

TECHNICAL NOTES

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Seedling Identification of Cool Season Cover Crops

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Grass (cereal) seedling, barley



Broadleaf legume seedlings, crimson clover



Forb seedlings, field mustard



Broadleaf legume, bell bean seedling

Cover crop seedlings from the three functional groups: grasses, forbs and legumes.

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High biomass cover crop mix includes oats, bell bean, peas and vetch.

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Introduction

Cover crops have many benefits including erosion prevention, increased soil organic matter and nutrient cycling, increased infiltration and improved water holding capacity, as well as potential weed suppression, and breaking of pest and disease cycles. Cover crops are used to address a variety of resource concerns and establishment of a good cover crop stand, with the adapted and desired species, is important to ensure resource concerns are treated successfully. As cover crops are frequently planted in a multiple species mix, it can be hard to identify the individual components of the mix, particularly as juvenile stages of plants frequently look different than the mature plant.

The method used for planting will affect how easy it is to identify juvenile cover crop species. Drilled seedings are more efficient for planting seeds as they provide good seed-to-soil contact. It also makes it easier to determine the success of the planting and identify the planted species as the seedlings will emerge in the planted rows. In the first photo, the rows of planted cover crops are clearly visible, and are more prominent than the weeds emerging between the rows.

There are occasions when drill seeding is impossible. There may be no drill available, the terrain makes drill seeding difficult, or the site's soils are too wet to use heavy equipment. In this case, broadcast seeding is required and may be done with a variety of methods, including large broadcast seeders, fertilizer spreaders, belly-grinders, or by drone seeding. The image on the right is of a winter broadcast (drone) seeded planting with soils too wet for equipment. The image shows the random distribution of the seedlings and illustrates the difficulty of identifying species at this stage. This mix was designed for a vineyard with sheep grazing and included a mix of grasses, forbs, and legumes. At this growth stage, it is hard, if not impossible, to distinguish the planted species from incidental weeds. This particular planting turned out to be a very successful Conservation Cover planting.

This Technical Note is designed to assist Conservation Planners with a means to distinguish seeded cover crop species from background weeds. In many cases identification to functional group or family will be adequate as many species are hard to identify until they reach maturity.



Drilled seeded cover crop. Note straight rows of plants.



Broadcast seeding of grasses, forbs and legumes showing random distribution of seedlings.

Grasses – Cereals

Grasses are frequently used as cover crops as their fibrous root systems are excellent at preventing erosion, nitrogen scavenging, nutrient cycling, increasing infiltration and soil organic matter, reducing compaction, and potentially breaking disease cycles. Cereal grains like barley, cereal rye, oats, triticale (hybrid of cereal rye and wheat), and wheat, are grown as crops, for forage, and as cover crops, and are also excellent at weed suppression. Their robust growth and numerous cultivars adapted to different areas, as well as reasonable seed price, ensures cereals popularity as cover crops and include the examples included in this Tech Note. Some other annual grasses are also used as cover crops including ‘Blando’ brome (*Bromus hordeaceus*) and annual ryegrass (*Lolium perenne* ssp. *multiflorum*), these latter have the same basic structure as the cereals with a single seed leaf and straight emerging (though smaller) first leaves.



A stand of barley showing development of the seed heads.

Barley

Scientific Name: *Hordeum vulgare* L.

Type: Cool season grass (cereal)

- Winter and spring cultivars

Attributes:

- Height at maturity 2 - 4 feet
- Good drought tolerance
- Good salinity tolerance
- Arbuscular mycorrhizal associations

Purposes:

- Erosion control
- Nitrogen scavenger
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Increase infiltration
- Break disease cycles
- Suppress weeds

Planting Information:

- Seeding rate: 60 – 90 lb/acre
- Seeding depth: ½ - 2 inches

Pest alerts in California:

- Insects: Harbors oat aphid (*Rhopalosiphum padi*)
- Nematodes: Host for *Meloidogyne javonica*, minor host *M. arenaria*
- Weediness: Will volunteer if sets seed

Notes: Although drought tolerant barley can be hard to terminate, growth continues after mowing until soil moisture is depleted.

