ILLUSTRATED GUIDE

TO

TILLAGE WEEDS

November 2010

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Guide to Identifying Tillage Weeds

This guide has been written to help farmers, growers and students identify the more common tillage weeds in field and garden. It contains details on 38 species which are grouped within their families.

Weeds have been around for as long as crops have been cultivated and as mankind spread to new lands, he brought both crop and weed seeds with him. In Ireland land was first brought into agricultural use by Neolithic farmers about 6000 years ago and pollen records show that both cereals and their weeds were grown at that time.

Tillage weeds are annual or perennial plants that have adapted to surviving in cultivated ground in a number of ways. The most obvious characteristic of a successful annual weed is the ability to germinate, flower and set seed quickly, all year round e.g. chickweed, groundsel and annual meadow grass. Other species can stay dormant in the ground for years and germinate when the ground is disturbed e.g. redshank, charlock and common poppy. Perennial plants can also cause problems for the arable farmer especially those which can establish from root fragments e.g. colt's foot, scutch and perennial sowthistle.

Whilst some annuals can germinate at virtually any time of the year, others have definite times of emergence:

Spring:	Redshank, black bindweed, knotgrass, orache, sun spurge fool's parsley, hemp-nettle, hedge mustard
Spring to autumn:	Corn marigold, charlock, corn spurrey, fat hen, annual nettle, sowthistle, for-get-me-not, mouse-ear
Spring and autumn:	Cleavers, ivy leaved speedwell, common poppy, field pansy
All year round:	Chickweed, groundsel, annual meadow grass, mayweed, dead nettle (especially autumn), common field speedwell, fumitory, shepherd's purse, fumitory

Crops themselves can become weeds if they reoccur in subsequent crops – these are known as volunteers. Examples include potatoes, oil seed rape and cereals.

It's important to be able to identify weeds particularly in the seedling stage and in these notes the key identification features for each weed are underlined, and also where appropriate highlighted with an arrow. There are lots of other sources available some of which are mentioned at the back of the book.
A recommended website is:
The Encyclopaedia of Arable Weeds – http://web.adas.co.uk/WeedManager.

Seedling groups

Large cotyledons (1 cm)

- Ivy leaved speedwell
- Charlock
- Cleavers

Red hypocotyls

- Redshank
- Knotgrass
- Black bindweed
- Fumitory (pink)
- Fat hen

Pointed cotyledons

- Chickweed
- Mayweed
- Black bindweed

Notched cotyledons

- Red deadnettle
- Annual nettle
- Hemp nettle
- Cleavers

Narrow cotyledons

- Knotgrass
- Fumitory
- Common poppy
- Corn spurrey
- Fool's parsley
- Black bindweed
- Fat hen
- Orache

Round/oval cotyledons

- Field pansy
- Corn marigold
- Sowthistle
- Common field speedwell
- Sun spurge

Hairy true-leaves

- Black nightshade
- For-get-me-not
- Charlock
- Hempnettle
- Ivy leaved speedwell
- Nipplewort
- Annual nettle

20 commonest arable weeds

1. Groundsel
2. Annual meadow grass
3. Chickweed
4. Shepherds purse
5. Fat hen
6. Orache
7. Knotgrass
8. Redshank
9. Scutch
10. Cleavers
11. Red deadnettle
12. Mayweed
13. Black bindweed
14. Fumitory
15. Speedwell
16. Charlock
17. Hemp-nettle
18. Sowthistle
19. Annual nettle
20. Thistle

