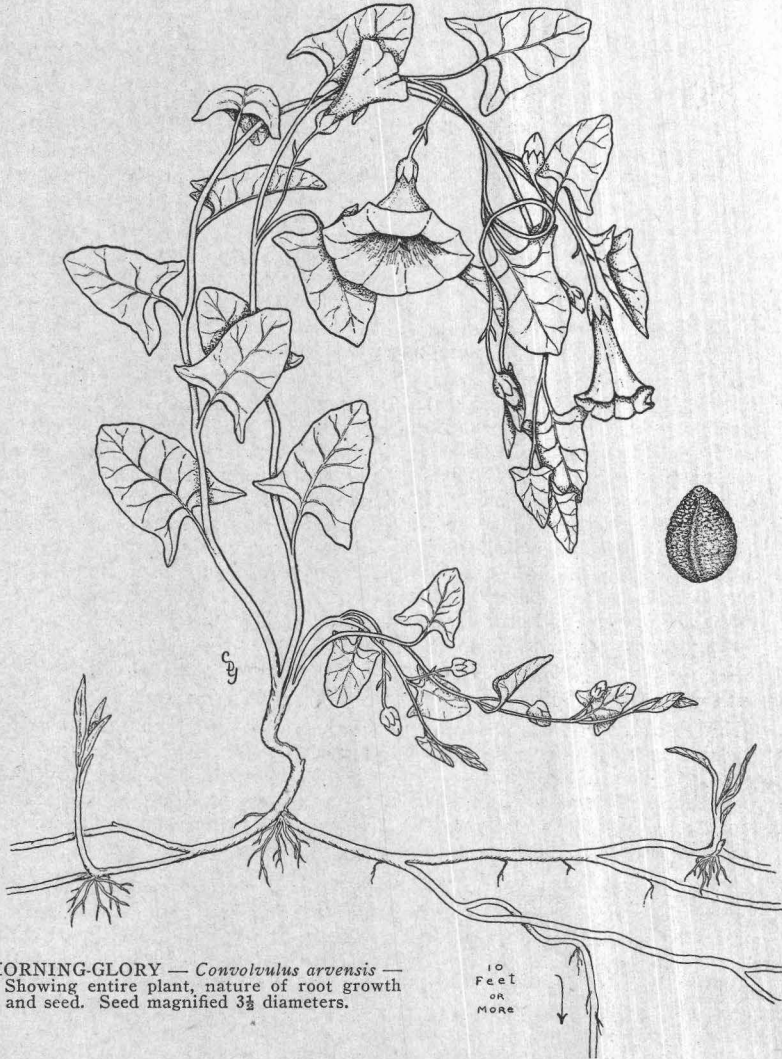


Morning-glory

LAWRENCE JENKINS

E. R. JACKMAN



MORNING-GLORY — *Convolvulus arvensis* —
Showing entire plant, nature of root growth
and seed. Seed magnified $3\frac{1}{2}$ diameters.

10
Feet
OR
MORE

Oregon State System of Higher Education
Federal Cooperative Extension Service
Oregon State College
Corvallis

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Morning-glory

(*Convolvulus arvensis*)

By LAWRENCE JENKINS and E. R. JACKMAN*

Illustrations by Cathrine Davis Young

Other names: Bindweed, Wild morning-glory, European bindweed, Creeping Jenny.

MORNING-GLORY, "the terrible weed with the beautiful name," is a perennial found in all counties of the state. It prefers rich, gravelly, or sandy loam but thrives on almost all types of soil. It grows best in the summer fallow counties of Eastern Oregon because the year of fallow is ideal for the spread of the roots into warm moist soil surrounding the patches.

The twisting stems trail along the ground or climb standing grain, posts, or other objects by twining spirally around them. The leaves vary in size and shape but are generally about an inch long and arrowhead-shaped with the tips rounded. The bell-shaped flowers are generally about 1 inch across and range in color from pure white to light pink.

Morning-glory has a very extensive root system that may penetrate the soil to a depth of 20 feet or more. From 1 to 2 feet or more deep are numerous lateral roots that send up shoots that develop into new plants. Even a small piece of root, if transplanted when dormant into damp soil, may form a new plant. The patches enlarge by the continual development of new plants around the edges. The lateral roots tend to push only into damp ground. The spread, therefore, in summer-fallow areas occurs almost entirely during the year the land is in fallow. Excavations have been made in morning-glory patches to a depth of 6 feet and in a short time a stand of weeds covered the bottom of the excavation, showing that even deep roots have enough food stored to form buds and produce plants.

Seeds of wild morning-glory are very hard. Germination is increased by burying in the ground for 10 or 15 years. The seed is very dark brown, about the size of a Club wheat kernel, and three sided or irregular in shape.

Hedge bindweed (*Convolvulus sepium*) is another species of morning-glory similar to the one described but with flowers and leaves twice as large. It is less aggressive and is easier to control. Morning-glory has many other strains varying in their aggressiveness and in their resistance to treatment. Several of these other species occur in Oregon, none serious, but all similar in appearance to the dangerous morning-glory.

Method of spread. Morning-glory finds its way onto most farms through grain or garden seed, grain screenings, or through the use of threshing machines or other farm machinery not properly cleaned after use on an infested farm. It is usually spread from place to place on the farm by scattering the seed or by plowing through the patches in the early spring while the roots are dormant. Roots transplanted at other seasons rarely survive. The moldboard plow is the chief spreader. If possible, disk-type plows should be used on infested farms.