Reference:

Jacobs, A.A. 2016. Plant guide for common barley (*Hordeum vulgare* L.). USDA Natural Resources Conservation Service, Jamie L. Whitten Plant Materials Center. Coffeeville, Mississippi.



Barley seedling at 2-leaf stage.



Barley, 90 days after planting.

Cereal Rye

Scientific Name: *Secale cereale* L.

Type: Cool season grass (cereal)

- Winter and spring cultivars

Attributes:

- Height at maturity 3 - 6 feet
- Moderate drought tolerance
- Fair salinity tolerance
- Arbuscular mycorrhizal associations

Purposes:

- Erosion control
- Nitrogen scavenger
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Increase infiltration
- Break disease cycles
- Good weed suppression

Planting Information:

- Seeding rate: 60 – 90 lb/acre
- Seeding depth: ½ - 2 inches

Pest alerts in California:

- Insects: Harbors oat aphid (*Rhopalosiphum padi*).
- Nematodes: Host for *Meloidogyne javonica*, minor host *M. arenaria*.
- Weediness: Will volunteer.
- Allelopathic: some cultivars may inhibit growth of following crops.

Notes: Good weed control. ‘Merced’ cereal rye is excellent at suppressing weeds; allelopathic and not recommended as part of a mix as it will suppress the mix components.

Reference:

Casey, P.A. 2012. Plant guide for cereal rye (*Secale cereale*). USDA Natural Resources Conservation Service, Plant Materials Center, Elsberry, MO.



Cereal rye seedling at 2-leaf stage.



Cereal rye, Merced, a spring cultivar, 90 days after planting.

Oats

Scientific Name: *Avena sativa*, L.

Type: Cool season grass (cereal)

- Winter and spring cultivars

Attributes:

- Height at maturity 2 - 5 feet
- Fair drought tolerance
- Fair salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Erosion control
- Nitrogen scavenger
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Increase infiltration
- Break disease cycles
- Suppress weeds

Planting Information:

- Seeding rate: 60 – 90 lb/acre
- Seeding depth: ½ - 2 inches

Pest alerts in California:

- Insects: Harbors cherry and oat aphid (*Rhopalosiphum padi*), and English grain aphid (*Sitobion avenae*)
- Weediness: Will volunteer if sets seed

Notes: Allelopathic: Can slow the germination of lettuce, cress, timothy, wheat rice and peas

Reference:

Björkman, T. and J.W. Shail. 2010. Cornell cover crop guide for oats. Cornell University. 2pp. Ver. 1.100716



Oat seedling at 2-leaf stage.



Oats, 'Montezuma' a fast-growing spring cultivar, 90 days after planting.

Triticale

Scientific Name: *xTriticosecale* Wittm.
Ex *A. Camus* [*Secale x Triticum*]
(A cereal rye and wheat hybrid)

Type: Cool season grass (cereal)

- Winter, spring and intermediate cultivars

Attributes:

- Height at maturity 3 – 5 feet
- Good drought tolerance
- Good salinity tolerance
- Robust root system
- Arbuscular mycorrhizal association

Purposes:

- Erosion control
- Nitrogen scavenger
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Increase infiltration
- Break disease cycles
- Suppress weeds

Planting Information:

- Seeding rate: 60 – 90 lb/acre
- Seeding depth: ½ - 2 inches

Pest alerts in California:

- Nitrogen tie-up can occur if crops are planted too soon after incorporation regrow
- Weediness: may volunteer if sets seed

Reference:

Smither-Kopperl, M. 2025. Plant Guide for triticale (*xTriticosecale*). USDA Natural Resources Conservation Service, Lockeford Plant Materials Center. Lockeford, CA 95237.



Triticale seedlings at 2-leaf stage.



Triticale, 'Forerunner' intermediate cultivar, 90 days after planting.

Forbs

Broadleaf plants have 2 seed leaves (cotyledons) and include a diverse mix of species. Their benefits include nitrogen scavenging and nutrient cycling, increasing infiltration and soil organic matter, reducing compaction, breaking disease cycles, and suppressing plant parasitic nematodes and weeds. Flowers provide pollen and nectar to support pollinators and beneficial insects. Brassicas all have a strong taproot and include canola, mustards, radish and turnip, examples of phacelia and flax provide added biodiversity.



