

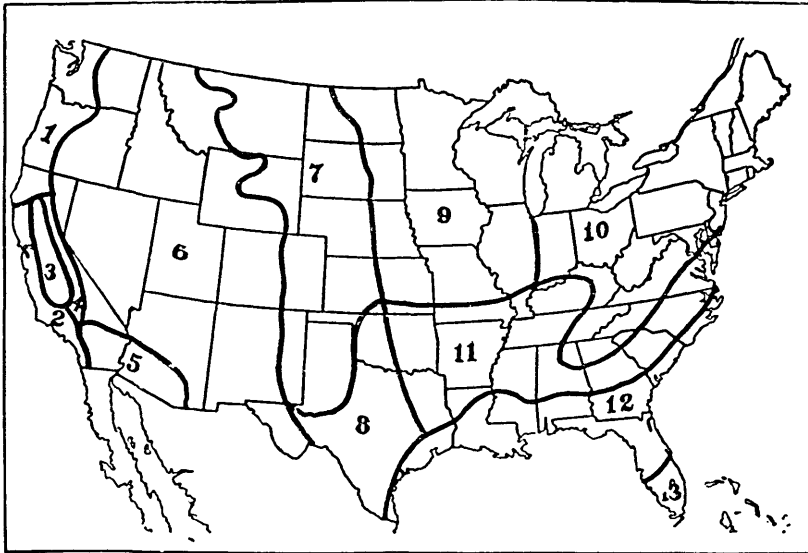
in excellent condition. The pump is very inexpensive to operate. Although the initial cost was rather high (\$450), Mr. Lorillard considers that the pump was worth its cost during this first season of its operation alone. He states that the important things to watch are keeping the strainer and suction hose from becoming clogged, and the engine from heating. When kept oiled and greased, the cylinder will remain cool after running steadily for several hours. The pump weighs under 85 pounds, and has a capacity of 20 gallons per minute.

### Desirable Trees for Golf Courses

*By F. L. MULFORD, Horticulturist, U. S. Department of Agriculture.*

On many golf courses the planting of trees is desirable for adding to the beauty of the landscape. In any particular region some trees are more desirable than others, either because they grow better or are more attractive. Some trees are undesirable on golf courses, especially near putting greens, as they make too much litter. All trees and shrubs that produce berries are useful for attracting birds, which are not only of great interest in themselves but very efficient in destroying insects.

To simplify the discussion of kinds of trees likely to prove satisfactory, we are arbitrarily dividing the United States, on the accompanying map, into 13 regions. An effort has been made to make each division cover an area having similar growing conditions throughout, so that the trees suggested for the division will be likely to thrive in all its parts.



Outline map of the United States, showing the regions within which essentially similar conditions for tree growth exist.

Region 1 comprises the mild humid portion of the northern Pacific coast east to the Cascade Mountains, including the western third of Washington and Oregon and a portion of northern California. The trees

native to western Europe are adapted to this region, as the climatic conditions are quite comparable. Most of our American trees also succeed here. Some of the desirable varieties for planting in this region are the Oregon, Norway, sycamore, and sugar maples; California walnut; tulip; European linden; basswood; sycamore; London plane; white and European ashes; English and American elms; English, red, and pin oaks; ginkgo; black locust; madrone; Pacific coast dogwood; Japanese and American redbud; golden chain or laburnum; European holly.

Region 2 is that portion of California lying between the Sacramento and San Joaquin Valleys and the Pacific Ocean. Many varieties of trees will succeed here if given water. Because of the lack of water, unless specifically irrigated the more drought-resistant species should be used. Among the deciduous trees useful for this region are the London plane; the California and common sycamore; English, Huntingdon, and American elms; Oregon, Norway, sycamore, and English maples; white, green, and European ashes; red, English, and pin oaks; European linden; basswood; California walnut; honey and black locusts; horse-chestnut; Albizzia; and the Japanese varnish tree, or Sterculia. Evergreen trees which will probably be successful in this region are the eucalyptus in variety, acacias, rubber, magnolia, California live oak, Victorian and poplar-leaved bottle trees, and in the southern portions the California pepper, silk oak, and jacaranda. Palms are much planted, but only an occasional specimen should be used in combination with other plantings.

