barrel of that variety; they had all been shipped away.

Cover Crops was the subject of an address by Prof. Shutt, whose address is summarized as follows,

There was perhaps no subject more prominent before fruit growers to-day than that of cover crops. The conditions were very exceptional when a profitable orchard could be kept in sod.

It was now quite generally conceded that a system of clean culture and cover crops was the best treatment that could be given the commercial orchard.

There is no cast iron rule about thissystem; the practice may be intelligently modified according to soil, climate and size of trees, etc.

What is the usual plan? The orchard is kept in clean cultivation until July, then a crop, usually one of legumes, is sowed and mowed down in the autumn, allowed to start next spring, then plowed down and clean cultivated as in the preceding year.

The Object of the Cover Crop.

1. To increase the organic matter and nitrogen in the soil.

2. By the system of clean cultivation and a dry earth mulch to conserve the moisture for the growth of the trees. The legumes alone have the power of appropriating nitrogen and storing it in the soil.

The increase of humus is also an important matter, for there is no part of the soil which has more important functions than humus. It is, first, a great absorbent of moisture. almost any crop will use up between 200 and 300 tons of water per acre. It is very important to hold this water supply there. More crops suffer from lack of water than from lack of food plant. This is especially true in both the lightest lands and heaviest clays, and in these the supply of humus is especially needed.

Humus indirectly is also a source of plant food : it is nature's store house for nitrogen. Before the plants can use this nitrogen the supply must go through the process of nitrofication, and humus holds it ready for this process.

3. Humus also contains a certain amount of phosphoric acid and potash. Decaying humus yields these substances in a partially digested form 4 to 5 times as much as the ordinary potash in the soil, by reason of its available form. The amount of potash and phosphoric acid in a soil which is assimilable in muric acid is what measures the fertility or crop-producing power of soil.

In fact it is a general rule that the fertility of the soil is largely governed by the supply of humus.

4. Humus also encourages bacterial life, the presence of which is most essential to the conversion of the plant food in the soil into a form in which the plants can absorb it. Corn crops increase the amount of humus in the soil perhaps from 8 or 10 per cent. to 15 per cent. An experiment had been tried at Ottawa this year, where the result of a corn crop had been shown.

There was a great difference in corn crops as between buckwheat and rye on one hand and clovers and legumes on the other. The former were consumers of nitrogen, and the latter absorbed it, storing it up in the roots in the ground.

The experiments show that all the way from 60 lb. to 125 lbs. of nitrogen per acre in one crop of mammoth clover can be got in the ground—as much as could be got in 10 tons of barnyard manure. Then there was the humus additional. There were also about 45 to 50 lbs. phosphoric acid and 115 lbs. potash.

The clover gets the nitrogen from the air in the soil; the better the soil has been tilled the better the clover will grow. This nitrogen absorption is due to bacteria.

The phosphoric acid and potash are of course merely worked over, and they are left in a more available form than they were previously.

The McPike Grape, which was shown at the Pan-American by The Silas Wilson Co., was originated by H. S. McPike, of Alton, 111. It is a seedling of Worden, of the same season, but larger in berry. The skin is tender and the pulp melting.