Field mustard in bloom.



Tillage radish in bloom.



Phacelia (lacy phacelia) in bloom.



Flax in bloom.

Canola

Scientific Name: *Brassica napus* L.

Alternate Names

Oilseed rape, rape

Type: Cool season broadleaf, non-legume

- Annual (spring) or biennial

Attributes:

- Height at maturity 1 - 3 feet
- Fair drought tolerance
- Good salinity tolerance
- Deep tap root
- No arbuscular mycorrhizal association

Purposes:

- Nitrogen scavenger
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Early bloom attracts pollinators
- Supports beneficial insects
- Break disease cycles
- Suppress weeds
- Early bloom support European honeybees
-

Planting Information:

- Seeding rate: 6 – 12 lb/acre
- Seeding depth: 0.25 - 1 inch

Pest alerts:

- Disease: host for *Sclerotinia sclerotiorum*
- Weediness: may volunteer if sets seed

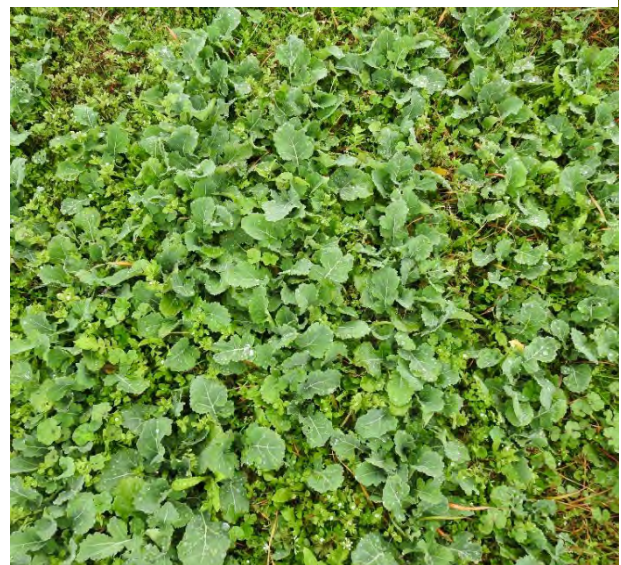
Notes: Do not use brassicas in rotation with one another.

Reference:

Canola/Rape, Cover Crops Database, 2026. Sustainable Agriculture Research and Education Program, University of California Agriculture and Natural Resources.



Canola seedlings at cotyledon stage.



Canola at 90 days after planting.

Mustard, Field

Scientific Name: *Brassica rapa* L.
var. rapa

Alternate Names

Mustard, common mustard, turnip, forage turnip

Type: Cool season broadleaf, non-legume

Attributes:

- Height at maturity 1 - 3 feet
- Large tap root
- Drought tolerance depends on cultivar
- Salinity tolerance depends on cultivar

Purposes:

- Erosion control
- Nitrogen scavenger
- Increase infiltration
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction,
- Break disease cycles
- Flowers attract pollinators
- Suppress weeds

Planting Information:

- Seeding rate: 6 – 12 lb/acre
- Seeding depth: 0.25 – 0.5 inches

Pest alerts in California:

- Diseases: Potential host for *Sclerotinia sclerotiorum*
- Insects: may attract flea beetles and diamond-back moths
- Weediness: May volunteer if sets seed

Notes:

- Do not plant in rotation with Brassica species

Reference:

Young-Mathews, A. 2012. Plant guide for field mustard (*Brassica rapa* var. *rapa*). USDA Natural Resources Conservation Service, Corvallis Plant Materials Center, Corvallis, OR.



Mustard seedlings at cotyledon stage.



Mustard (turnip) 60 days after planting.

Mustard, White

Scientific Name: *Sinapis alba* L.