Region 3 comprises the Sacramento and San Joaquin Valleys. The deciduous trees for this region are the California walnut; London plane; California and common sycamores; Oregon, Norway, and sycamore maples; white, European, and green ashes; red, English, valley, and pin oaks; European linden; basswood; English and Huntingdon elms; honey locust; and horse-chestnut. Chinaberries and Texas umbrellas are much planted in these valleys, also eucalypti. Except in the extreme North, acacias grow especially well in this region and add greatly to the attractiveness of plantings by the abundance of their bright yellow flowers.

Region 4 includes the country from the Sacramento and San Joaquin Valleys to the crest of the Sierra Nevada Mountains. It varies in elevation and correspondingly in temperature and the amount of available moisture. Where there is sufficient moisture, the deciduous trees recommended for region 3, except the valley oak and possibly the California sycamore, may be used. Where there is less moisture the thornless honey locust, black locust, green ash, hackberry, poplars, ash-leaved maple, and the American elm, if it can be watered the first few years, may be planted. In the warmer sections the chinaberry and Texas umbrella may be used.

Region 5 comprises the hot semiarid country of southern California and southwestern Arizona which is dependent on irrigation. The best deciduous trees for this region are those suggested for the drier portions of region 4. With ample irrigation the deciduous trees recommended for region 3 might grow. Among the evergreens, the Texas palmetto, Parkinsonia, and the Washingtonia and some other palms can be used where other trees do not succeed. The red and desert gums may be used also in the drier regions. With ample irrigation, the evergreens suggested for region 2 should succeed.

Region 6 comprises the intermountain section and extends from the crest of the Cascade and Sierra Nevada Mountains eastward to the eastern base of the Rocky Mountains. The region includes great variations in growing conditions, often in very short distances. As a whole it is

semiarid, and in most places trees can hardly be expected to thrive without more or less irrigation, although in some of the mountain valleys and on some of the mountain slopes almost ideal conditions for tree growth exist. In the drier parts of the region only those deciduous trees that are weeds under more congenial conditions can be grown. Those that can be planted with the greatest hope of success are the thornless honey locust, black locust, green ash, hackberry, and where the others do not succeed, the poplars and ash-leaved maple. If it can be watered for a few years, the American elm usually can be grown, and in the southern half of the region the Mississippi hackberry will probably succeed. Near the southern border, on lower elevations, the chinaberry and Texas umbrella can also be planted. In the locations most favored naturally or where irrigation is possible, the trees suggested for region 9 can be used. Evergreens that may be used for the drier portions of the southern part of region 6 are the Parkinsonia and the Texas palmetto. Native trees may be found that will prove of greater value for limited areas than any suggested.

Region 7 is the northern part of the Great Plains area from the foot of the Rocky Mountains at about the 5,000-foot contour line east to the 98th meridian. The rainfall gradually increases from west to east until at about the 98th meridian the conditions are more favorable for tree growth. The trees to be relied on are the thornless honey locust, common hackberry, black locust, green ash, ash-leaved maple, mossy-cup oak, the poplars, the Chinese elm, and the American elm if it can be watered the first few years after transplanting. The basswood and Norway maple would probably succeed if supplied with plenty of water.

Region 8 is the southern part of the Great Plains. In addition to the deciduous trees recommended for the northern Great Plains (region 7), the Mississippi hackberry, Texas umbrella, and chinaberry may be successfully grown. Evergreen trees that may be used in region 8 are the Texas palmetto and Parkinsonia.

