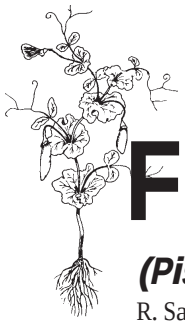

EM 8698
January 1998
50¢

FIELD PEA

(Pisum sativum L. or *Pisum sativum* L. ssp. *arvense* (L.) poir.)

R. Sattell, R. Dick, D. Hemphill, and D. McGrath

Field pea looks very similar to garden pea. It is a climbing annual legume with weak, viny, and relatively succulent stems. Vines often are 4 to 5 feet long, but when grown alone, field pea's weak stems prevent it from growing more than 1.5 to 2 feet tall.

Leaves have two leaflets and a tendril. Flowers are white, pink, or purple. Pods carry seeds that are large (4,000 seeds/lb), nearly spherical, and white, gray, green, or brown. The root system is relatively shallow and small, but well nodulated.

Growth is slow during winter but increases rapidly in warm spring weather.

Environmental preferences and limitations

Field pea requires cool, moist growing conditions and can withstand heavy frost once established. It does not grow well in hot weather and is not suitable as a summer cover crop. Germination occurs at temperatures as low as 40°F, although optimal temperatures for germination and growth are between 60 and 70 F.

Field pea grows well on a wide range of soils; however, waterlogged soils and temporary flooding are not tolerated. Field pea prefers well-limed soils with a pH near 7.0, but is reported to tolerate soil pH as low as 4.2 and as high as 8.3.

Field pea is not shade tolerant and shows little salinity tolerance.

Experiments in the Willamette Valley have shown that field pea stands were more erratic and less vigorous than other vetches and clovers tested. This poorer performance may be due in part to field pea's low tolerance for waterlogged soils or its susceptibility to water-associated root diseases.

Uses

Field pea can be used as a cover crop, green manure, forage, hay, and silage. Hay is good quality, but pea is more succulent than vetches and more difficult to cure. Regrowth after mowing or grazing is poor.

When grown alone and incorporated or killed in spring, field pea residues decompose rapidly and can contribute nitrogen (N) to a following crop. Field pea has no hard seeds, is easy to kill, and does not escape to become a weed.

Field pea often is planted in mixtures with cereal grains. The cereal protects the soil during winter, when field pea growth is slow, and provides a support for vines to climb, keeping pea vegetation off the ground where it is more likely to rot. Rapid spring field pea growth suppresses spring weeds and reduces the overall C:N ratio of spring residues, speeding the decomposition process and preventing competition by soil microbes for plant-available N.

Field pea is not a good choice for relay interplanting. It is not likely to withstand harvest traffic, nor is it able to emerge from heavy harvest residues.

Dry matter and N accumulation

In a mid-Willamette Valley replicated trial over 5 years, Austrian winter pea planted in mid-September accumulated a maximum of 5.3, minimum of 0.8, and average of 1.7 tons dry matter/acre and a maximum of 202, minimum of 28, and average of 101 lb N/acre by mid-April.

Management

Early fall planting generally is preferred because larger overwintering plants are more winter-hardy, provide more soil protection, and are better able to withstand insect damage in the spring. However, warmer temperatures in early fall also increase seedling susceptibility to soil pathogens. Field peas planted in late fall do not grow to appreciable size until spring and are more prone to winter-kill by cold or diseases.

Quick facts: Field pea

Common names	Field pea, Austrian winter pea
Hardiness zone	7 (see Figure 1)
pH tolerance	4.2–8.7; optimum near 7.0
Best soil type	Wide range with adequate drainage
Flood tolerance	Low
Drought tolerance	Moderate
Shade tolerance	Low
Mowing tolerance	Low
Dry matter accumulation	1.7 tons/acre
N accumulation	100 lb/acre
N to following crop	Half of accumulated N
Uses	Use as a winter annual cover crop to smother spring weeds, fix N, and improve soil tilth. Often grown with cereal grains. Easily killed and incorporated. Will not escape and become a weed.
Cautions	Will not tolerate wet soils.

