them to hold their shape, fit and look better and wear longer than other makes for the price.

CAUTION: Beware of cheap imitations. Buy only shoes with the W. L. Douglas name and price stamped on bottom.

How to Order by Mail.—If W. L. Douglas shoes are not sold in your city, write to me for a list of dealers. I will send you a list of dealers. I will send you a list of dealers.

W. L. Douglas, 285 State Street, Brockton, Mass.

PUTNAM FADELESS DYES

Color more brilliant and faster colors than any other dye. One to color coats, linens and all colors. Guaranteed to stay any amount without retinting. Write for color book. How to dye. Black and Blue Colors. MONSIEUR PUTNAM COMPANY, Quincy, Ill.