Region 9 is the upper Mississippi Valley, including the area from that already considered to Lake Michigan and south to southern Kansas. It is more favorable to tree growth than regions 6 and 7. Trees which will succeed here are the American elm; red, pin, mossy-cup, and other native oaks; white ash; sycamore; basswood; Norway and sugar maples; poplars; silver maple; and for flowering trees, redbud, flowering dogwood, silver bell, and caragana or golden chain.

Region 10 includes the northeastern part of the country from eastern Illinois to the Atlantic Ocean, and extends southward through the Appalachian Mountains. It is most favorable for tree growth. The best trees for planting in this region are the red and pin oaks, London plane, sycamore, the staminate form of the ginkgo, basswood, tulip, Norway maple, red maple, white ash, thornless honey locust, American elm, and in the southern portion of the region on light land, the sweet gum. The mossy-cup, chestnut oak, and sugar maple are good, while for showy flowers there are redbud, flowering dogwood, silver bell, golden chain, pearl bush, Japanese lilac, flowering crabs, and flowering cherries. Evergreen trees are white, Scotch, and Austrian pines; white and red spruces; hemlock; balsam fir; arbor vitae; and red cedar.

Region 11 includes the lower Mississippi Valley and the country east of the southern Appalachian Mountains, extending from the light lands near the South Atlantic and Gulf coasts to the northern limits of

the distinctively southern flora. The typical trees of this region are the willow oak and water oak, the former a valuable tree, the latter good when young but comparatively short-lived and with no advantages over the willow oak. Other good trees are the red, Spanish, laurel, Darlington, and pin oaks; tulip; sweet gum; American elm; red and Norway maples; and ginkgo; with the same flowering trees as region 10, with the addition of crape myrtle, the southern mock orange or evergreen cherry, and evergreen magnolia.

Region 12 is the land near the coast from Wilmington, N. C., to the Mexican border, exclusive of the southern part of Florida. Good deciduous trees for this region are the willow, laurel, Darlington, and Spanish oaks; tulip; sweet gum; sycamore; London plane; American elm; and the staminate form of the ginkgo. The honey locust, red or scarlet maple, Norway maple, and the hackberries are not so good. The live oak is the characteristic tree of this region and is the pride of those who have it; it is an excellent evergreen tree, with large, spreading, and open top. The palmetto and palms thrive, as also the evergreen magnolia.

Region 13 consists of the southern part of Florida. The deciduous trees suitable for this section are the willow, Spanish, and southern red oaks; American elm; Mississippi hackberry; and in the southern half of the region the Poinciana. Evergreen trees are better suited to region 13 than to any other portion of the United States except possibly southern California. Among the best are the live and laurel oaks, evergreen magnolia, camphor, rubber, silk oak or grevillea, and casuarina. Eucalypti are planted to some extent in Florida, but the climate is such that only on the drier grounds of the interior are they likely to succeed, and even there they are not to be compared with other excellent species of trees that may be cultivated successfully.

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## Care of Creeping Bent Greens

By O. B. FITTS

For some reason, probably because of misinterpreted information, a great many people have the idea that the bent grasses are fool-proof: that a good turf for putting greens may be produced from them regardless of whether or not proper methods are used. This is a great mistake, and is no doubt the cause of much neglect, which invariably results in poor greens. Bent grasses, in order to make and maintain good putting green turf, generally require the same care and attention as other fine turf grasses. While the necessary treatment may vary in some of the minor details, all bent greens call for constant and thoughtful attention, especially through the playing season; and the fact that, when properly cared for, creeping bent produces a denser turf than the other turf grasses, is no reason why it should be expected to give such results without getting the same thoughtful consideration and care required by other grasses. Creeping bent will not crowd out crab grass or *Poa annua* after they are once established; but, owing to the density of the turf, the crab grass and other undesirable plants have much less chance to gain a foothold than in thinner turf. If a good turf is expected, these foreign plants should be picked out as soon as possible after they appear.