A SHORT COURSE PRIZE PAPER.

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[Following is a copy of the paper which took the prize offered by the Wisconsin Agriculturist in an examination of Short Course students at the College of Agriculture, University of Wisconsin. It shows the character of the work done during the first year of the Short Course.]

1. Why do not seeds germinate as well in puddled soil as in soil in good condition?

Seeds do not germinate as well in puddled soil as in soil in good condition because of lack of oxygen which is shut out by the puddling. Puddled soil while wet is not as warm as not puddled soil. It does not warm up as fast, and when warm and dry it bakes, thus making it difficult for the plumule to come to the surface and for the hypocotyl to grow down and send out roots.

2. Why may we plant the pea deeper than the bean?

We may plant the pea deeper than the bean because the hypocotyl of the pea does not push the cotyledons to the surface as does that of the bean. The cotyledons of the bean in coming through the soil must displace more soil than the plumule alone would, thus making it much more difficult to get to the surface.

3. Why does the clover crop enrich the land?

The clover crop enriches the land because it has on its roots a species of bacteria which are capable of fixing the free nitrogen of the air; that is, they take the nitrogen from the air and put it in such form as the plants may use. They not only furnish enough for the needs of the clover plant on which they live, but also leave a surplus in the soil which may be used by another crop.

4. What 3 elements of soil fertility are likely to be lacking?

The three elements of the soil most likely to be lacking are nitrogen, potash and phosphoric acid.
5. Can we keep our land rich by growing clover alone, or is it necessary to apply some other material?

Land cannot be kept rich by growing clover alone. Clover will furnish nitrogen but it is at the same time taking other constituents from the soil which it does not furnish, and would therefore cause a scarcity of these elements if they were not applied in some form.

6. Does cultivation of the surface soil tend to waste, or to save soil moisture? Why?

Cultivation of the surface soil tends to save soil moisture by forming a mulch of fine earth through which the moisture from below does not readily pass because of the lack of capillary action. This dry mulch is loose and the spaces between the soil grains are filled with air which tends to prevent water from coming through, as a dry cloth does not readily take water because of the air in it.

7. For what class of insects would you use the kerosene emulsion, those that eat the leaves, or those that suck the juices?

I would use the kerosene emulsion on that class of insects which suck the juices from plants.

8. What is the difference between a cross and a hybrid?

A cross is the result of one variety being fecundated by a different variety of the same species. A hybrid is the result of one species being fecundated by a different species of the same variety.

9. How can you tell if a variety of strawberry can bear fruit well alone?

If each flower has both the stamens and pistil or pistils it will be self-fertilizing and will bear fruit well alone. If one flower of the same plant has pistils and another stamens one will fertilize the other and it will also bear fruit well alone.

10. Which of these four parts of the flower are essential to seed formation? (Calyx, Corolla, Stamens, Pistils.)
The stamens and pistil or pistils are necessary to seed formation.

11. Is the Bordeaux used to destroy insects, or fungous parasites?

It is used for fungous diseases when used alone, but is often used for both by putting Paris green or other insecticides with it.

12. Is it best to plant pumpkin seeds flatwise, endwise or edgewise?

It is best to plant pumpkin seeds flatwise because it gives the hook like growth with which nature endowed them a better chance to do its work. This hook is for the purpose of removing the seed case. If the seed be planted edgewise or endwise the hook will often slip between the halves of the seed case and thus fail to do the work intended, and make it very difficult for the young plantlet to get to the surface of the ground.

13. What does chlorophyll do for the plant?

Chlorophyll is a green coloring matter found in the cells of plants and aids in the formation of plant food. It helps to change the materials taken in by the plants so that they may be used by the plant. It is only formed where there is sunlight.

14. Can fertilizing materials do the plant any good until they are dissolved in the soil water?

Fertilizing materials can do the plant no good until dissolved in the soil water because plants only take in substances in solution.

15. What do you mean by the "dew point"?

The dew point is that stage of the atmosphere when it commences to precipitate some of its moisture. Warm air will hold more moisture than cold air. When warm air is cooled it precipitates some of its moisture in the form of dew, rain, snow and hail, etc.

16. What is the best method for keeping the striped beetle from destroying cucumber vines?
The best method to keep the striped beetle from the cucumber vines is to cover the hills with a box covered on the top with fine wire netting. They should be covered as soon as they show through the ground and before the beetles have gotten on them. They should be left covered until the vines crowd the netting on the box.

17. What fertilizing materials do wood ashes contain?
Wood ashes contain principally potash and phosphoric acid.

18. Mention as many as you can of the crops that act like clover in enriching the land with nitrogen.
The following crops enrich the soil the same as clover: beans, peas, alfalfa.

19. Why does rotation of crops tend to keep up soil fertility?
Rotation of crops keeps up the soil fertility for this reason: All crops do not take out of the soil the same fertilizing constituents nor the same amount. By rotation we allow accumulation of those constituents which have been heavily drawn upon by one crop while another crop is growing which does not require so much of this element. Also by having clover or other legumes included in the rotation we enrich the soil with nitrogen.

20. What is the effect of too much nitrogen on plants?
Too much nitrogen causes a very rank growth of stalk and hinders seed or fruit formation.

The Atchison Globe says that one observing farmer accounts for the high price of eggs on the ground that more people are raising fancy poultry. He says that the new kinds of poultry are so highbred and lazy that they have to be lifted to their roosts at night, and they are too lazy to lay eggs. The old common kind, without feathered pants or pedigree, laid eggs early and late.