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United States Department of Agriculture.

DIVISION OF BOTANY.

NUT GRASS.

For many years there have been frequent complaints in many parts of the Southern States about "nut grass," or "coco." This plant is not a grass, as its common name and its appearance indicate, but a sedge, and is known to botanists as *Cyperus rotundus*. It has many local names in the different regions in which it has been introduced. The species is of subtropical origin, and is said to have reached the United States first at New Orleans among garden plants brought from Cuba. It now extends from Texas to southern Illinois and, in the coast region, to Florida and New Jersey, being most abundant in sandy soils.

Nut grass (*Cyperus rotundus*).—*a*, Young shoot; *b*, entire plant in seed-bearing stage; *c*, part of spikelet enlarged; *d*, scale from spikelet; *e*, seed, enlarged, with transverse section of same.

Although nut grass is well known throughout the greater part of this area, a description may, in some cases, prevent a waste of effort on the wrong plant and especially aid in detecting it where it has been but recently introduced.

DESCRIPTION.

In spring and early summer a cluster of grass-like leaves appear, 3 to 6 inches long and one-eight to one-fourth inch wide, thicker than most grass leaves and with a rather prominent midvein. Late in the season a single leafless triangular stem is produced, attaining a height of 6 to 20 inches and bearing at its summit about 3 unequal leaf-like bracts 1 to 3 inches long, and several loosely arranged clusters of dark chestnut-colored flower spikes, in each of which several seed grains are produced. These seed grains are narrowly oblong, dull green or light brown in color, and about one-sixteenth inch long. While this growth is being produced above ground, slender rootstocks are penetrating the soil below and producing, at intervals of 2 to 6 inches or more, small potato-like tubers one-fourth to three-fourths inch in diameter. The relative production of the tubers and the seed will vary considerably in different soils. In general, but not invariably, loose sandy soils will produce more tubers and less seed, while harder soils will produce more seed and fewer tubers.

MODES OF DISTRIBUTION.

Each tuber and each seed under the proper conditions is capable of producing a new plant, so that the species is abundantly propagated in both these ways. The tubers are scattered about by the plow and cultivator, and doubtless are sometimes shipped with garden plants and nursery stock. The seed grains are widely distributed in impure clover and grass seed. They are so small as in most instances to be screened readily from larger grains such as wheat and oats. They have a hard coat and do not yield to digestion in the case of any ordinary farm animals except sheep. Manure, therefore, from cattle and horses fed on nut-grass hay is likely to reseed land abundantly with the weed.

COMPARISON WITH CHUFA.

Nut grass resembles small forms of the sedge commonly known as chufa (*Cyperus esculentus*). Since chufa is often cultivated as food for swine it is important that the distinction between the two plants should be clearly defined. The chufa is usually larger, 15 to 30 inches high, with leaves slightly rough, one-fourth to one-half inch wide and about as long as the seed-bearing stem. The rays bearing the light-brown or straw-colored spikelets are much shorter than the leaf-like bracts arising at their base, while in the nut grass the bracts about equal the rays and the spikelets are dark chestnut-colored. The most striking point of difference, however, and the most important in relation to their eradication, is in the disposition of the tubers. In the chufa they are all clustered about the base of the parent plant, and except in very loose porous soil they are usually close to the surface where hogs would quickly root them out. The tubers of the nut grass are scattered along the rootstock often several inches below the surface of the ground and sometimes two to four feet or more away from the parent plant.

REMEDIES.

No seed should be allowed to mature. The seed grains are usually many times more numerous than the tubers, and are much more liable to be widely distributed. The following extract from an article on this subject by Hon. G. D. Tillman, as it appeared in the report of the Botanist for 1889, emphasizes the importance of the seed and outlines a method of eradication.

> The plan of campaign to extirpate nut grass is simply to prevent it maturing seed above ground. Nearly everybody thinks that the nuisance reproduces itself from the nut alone, whereas it propagates a thousand times more from the seed. Hence, to effectually and quickly destroy nut grass on any land infested with it, the soil should be frequently stirred during the growing period of summer so as to stimulate each nut tuber and seed to sprout. It is a waste of effort to attack coco in winter, either by digging, or plowing, or turning hogs on it. The best time for fighting it is between midsummer and frost time. Although myriads of the sprigs will show themselves above ground in a day or two after each working of the soil, even in the spring months, yet no seed stem will shoot up till late in the season, and the secret of success, as before remarked, is merely to cut down every tall stem, while in the flowering stage at the latest, and the sooner the better. The old method for destroying coco, by cutting it off under the surface of the ground every time a sprig appears above the surface, is a useless expenditure of labor. The ground should be often stirred with the plow or hoe, from April to frost, as before mentioned, to make every nut and seed come up if possible, and as soon as possible, but there is no urgent necessity, as far as eradicating the grass is concerned, to kill its sprigs until they begin to shoot up seed stalks. For this purpose it is only requisite to plow or chop down the grass at the regular intervals of working Indian corn, collards, or any other crop. Still it is advisable to plant the land in some tall-growing crop which shall neither cover nor obscure the coco seed stems, and thus keep them from being observed and destroyed. By the above method two years are ample time in which to rid any ground of coco. In fact, one season is sufficient to eradicate it, except that a few scattering sprigs will show themselves in subsequent years, which can easily be prevented from going to seed by close attention. One cause that has enabled coco so long and so defiantly to hold its sway in the South is that we have so few crops which are hoed or plowed in the fall of the year. This, together with the popular error that coco propagates from the nut alone, explains the whole story of its universal triumph over the patience, sweat, curses, and blows of the millions who have warred on it.

In addition to the above methods of destroying nut grass by cultivation and cutting, a third method, which has received too little attention, may be profitably applied. Choke it out with a vigorous growing crop. After the summer-cultivated crop is harvested, plow and prepare the land thoroughly; then seed it heavily to some winter crop adapted to the soil. Crimson clover is the best for this purpose in most localities, and it is at the same time a very profitable crop for improving light soils and for winter grazing. Winter vetch may be used to advantage in some places; and cropping with rye or rescue grass for winter grazing, to be turned under for green fertilizer in the spring, is far preferable to leaving the land bare. The winter crop in any case should be plowed under in the spring and followed by a well-cultivated summer crop. The increased fertility of the soil resulting from this treatment will enable the farmer much more easily to kill out any remnant of nut grass or other weeds.

Extreme care should be exercised that only pure seed be sown, for by the thoughtless use of impure seed the farmer is fostering the evil which at other times he is trying by costly labor to prevent.

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Approved:
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