Suggested seeding rates vary from 70–160 lb/acre. Increase seeding rates for larger seeds, later plantings, or if planting into rough seedbeds.

Optimally, drill seed into a smooth seedbed to a depth of 1 to 2 inches. Place seeds deeply if necessary to reach available moisture in non-irrigated soils, and shallowly in irrigated soils or if fall rains have begun. You can broadcast seed, but the plants will be vulnerable to lodging and rotting if not planted with a nurse crop. It's best to till lightly after broadcasting to put the seed below the surface.

Winter pea roots need to be colonized by an *appropriate* strain of rhizobia bacteria to be able to convert atmospheric nitrogen into plant-available forms. Inoculating seed with the proper rhizobia bacteria ensures that the bacteria will be present when the seed germinates.

Use fresh inoculant, protect it from heat and light, and apply it to seeds just before planting according to the manufacturer's directions. Cover broadcast seed with soil to protect inoculant from sunlight.

You may not need to inoculate if the appropriate rhizobia bacteria already are present in the soil. You can find out by planting a section of the field with raw (non-inoculated) seed and watching for differences in growth.

Field pea normally is killed or incorporated in spring at the beginning of bloom. When grown alone, succulent residues are incorporated easily with a disk and decompose very rapidly, releasing accumulated N for use by the following crop.

Pest interactions

Incorporating succulent field pea residues often causes a sharp increase in soil-borne pathogen populations, especially damping off fungi (e.g., *pythium*). If susceptible seed is planted shortly after incorporation, you may have more problems with this disease. Avoid this problem by waiting several weeks between residue incorporation and planting, and by ensuring that soil temperature and seedbed preparation are optimal for rapid seedling emergence.

Field peas are not an appropriate cover crop to grow in rotation with a cash crop legume because they are susceptible to many of the same diseases, allowing pathogen populations to grow quickly.

Field pea harbors high densities of aphids and aphid predators such as syrphid flies and seven-spotted lady beetles. Field pea flowers attract bees and native pollenizers.

When used as a break crop, field pea can reduce the incidence of take-all in wheat.

Generally, field pea does not grow enough in the fall to out-compete and reduce weeds and is a poor competitor in areas with abundant winter weed growth.

Varieties/cultivars

Seed generally is available on a generic basis as field or Austrian winter pea.

For more information

World Wide Web

Orchard floor management information—http://www.orst.edu/dept/hort/weeds/floormgt.htm

OSU Extension Service publications—eesc.orst.edu

The University of California, Davis cover crop information—http://www.sarep.ucdavis.edu/sarep/ccrop/

Oregon Cover Crop Handbook

This publication also is part of *Using Cover Crops in Oregon*, EM 8704, which contains an overview of cover crop usage and descriptions of 13 individual cover crops. To order copies of EM 8704, send your request and $5.50 per copy to:

Publication Orders
Extension & Station Communications
Oregon State University
422 Kerr Administration
Corvallis, OR 97331-2119
Fax: 541-737-0817

Figure 1.—Oregon plant hardiness zone map. Field pea normally will survive in ***Zone 7*** *or any warmer zone. (Extracted from the USDA's national plant hardiness zone map, based on average annual minimum temperature in °F.)*
Zone 4 = -30 to -20; Zone 5 = -20 to -10
Zone 6 = -10 to 0; Zone 7 = 0 to 10
Zone 8 = 10 to 20; Zone 9 = 20 to 30

Robert Sattell, faculty research assistant in crop and soil science; Richard Dick, professor of soil science; Delbert Hemphill, professor of agriculture; and Dan McGrath, Extension agent, Willamette Valley; Oregon State University.

Funding for this project was provided by the Oregon Department of Agriculture.

This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials—*without regard to race, color, religion, sex, sexual orientation, national origin, age, marital status, disability, and disabled veteran or Vietnam-era veteran status*—as required by Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973. Oregon State University Extension Service is an Equal Opportunity Employer.