

few years has ranged from \$3.00 to \$4.00 a pound for first class wild root.

The impression has obtained in this country that ginseng could not be cultivated. The writer has clearly demonstrated that it can be successfully cultivated, and can be made very profitable. A few figures will show what I am doing in ginseng culture, and give some idea as to its possibilities. I commenced in a small way in the autumn of 1886, the first two years did not amount to anything more than gaining a little experience. But since 1888, I have been developing the business as fast as the nature of the plant would allow. I have at this time, January 1896, in garden 67 beds stocked with roots 30 of them 3 x 16 feet each and 37, 3½ x 16 feet each and about 15,000 trailing roots in forest nursery with about 10,000 seeds sown in forest nursery from which plants are expected next spring. Also last season crops of about 200,000 on hand ready to be sown next fall, to produce plants in the spring of 1897. I have also furnished the public during the past five years with about 80,000 seeds and about 4,300 roots for cultivation.

My grounds have produced 84½ pounds of dry marketable root which sold for \$104.88. From 7½ beds, 3 x 16 feet each, have been taken the past season 2,545 roots weight 148 ½ pounds, from these were taken out for replanting 2,312 roots weight 59 ½ pounds leaving 88 ¾ pounds to be dried for market making 30½ pounds dry which sold for \$161.00. It will be observed that the stock was decreased by only 233 roots. 2,408 seedling roots of one to four years growth, weight 19 lbs. were also taken from 6 of the beds and not included in the above figures.

Four of the beds had been in cultivation five years, the others four years, the plants had produced during the time at least 40,000 seeds value \$30.00. The total value of roots and seeds from the 7½ beds was more than \$300.00 from less than two square rods of ground, in less than five years. The first cost of stocking the beds with small wild roots was less than \$25.00.

No one need think he can rush into ginseng culture by the acres and reap a fortune from it in a few years. It must be worked up from small beginnings and it will take time to place it on a paying basis. But I can see no reason why others may not do as well as I have done. Ginseng can be cultivated in garden, orchard or forest, any light rich soil such as will produce good garden vegetables will grow ginseng; a sandy loam or rich alluvial soil will give good results. It must have shade, either natural or artificial, and should be protected to some extent from hot dry winds, mulching and moisture are essential condition, but the plant will stand drought as well as ordinary crops. The best way to develop this industry is to transplant the wild roots, in this way one soon gets to producing seed in quantity. The seed is the main dependence in ginseng culture, as it does not spread from the root. A few thousand roots put in each year for a few years would place the business on a paying basis. There is no danger of over production of first class root. Ginseng has been cultivated in Korea for hundred of years, and the market has not been over stocked.

Summit Station.

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## HOPS.

The Hop, *Humulus Lupulus*, is in the class and order *Diacia Pentandria* of Linnæus, some plants having male and some female flowers. The year of its introduction into England is doubtful; an old lease in Kent, date, 1463, has the following covenant: "Every year during the term, an acre of wode competent and of the best fowell, exceptes Hope tymbere;" so we may suppose hops to have been well known about the beginning of the 15th century.

It is curious to see how the idea of being involved in certain names of plants, and even of living creatures—*lupus* a wolf, hence the pike was called the *water wolf*; and the hop-plant, a little wolf, *lupulus*, bitter i. e., *biter*; confer morsel from *mordeo* to bite, through the French *marceau*; the bit of the bridle, &c., &c.

"Hops," says an old writer, "are hot, and in the third degree inciting aperitive, abstersive, subastrigent, digestive, discutive, diuretic, stomachic, and sudorific: indeed, the spirit of the hop is truly cordial." Very good, we hope its qualities are sufficiently numerous to please all parties.

Hops may be grown to perfection on various soils, but deep, rich, dry soils with porous subsoils are the best for this as for all crops. All heavy lands should be drained 4 feet deep, and at distances from 28 to 40 feet apart, according to the porosity of the subsoil. The roots run down, sometimes, 15 feet into the ground, and no amount of open furrow surface work will save them from rotting in a wet season. For *draining*, v. *Journal of Ag*, p. 99, vol. 2.

It is worth while taking pains about this crop. We know of land that has stood in plant for more than 120 years—it belonged to Mr. Ellis, of Barming, near Maidstone, Kent, Eng., and is, even now, noted for growing large crops of the best quality. The subsoil of this old plantation is the shattery *Kentish Rag*, geologically, the *Green sand*. Poor Mr. Ellis, after hop-growing for forty years, died insolvent about fifty years ago. He was the original of the husband of *David Copperfield's* first love, the "Eidest Miss Larkins." The really superior qualities of hop-soils, like the above named, grow a great weight of the finest sorts, *Goldings* and the *Canterbury*. We do not know of any land in this province fit for their cultivation, unless it be half-way down the slope of the hills near Compton, and other equally favoured districts in the Eastern Townships. The heavy soils of the "French Country" must be satisfied with the coarser varieties: *Jones*, *Grapo*, and *Colegate*; and even these will not last long in plant where the drainage is neglected, as it almost invariably is. Large crops may, undoubtedly, be grown on these heavy alluvial soils: We have known as much as 1480 pounds to the acre on some of the Wealden clays in the border between Kent and Sussex. Blight, however, on these low grounds is very destructive. Here, a piece of old grass deeply, very deeply, ploughed would be the most desirable hop-yard, as the buried turf would help to feed the plant for some time; but we are anticipating.

*Situation of Hop-yard*.—The site is a very important matter, as shelter from the prevailing winds of the district is a vital point. In Kent, we used to prefer a field sloping to the north, and the idea was, that that aspect has more hours sunshine than a southern exposure. A halt of wood

should be left as a protection, but the yard should not be surrounded by wood on any account, as that would hinder the free circulation of air, and tend to encourage mould.