Type: Cool season broadleaf, non-legume

Attributes:

- Height at maturity 3 - 6 feet
- Strong tap root
- Excellent drought tolerance
- Poor salinity tolerance
- No arbuscular mycorrhizal associations

Purposes:

- Nitrogen scavenger
- Increase infiltration
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Break disease cycles
- Suppress weeds
- Flowers attract pollinators

Planting Information:

- Seeding rate: 10 lb/acre
- Seeding depth: 0.25 – 0.5 inches

Pest alerts in California:

- Diseases: Potential host for *Sclerotinia sclerotiorum*
- Insects: may attract flea beetles and diamond-back moths
- Weediness: May volunteer if sets seed

Notes:

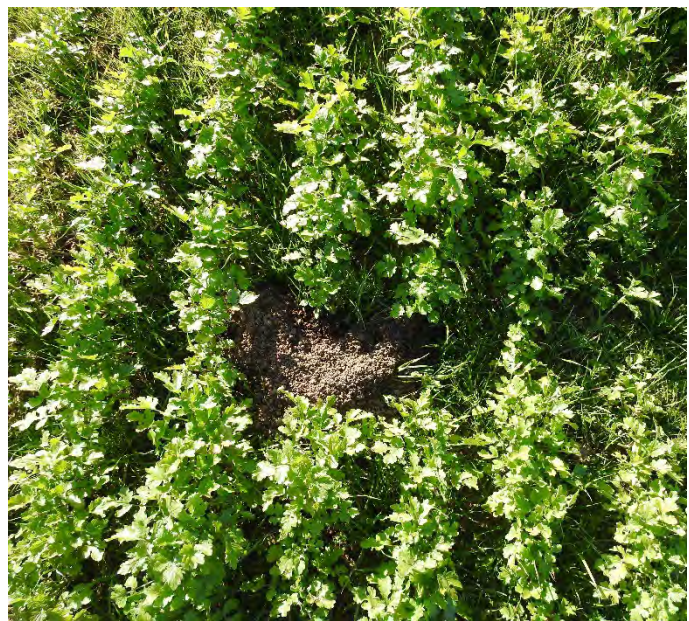
- Do not plant in rotation with Brassica species
- May have allelopathic effects

Reference:

Mustards, Cover Crops Database, 2026. Sustainable Agriculture Research and Education Program, University of California Agriculture and Natural Resources.



White mustard cotyledon stage.



White mustard, 60 days after planting.

Tillage Radish

Scientific Name: *Raphanus sativus* L.

Alternate Names

Daikon radish, radish

Type: Cool season broadleaf, non-legume

Attributes:

- Height at maturity 2 -4 feet
- Large tap root
- Poor drought tolerance
- Poor salinity tolerance
- No arbuscular mycorrhizal association

Purposes:

- Nitrogen scavenger
- Increase infiltration
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Break disease cycles
- Suppress weeds
- Flowers attract pollinators

Planting Information:

- Seeding rate: 10 - 20 lb/acre
- Seeding depth: 0.25 – 0.5 inches

Pest alerts in California:

- Insects: may attract flea beetles and harlequin beetles.
- Weediness: May volunteer if sets seed

Notes:

- Plant at a lower seeding rate to increase root size and so reduce compaction
- Do not plant in rotation with Brassica species

Reference:

Jacobs, Alayna A. 2012. Plant Guide for oilseed radish (*Raphanus sativus* L.). USDA Natural Resources Conservation Service, Booneville Plant Materials Center. Booneville, AR 72927.



Radish seedling cotyledons.



Radish plants, 90 days after planting.

Flax

Scientific Name: *Linum usitatissimum* L.

Alternate Names

Common flax

Type: Cool season broadleaf, non-legume

Attributes:

- Height at maturity 2 – 4 feet
- Fair drought tolerance
- Fair salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Increases biodiversity
- Nitrogen scavenger
- Increase infiltration
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Break disease cycles
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 10 - 20 lb/acre
- Seeding depth: 0.5 - 1 inches

Pest alerts in California:

- Disease: Potential host for *Rhizoctonia* spp.
- Weediness: May volunteer if sets seed

Reference:

USDA Natural Resources Conservation Service and Iowa State University, 2024.
Flax Cover Crop Fact Sheet



Flax seedlings at cotyledon stage.



Flax plants at 90 days after planting. Note presence of grass weeds

Phacelia, Lacy

Scientific Name: *Phacelia tanacetifolia* Benth.

