

Composition and Properties of the Hop.

The reader will have observed from remarks made in preceding papers on hop culture, that the value of the article depends very much on the kind raised...

In the subjoined table No. 1 is the analysis of four hills of hops of the Farnham Whitebine variety, grown in a calcareous soil in Surrey, rich in phosphoric acid.

Table with 4 columns: No 1 Farnham Whitebine, Kent, No 2 Yellow Grape, Bine. Rows include: Per cent of ash on dry matter, Silica, Chloride of Sodium, Chloride of Potassium, Soda, Potash, Lime, Magnesia, Sulphuric Acid, Phosphoric Acid, Phosphate of Iron, Phosphate of Alumina, Carbonic Acid, Manganese.

Professor Way gives the following results of analyses of two dried specimens of hops grown, No. 1 by Mr. Paine, of Farnham, Surrey, No. 2 by Mr. Eggar, of Bently, Hampshire; both being the Farnham Whitebine, and from a similar calcareous soil; the only difference being that No. 2 was gathered a week earlier than No. 1, and therefore not so fully ripe :-

Table with 2 columns: No. 1 Farnham, No. 2 Bently. Rows include: Per Centage of ash calculated on dry substance, Silica, Chloride of Sodium, Chloride of Potassium, Soda, Potash, Lime, Magnesia, Peroxide of Iron, Sulphuric Acid, Phosphoric Acid, Carbonic Acid.

The following table exhibits the composition of pounds, removed by an acre of hops with leaves and bine, 1,200 hills, total growth when thoroughly dried, 2,240 lbs :

Table with 3 columns: Hops, Leaves, Bine. Rows include: Silica, Chloride of Sodium, Chloride of Potassium, Soda, Potash, Lime, Magnesia, Peroxide of Iron, Sulphuric Acid, Phosphoric Acid, Carbonic Acid.

The above hops were carefully analyzed by Professor Way with a view to determine the amount of nitrogen carried off per acre by the crop, with results as follows: - In the hops, 56.44 lbs; leaves, 49 lbs; bine 23.86 lbs. Total amount of nitrogen removed being 129.3 lbs, per acre, or nearly equal to that which is supplied by 1,000 lbs. of the best Peruvian guano.

The reader, by glancing at the foregoing tables, will see that the hop is probably the most exhausting crop to the soil that can enter into any system of cultivation. It would be so as a mere rotation crop, but as producing annually on the same land, and that often for a long term of years, we can readily understand why hop grounds imperatively require so constant and liberal a dressing of manure...

Although little or nothing has been done till of late years by analytical chemistry towards determining with accuracy the constituents of hops, the properties of three active ingredients have now been pretty well made out :-

1. The volatile oil.—Dried flowers of hops will yield from seven to nine per cent. by weight of this substance, according to their quality, which we have seen is much influenced by variety, soil, climate, &c. It is thought that this oil contributes largely to the well-known narcotic property of hops, but in precisely what way has not yet been determined.

2. The aromatic resin.—When fully ripe hops are carefully dried they yield, by rubbing, a fine yellow dust, equal to a sixth or seventh part of their entire weight. To this fine powder the name of lupulin has been given, and it is known in commerce as the "condition" of the hop, and consequently is the chief element that determines its market value.

and action of which, though no doubt of great importance, have yet been but imperfectly determined.

3. The bitter principle.—In addition to the resin, lupulin contains a small amount of a volatile oil and tannin, and ten per cent. of a peculiar bitter principle, which gives flavour to beer, assists in regulating its fermentation, and forming its keeping quality. "Though," remarks Professor Johnston, "the specific action of each of the chemical principles contained in the hop flower has not been very well ascertained, the united action of all of them together is well known. The tinctures and extracts of hops which we use in medicine, and introduce into our beers, contain the all, so that all the virtues of the hop, in whichever of the ingredients they reside, are present in them, in a greater or less degree. Hence, well hopped beer is aromatic, tonic, soothing, tranquillising, and in a slight degree narcotic, sedative, and provocative of sleep. The hop also aids in clarifying malt liquors, arrests the fermentation before all the sugar is converted into alcohol, and thus enables them to be kept without turning sour."

Barley Culture.

To the Editor of THE CANADA FARMER :

SIR,—The farmers in this section, and in fact over the whole of Canada, have of late years turned their attention very much to the cultivation of barley, and that crop has been so far advantageous, as to have checked the exhausting drain upon our arable land caused by the excessive growth of wheat. Of late years there has been a great breadth of barley grown throughout the country, and it has been a better paying crop than wheat. I know of only two varieties of barley grown in this country;—the ordinary long-bodied, and the two-rowed barley. The roots of the wheat plant penetrate deeply into the soil, whereas those of the barley depend chiefly upon the soil near the surface for their sustenance.

Thus we see that barley requires a shallow, rich and mellow seed-bed. The best and most common position in our rotation for barley is after roots. The surface of root-ground is rich and mellow, and if the roots have in the preceding year been properly attended to, is clean for the deposit of clover seeds. I believe that in most seasons, with a moderate supply of rain, seeding down with barley will give a stronger and more healthy plant of clover than if it be sowed on fall wheat.

In strong lands, barley often yields well on a wheat stubble, which should be ploughed narrow and deep in the fall, and more lightly if left till spring, and should always be pressed firm.

And here let me point out the great mistake of broad ploughing, thus turning our furrow slice completely on its face. It seems to be the object of many farmers to rush through as much ploughing as possible in a given time. Now, if they gain time in the actual amount of ploughing got over, it is to the detriment of their land and crops. Let them remember, that one acre well ploughed is far better than two which have been stirred over. Examine closely a field in which each furrow slice has been turned flat upon its face; let it be exposed alternately to the action of the sun and rain, and see (especially if it be a clay) how baked and hard it will have become. That ploughing is lost, and there is a worse seed-bed than if the stubble had been simply cultivated.

When a furrow slice is set up and pressed firm as it should be, not only in sod but in stubbles, the angles on each side of the apex should be equal, and every ridge should be of an exact height. Out of every 100 acres ploughed in this country, eighty of them are ploughed too flat.

If the land be set up thus, not only is there a natural drain under and between each slice, but when the harrows pass across them they cover the seed thoroughly, and of a uniform depth.

Seeds, especially peas, when sown broadcast cannot be covered so thoroughly, on a flat ploughing, as where there is a series of regular and high ridges from which to draw the soil with the harrows. Although root land is generally the most suitable for a barley crop, yet if it be too rich, I should prefer to sow spring wheat, which, throwing down a deeper root, is able better to stand the extra coarseness of straw, the usual tendency of all plants in a rich soil.

Barley, to thrive, must receive no checks; it is a weak plant, and if it be once checked, especially by dry frosts, will never recover itself thoroughly. This