*Preparation of the land for planting*.—It is no use talking of trenching the land two feet deep, here, as we do in Kent and Surrey: we must, perforce, be satisfied with ploughing. Two ploughs, following one another in the same furrow, ought to get a depth of 14 inches in ordinary land. The second plough should be a *subsoiler*, where one is to be had. Our great Kentish "Turn-wrest" plough, with 6 horses, we have seen turn up a furrow of 14 inches in depth. It had two wheels, a gallows, and a steel pointed wooden share, and left an amazing amount of crumb (1) In our heavy soils on the chalk hills, any other plough would be broken to pieces in ten minutes work. Trenching used to cost about \$35 an acre; here, as men are not used to the job, double the money would not pay for it. If deep work is necessary in the moderate climate of England, how much more so must it be in our hot summers.

The hills should be arranged in the *Quincunx* form, as in that way there will be more paths for the horse-hoe than where the lines run up and down the field, merely. Besides, there will be more hills on an acre in the *Quincunx* system: i. e., at 6½ feet apart, the usual distance, there will be 1194 hills in the one case, and only 1031 in the other. Pins are stuck in the sites of the future plants, to guide the planters.

Young plants are produced in two ways: by cuttings from the prunings of the bines of the former year's growth, after gathering the crop; in which case, 5 should be set in each hill, in case of accidents; or by *bedded sets*, in which case, 3 are sufficient, as above planted in a nursery-ground a year before they are put out in their future home.

*The sorts of Hops generally grown*.—These are numerous enough, but five of them are sufficient for our purpose:

*Golding's*; the finest, richest, and most valuable of all, varying in quality according to the soil in which they are grown. Poles for this sort should be from 16 to 18 feet in length.

*Canterburys*, these are pretty much the same as the *Golding*, but run more to bine, and the poles may be 2 feet longer.

*Grapes*; are more suited to our climate and soil than the above. They grow in clusters, hence the name; not so given to bine, but more productive of hops than the finer kinds; take poles from 12 to 14 feet.

*Jones*; their chief virtue is that they require shorter poles than any other sorts; any broken poles, 10 or 11 feet long, will do for them, as they are inclined to extend their heads and lateral branches from pole to pole; they are less productive but of better quality than the *grape*.

*Colegate's* sprang from a wild variety found at Chevening in Kent (such a lovely spot). They are hardy but late; run much to bine, and take 18 feet poles. It is as well to have some of these, as they can be picked after the main crop is done, a useful quality where labour is scarce. They are very hard climbers, and require to be tied continually until the bine reaches the top of the pole.

*Flemish*; a large, coarse kind, only fit for bad porter. We have seen the cones nearly six inches in the greater circumference.

(1) Same plough is used in Normandy, &c. Ed.

*Seeds* will not produce hops of like character to the parent; so it is useless to attempt sowing. Be satisfied with getting good cuttings from a well managed plantation, and leave seed and bedded sets alone.

As we have seen, hops are *dioicous*, bear male and female flowers on different plants. Where no males are set out the cones are generally loose and light—the *lupuline*, or yellow resinous powder in which lies the condition as brewers call it, is present in very small quantity. One male hill should be allotted to every 144 female hills, i. e. about 8 or 10 per acre. The extra weight of the cones will pay for the trouble. The males should be planted on the windward side, to allow the farina to be distributed more equally.

Where the land is heavy, we can advise with confidence the application of lime. A great expense, no doubt, in this country, where it costs four times as much as it does at home. But, you must remember, the yard is to stand for years, and will not require a second dressing. Our (family's) Kentish tenants, at least 25 of whom were hop-growers, used to put about 200 bushels per acre on the stronger soils.

Next; the whole field should be manured, and less than one hundred single-horse cart loads per acre will not do much. Where the land is heavy, we approve of digging out a hole, a yard, or so, square, where the hill is to be and filling it with a compost of rich earth, blood, bones, and other handy materials. See that the hills are made as fine as a garden before planting.

The first year, as no crop can be expected, the middle of the alleys may be sown with turnips, mangels, or other roots; always remembering that the horse-hoe must be kept going all the summer, and the hills, &c., kept perfectly clean, and in good tilth. As the bine begins to run from each set, it should be tied up in a bunch, or to a short stake, to prevent the horse-hoe from injuring it. The implement for working in the alleys, though we call it a horse-hoe, is rather a grabber, much heavier and stronger than the usual one for potatoes, &c.

In the autumn of the first year, when the sap is down, and the young bine is brown, it should be cut down, and a little earth thrown on the crown of the hill will preserve the plant from the frost, and shed off any rain that may fall. Level this mound before spring-growth begins; pole early and work all round with a digging fork at once; the poles need not exceed 7 or 8 feet in length. We say, pole early and then dig, for digging before poling very often, in the hands of careless people, destroys more than one hill.

In England we dig the whole of the yard every year. The men are so handy, that an acre a week is the average stint, costing from 16s to 20s an acre. The *hop-spud*, a 3 tined fork, does wonderful work in these skilful hands. The cast-steel forks, sold here as *dang-forks*, will do one-third more work than a spade, and do it 3 inches deeper, too: no stones of any size, of course. But here, we cannot dig—we must plough; the horses should be yoked a *trip*, tandem fashion, and the furrow should be, at least, 10 inches deep. The greatest care should be taken not to bruise the plants in turning at the headlands, and the hills should be well worked by manual labour. By the bye, we regret to say that too many growers in the Eastern Townships leave wide headlands unplanted. Land is plentiful, I