Alternate Names

Phacelia

Type: Cool season broadleaf, non-legume

Attributes:

- Height at maturity 1-3 feet
- Strong tap root
- Good drought tolerance
- Poor salinity tolerance
- Arbuscular mycorrhizal association
- Native to California

Purposes:

- Erosion reduction
- Nitrogen scavenger
- Increase infiltration
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Break disease cycles
- Suppress weeds
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 7 - 12 lb/acre
- Seeding depth: ¼ - ½ inches

Pest alerts in California:

- Diseases: Host for *Sclerotinia minor*
- Insects: Harbors pea aphid
- Weediness: May volunteer if sets seed

Notes: Plant is allelopathic, no problem as part of a mix, however when planted alone may reduce germination of following crops.

Reference:

Smither-Kopperl, M. 2018. Plant Guide for lacy phacelia (*Phacelia tanacetifolia*). USDA Natural Resources Conservation Service, Lockeford Plant Materials Center, Lockeford, CA 95237.



Lacy phacelia seedling at cotyledon stage.



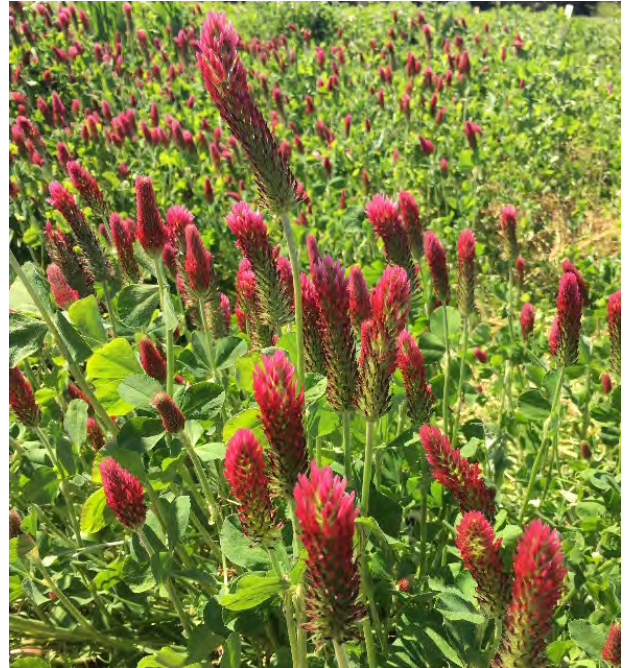
Lacy phacelia, 90 days after planting. Note absence of weedy species.

Legumes

These broadleaf plants are in the Fabaceae family. They have 2 seed leaves (cotyledons) within the seed and form a symbiotic association with *Rhizobia* bacteria in their roots to fix nitrogen. Benefits include adding nitrogen, nutrient cycling, increasing infiltration and soil organic matter, and reducing compaction. Flowers provide pollen and nectar to support pollinators and beneficial insects. Species of cool season cover crops are peas, clovers and vetch species, which includes bell bean.



Spring pea 'Dundale' (*Pisum sativum*) in bloom.



Crimson clover (*Trifolium incarnatum*) in bloom.



Bell bean (*Vicia faba*) in bloom.



Woolly pod vetch (*Vicia villosa* ssp. *varia*) in bloom.

Bell Bean

Scientific Name: *Vicia faba* L.

Alternate Names

Fava bean, faba bean, tick bean, horse bean

Type: Cool season legume

Attributes:

- Height at maturity 2 - 6 feet
- Upright growth form
- Good drought tolerance once established
- Low salinity tolerance
- Strong tap root
- Arbuscular mycorrhizal association



Bell bean, first leaves.

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Reduce compaction
- Increase infiltration
- Break disease cycles
- Support pollinators, especially bumble bees
- Supports beneficial insects

Planting Information:

- Seeding rate: 80 lb/acre
- Seeding depth: 1 – 2 inches

Pest alerts in California:

- Diseases: Host for bacterial blast
- Insects: Harbors bean aphid
- Nematodes: Host for root knot (*Meloidogyne* spp.)



Bell (Fava) bean (Felix) at 90 days after planting. Note presence of vetch as a weed.

Notes: Is sensitive to temperature, will not germinate at temperatures below 43F, although will tolerate freezing once established, and does not grow when temperatures are above 90F.