Damage. Cultivated crops produce very little on morning-glory-infested land. Fall-planted rye is the only grain crop that competes well with it in Eastern Oregon. In Western Oregon vetch and winter barley are the

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best competitors among the grain crops. In 1937 it was estimated that morning-glory occupied about 22,000 acres of crop land in Oregon, the larger part is in the summer-fallow counties of Eastern Oregon. This land is now returning little to the owners and is yearly contaminating at least 1,000 additional acres.

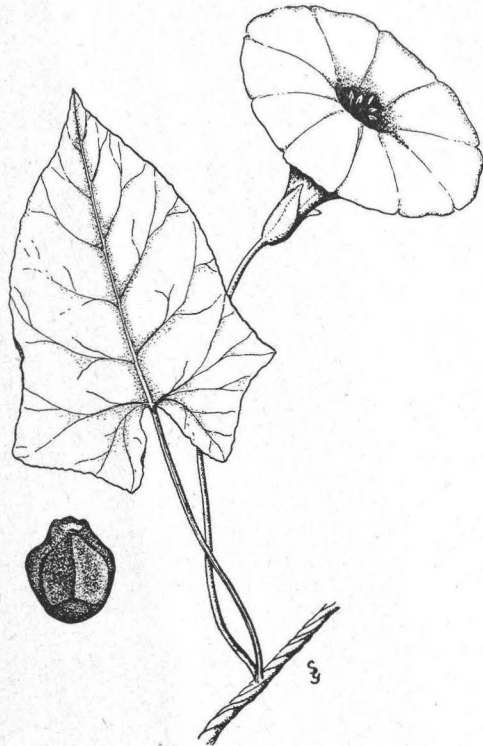
Oregon seed law. The 1937 Oregon Seed Law named morning-glory as a noxious weed. If seed is sold containing the seed of morning-glory, the number per pound must be stated on the tag. Screenings from small seeds cannot be sold legally if they contain morning-glory seeds.

Control. When morning-glory covers several acres of land, cultivation is the most practical control measure. Deep plowing of the infested area early in the season, followed by clean cultivation until all growth stops in the fall has been successful on many farms. The method must be followed for 2 years.

A few farmers are experimenting with deep tillage blades, that cut the roots a foot or more below the surface and leave the soil surface rough, thereby avoiding erosion. This probably will be effective, but of course such an implement will require a great deal of power. The rod weeder and the duck foot are the most satisfactory tools on the market for cultivating. The rod weeder may pack the soil if used repeatedly so that a midsummer plowing may be necessary.

Preliminary work at the Federal Weed Control Experiment Station at Genesee, Idaho, indicates that season-long cultivation may be more effective if the weeds are allowed to grow for ten days after emergence between cultivations, and if the first cultivation is delayed in the spring until the bud stage.

The deferred fallow method may be better adapted to parts of the Columbia Basin where wind and water erosion is serious. When this method is used in Eastern Oregon, winter rye or winter wheat is planted with at least double the normal rate of seeding. The crop is cut for hay in the early milk stage, and the land is plowed deeply at once. If green growth appears, the land is worked just as with the season-long fallow, but in that case it should be replowed before seeding. A crop of rye or wheat is seeded again heavily in the fall and the process continued for



HEDGE BINDWEED — *Convolvulus sepium* —
Showing leaf, flower and seed. Seed magnified 3 diameters.

three years. In Western Oregon vetch commonly is used for this purpose, but winter barley also is satisfactory.

Control by seeding to permanent crops. Crested wheat grass is controlling the spread of morning-glory in several places in Eastern Oregon. It is probably the most practical control method on large acreages in light rainfall districts where soil blowing is a menace. The Fairway strain is superior to the standard strain for weed control. Alfalfa is another crop that will compete with the weeds and choke them out and stop their spread on land where it is possible to grow the crop. Ladak alfalfa should be used in Eastern Oregon and Grimm alfalfa in Western Oregon. Infested land should be plowed deeply immediately before seeding.

Chemical control. Sodium chlorate applied either as a spray or a powder is the cheapest effective chemical for general use. Because of the fire hazard it creates sodium chlorate should never be used without reading and observing the precautions and directions given on pages 15 to 23 in Oregon Extension Bulletin 510.

Chlorate acts differently in different soils, so that no precise directions can be given, but in most places from 3 to 4 pounds per square rod are effective. Fall applications are the best in Eastern Oregon and spring treatments are preferred in Coast counties. In the Willamette Valley early spring is a better time for treatment if the weed is in sandy or gravelly soil, or on land where the water table may be high in the winter. In Eastern Oregon summer-fallow areas, treatment is more effective in the fall after a grain crop than it is following the year of fallow. Individual plants or strains may be more resistant to chlorate than the average. It is seldom possible to kill every plant in a patch with one treatment.

Carbon bisulphide is effective if put on as directed in Oregon Extension Bulletin 510, pages 12 to 14. It is not effective in dry earth or in gravelly soils, heavy clay, or gumbo.

Control by pasturing. Pasturing morning-glory fields with hogs or sheep is effective in preventing further spread. The weed makes few or no seeds after the first year of close pasturing and the root area is greatly reduced so that control by other means is much simpler. Morning-glory does not thrive in noncultivated lands, unless the native vegetation has been killed. It is rarely found in land that has never been plowed.

For further information on these and other control methods read Oregon Extension Bulletin 510, "Control of Perennial Weeds in Oregon."

This is one of a series of 39 bulletins discussing 58 perennial weeds in Oregon and their control. A list of bulletins in this series will be found on the last page of Extension Bulletin 510. The individual bulletins are punched so that several may be bound together if desired.

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