

When the thistles begin to appear, cultivate thoroughly with a broad-share cultivator, the points or shares over-lapping far enough to cut all plants; and harrow and pull up and expose the plants that have been cut. Repeat the cultivation throughout the fall, and plow in the usual way, or, if possible, rib up with a double mould board plow just before the frost. This systematic cultivation from fall to winter will check thistles and other weeds very much, and when followed by a good crop (mangels, corn, turnips, carrots, beans or rape), properly cultivated, will not only clean the land, but put it into good shape for a crop of grain (oats, wheat, &c.), the next spring, which crop should be seeded with red clover.

2) *In sod (meadow or pasture) for spring crop.* After one or two, but not more than two, crops of hay or pasture, plow shallow (not more than four inches) early after harvest, say the 1st to the 15th of August, and harrow at once. Let it lie a couple of weeks, and then cultivate the same way it was plowed, two or three times deep, with a spring-tooth cultivator. After a while cross-cultivate a little deeper. If possible, cultivate a third, or even a fourth time, going a little deeper each time. Then, if you can manage to do so, rib it up with a double mould board plow the last thing in the fall. This will make a good foundation for any crop the following spring—grain, roots, corn or rape—and if the portion in hoed crop is thoroughly cultivated with horse and hand hoes, very few, if any, thistles will be left. The portion intended for rape must be kept clean by surface cultivation till ready for putting in the crop, say the last half of June or the 1st of July, after which it should be treated like other hoed crops.

Some recommend a crop of fall rye on land which is intended for rape the following summer, but the rye takes so much moisture from the soil in the spring that the rape after it is apt to be a poor crop, unless in favorable seasons.

If summer-fallowing is resorted to, it will be well not to plow any more than is necessary, but to rely on surface cultivation with the broad-share cultivator and the harrow, done in such a way as to cut the plants two or three inches below the surface, without bringing up any of the numerous rootstocks which run along a little lower down. It will also be well to keep the fallow covered part of the summer by growing some kind of green crop, say a crop of buckwheat, sowed rather thick and plowed under when coming into bloom. This will help to prevent the loss of nitrates which bare land suffers from washing, and will improve the soil by increasing the supply of vegetable matter in it.

When necessary at any stage in the above method of cultivating either stubble-ground or sod, say for mangels, use a grubber or subsoil plow to stir the soil to a greater depth than is reached by the surface cultivation.

CHICORY, OR WILD SUCCORY (*Cichorium intybus*, L.).

A perennial weed introduced from Europe, with long, deep tap-root, which when dried and ground up is used in adulterating coffee and as a substitute for it. The stems are almost leafless, from 1 to 3 feet high, much branched, slightly hairy and white in color. The leaves, spread out on the ground, are long, with irregular edges. The flower heads are numerous, occurring in clusters, without flower stalks, on the naked branches. The flowers are about $1\frac{1}{2}$ inches across, bright blue in color, and are usually closed by noon. The seed is about $\frac{1}{8}$ inch long, tapering to a blunt point, the opposite end having a fringe of minute hairs around the crown. The body of the seed is corrugated. An average plant produces about 3,000 seeds.

Time of flowering, July to October.