Reference:

Smither-Kopperl, M. 2019. Plant Guide for fava bean (*Vicia faba*). USDA Natural Resources Conservation Service, Lockeford Plant Materials Center. Lockeford, CA 95237.

Clover, Balansa

Scientific Name: *Trifolium michelianum* Savi ssp. *balansae* (Boiss.) Ponert

Type: Cool season legume

Attributes:

- Height at maturity up to 24 inches
- Good drought tolerance
- Fair salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Break disease cycles
- Suppress weeds once mature
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 6 lb/acre
- Seeding depth: 0.25 – 0.5 inches

Pest alerts in California:

- Insects: Can harbor flower thrips
- Weediness: Moderately hard seeded, may reseed and persist

Notes: Will perform better with an early mow to suppress weedy species

Reference:

USDA Natural Resources Conservation Service and Iowa State University, 2024. Balansa clover cover crop Fact Sheet Crop 3270.



Clover (Balansa), seedlings.



Clover (Balansa), at 90 days after planting. Note, clover has small trifoliate leaves (white arrows). Weedy species include grasses, mustard and vetch.

Clover, Crimson

Scientific Name: *Trifolium incarnatum* L.

Type: Cool season legume

Attributes:

- Height at maturity 12 - 20 inches
- Moderate drought tolerance
- Poor salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Break disease cycles
- Does not host plant parasitic nematodes
- May suppress weeds
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 7 - 10 lb/acre
- Seeding depth: 0.5 inches

Pest alerts in California:

- Diseases: Host for *Sclerotinia* spp.
- Insects: Harbors flower thrips and western tarnished plant bug
- Weediness: May volunteer and spread if it sets seed

Notes: Does not tolerate mowing.
Least hard-seeded of the clover species

Reference:

Young-Mathews, A. 2013. Plant guide for crimson clover (*Trifolium incarnatum*). USDA Natural Resources Conservation Service, Plant Materials Center, Corvallis, OR.



Crimson clover with first leaves.



Crimson clover at 90 days after planting. Note presence of weeds, clover has small trifoliate leaves (white arrows).

Clover, Rose

Scientific Name: *Trifolium hirtum* All.

Type: Cool season legume

Attributes:

- Height at maturity 6 – 18 inches
- Excellent drought tolerance
- Tolerant of infertile soils
- Poor salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Poor competitor with weeds
- Break disease cycles
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 7 - 10 lb/acre
- Seeding depth: 0.5 inches

Pest alerts in California:

- Insects: Can harbor lygus bug
- Nematodes: Potential host for root knot (*Meloidogyne* spp.)
- Weediness: Will volunteer

Notes:

- Rose clover is naturalized and listed as invasive (limited) in California.
- Hard seeded

Reference:

Dyer, D. & R. O'Beck. 2005. Plant guide for rose clover (*Trifolium hirtum*). USDA Natural Resources Conservation Service, Plant Materials Center, Lockeford, CA.



Rose clover seedlings.



Rose clover at 90 days after planting, arrows show location of small trifoliate leaves. Note weedy volunteer peas and grasses.

Clover, Subterranean

Scientific Name: *Trifolium subterranean* L.

Alternate Names

Subclover

Type: Cool season legume

Attributes:

- Height at maturity 6 – 15 inches
- Some cultivars extremely drought tolerant
- Poor salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Break disease cycles
- Flowers support pollinators
- Supports beneficial insects
- Suppresses weeds once established

Planting Information:

- Seeding rate: 25 lb/acre
- Seeding depth: 0.25 – 0.5 inches

Pest alerts in California:

- Diseases: Potential for bacterial blast, and fungal root pathogens in damp areas
- Insects: Harbors bean aphid
- Nematodes: Potential host for root knot (*Meloidogyne* spp.)
- Weediness: May volunteer if sets seed

Notes: Seed is produced below ground

Reference:

Friddle, M. 2018. Plant guide for subterranean clover (*Trifolium subterraneum*). USDA Natural Resources Conservation Service, Corvallis Plant Materials Center, Corvallis, OR.



Subterranean clover seedlings on emergence.



Subterranean clover (Seaton) at 90 days after planting, white arrow to small trifoliate leaves. Note abundant weeds with subclover growing under the canopy.

Pea

Scientific Name: *Pisum sativum* L.

Alternate Names

Spring pea, winter pea, field pea

Type: Cool season legume

Winter and spring cultivars

Attributes:

- Height at maturity 20 -28 inches
- Viney growth habit
- Good drought tolerance
- Poor salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Break disease cycles
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 50 lb/acre
- Seeding depth: 1 – 2 inches

Pest alerts in California:

- Diseases: Susceptible to root and stem rots including *Fusarium* spp., host for *Sclerotinia minor*
- Insects: Harbors pea aphid
- Nematodes: Host for several plant parasitic nematodes

Notes:

Grows best as part of a mix, where the vines can climb plants with an erect growth habit.

Reference:

Pavek, P.L.S. 2012. Plant guide for pea (*Pisum sativum* L.). USDA Natural Resources Conservation Service, Pullman, WA



Pea seedling after emergence.



Pea (Austrian winter), 90 days after planting. Note high incidence of weeds including grasses and vetch, white arrow to pea plant.

Vetch, Common

Scientific Name: *Vicia sativa* L.

Type: Cool season legume

Attributes:

- Height at maturity 2 - 6 feet, when supported
- Viney growth habit, up to 6 feet.
- Good drought tolerance
- Poor salinity tolerance
- Arbuscular mycorrhizal association

Purposes:

- Nitrogen fixer
- Increase soil organic matter
- Increase nutrient cycling
- Increase infiltration
- Break disease cycles
- Suppress weeds
- Flowers support pollinators
- Supports beneficial insects

Planting Information:

- Seeding rate: 15 lb/acre
- Seeding depth: 0.5 – 1.5 inches

Pest alerts in California:

- Insects: Western tarnished plant bug, lygus and two-spotted spider mite
- Nematodes: Host for reniform nematode (*Rotylenchus reniformis*)
- Weediness: May volunteer

Notes: Several other vetch species, including hairy vetch, purple vetch and woollypod vetch, are very similar in appearance to common vetch at the seedling stage.

All vetches are hard-seeded, common vetch less than the others.

Reference:

Common vetch, Cover Crops Database, 2026. Sustainable Agriculture Research and Education Program, University of California Agriculture and Natural Resources.



Common vetch seedling.



Common vetch at 120 days after planting. Note relative absence of weeds, smothered by the vetch.

Successful Establishment of Cover Crops

Annual cover crops are planted for a variety of reasons, with the bottom line that they should add value from the numerous potential benefits. There are several factors to consider when planning a cover crop planting to maximize the potential for success.

1. Determine goals of the cover crop planting.
2. Assess resource concerns.
3. Select appropriate cover crop species to address resource concerns: will it be a single species planting or a seed mix?
4. Purchase high quality seed from a reputable seed company.
5. Read the seed label.
6. Determine seeding equipment available.
7. Will it be a direct seeded (drilled) or broadcast seeding?
8. Control weeds prior to planting, with options of tillage, mowing or herbicide use.
9. Conduct site preparation to produce a firm seed bed.
10. Seed will not germinate unless there is adequate moisture.
11. Planting should be timed with a suitable rainfall event or irrigation.
12. At planting, make sure to calibrate the planter.
13. Plant at the correct seeding depth for the species or mix.
14. Broadcast seeding will require further action to ensure good seed-to-soil contact.

Once the cover crop is planted, it should require minimal management until time for termination. Failure of a cover crop planting is not uncommon, and possible reasons are listed in the table below:

Reasons for Failure for a Cover Crop Planting

Preplant	Post-planting
Poor quality seed	Competition from weeds
Improper timing, temperatures too hot or cold	Inadequate moisture for seedlings to establish
Improper planting depth	Drought
Inadequate moisture	Poor drainage
Soil crusting	Pest damage, disease, slugs, snails, or insects
Toxicity: Herbicide carryover	Improper grazing by livestock
Toxicity: Allelopathic effects	Foraging by wildlife, including rodents and deer

Recommendation

For additional information contact your local UC Cooperative Extension Office or Natural Resources Conservation Service Center.

References

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