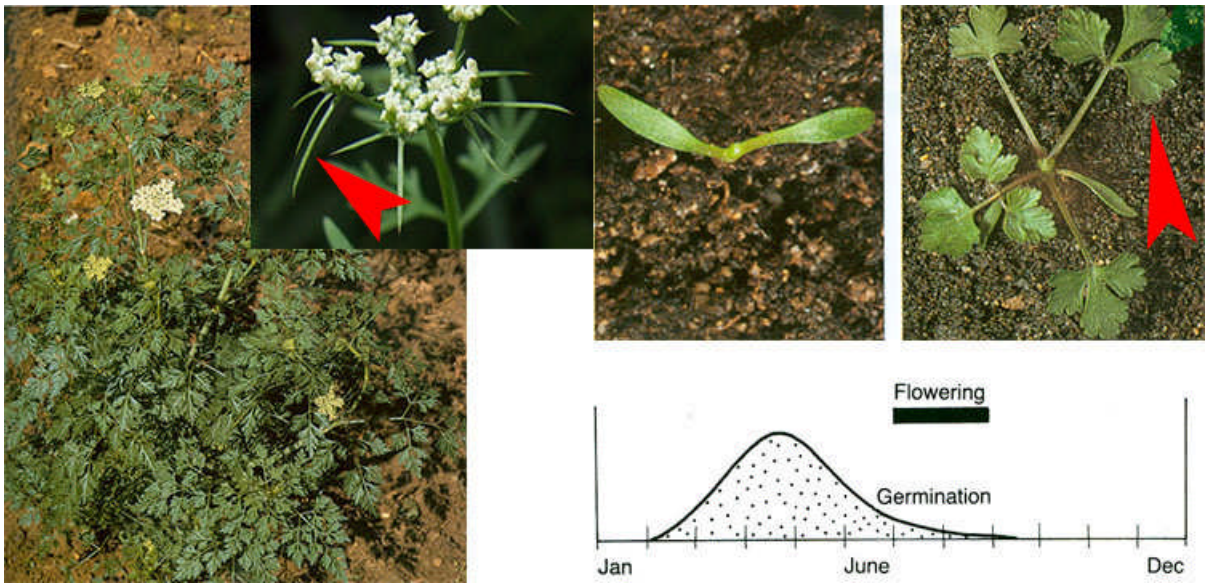
UK weeds not common in Ireland

- Bugloss
- Flixweed
- Green field speedwell
- Hen-bit deadnettle
- Parsley-piert
- Wild carrot
- Wild radish/runch

APIACEAE (formerly UMBELLIFERAE)

Crops: carrot, parsnip, celery, parsley, coriander

Fool's Parsley - *Aethusa cynapium* (A)

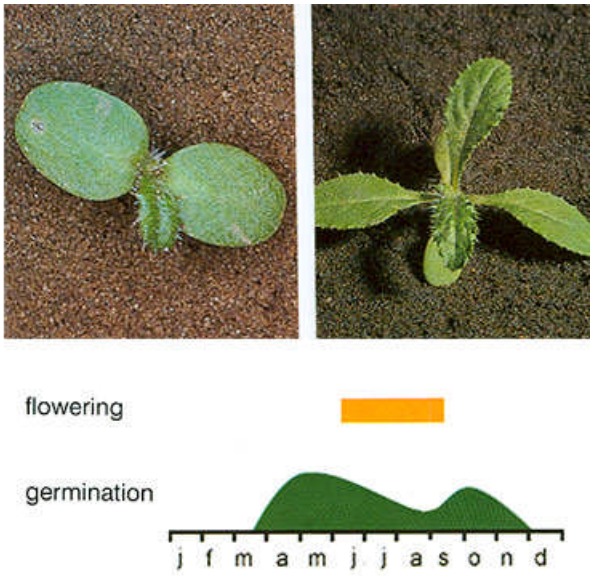


This annual weed can be plentiful in a field but it's only in the odd field that it's found. The common name certainly alludes to the fact that the foliage is very similar to flat leaved parsley and could easily be mistaken for same – it's also rather similar to carrot foliage. It may also allude to the fact that it's a poisonous plant and only a fool would eat it. Fool's parsley in the seedling stage could be confused with creeping buttercup (see right) but the narrower cotyledons and the distinctly three lobed adult leaf distinguish it. The image below shows it growing in amongst parsley; one can see from the left hand image how similar the leaf of Fool's Parsley (darker green) is to flat leaf parsley. The flat, white, umbel type flower heads have characteristic downward pointing bracts. Because it's in the same family as carrots, parsnips, parsley and celery it can become a problem weed in those crops. Tilled fields, gardens and waste places.

ASTERACEAE (formerly COMPOSITAE)

Crops: lettuce, salsify, chicory, endive, globe artichoke, Jerusalem artichoke

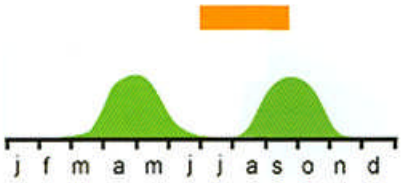
Creeping Thistle – *Circium arvense* (P)



More associated with pasture than tillage creeping thistle can still cause problems to the arable farmer in the fields where it presents in large amounts. It's an abundant perennial weed that occurs in fields, waste ground and roadsides.

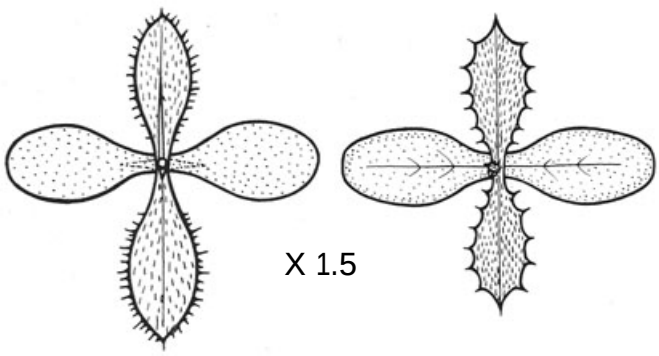
The main reason for its success as a weed is the extensive underground creeping root system that rapidly forms dense patches. The development of horizontally growing roots can spread the weed up to 6 m in a year. The deep-seated root system is very brittle and easily breaks into pieces. Fragments of root from plants in the field margins can be carried into the field and spread during cultivation. Creeping thistle can also regenerate from seed but only about 3% of it is viable. It flowers during July and August.

Spear Thistle – *Circium vulgare* (B)



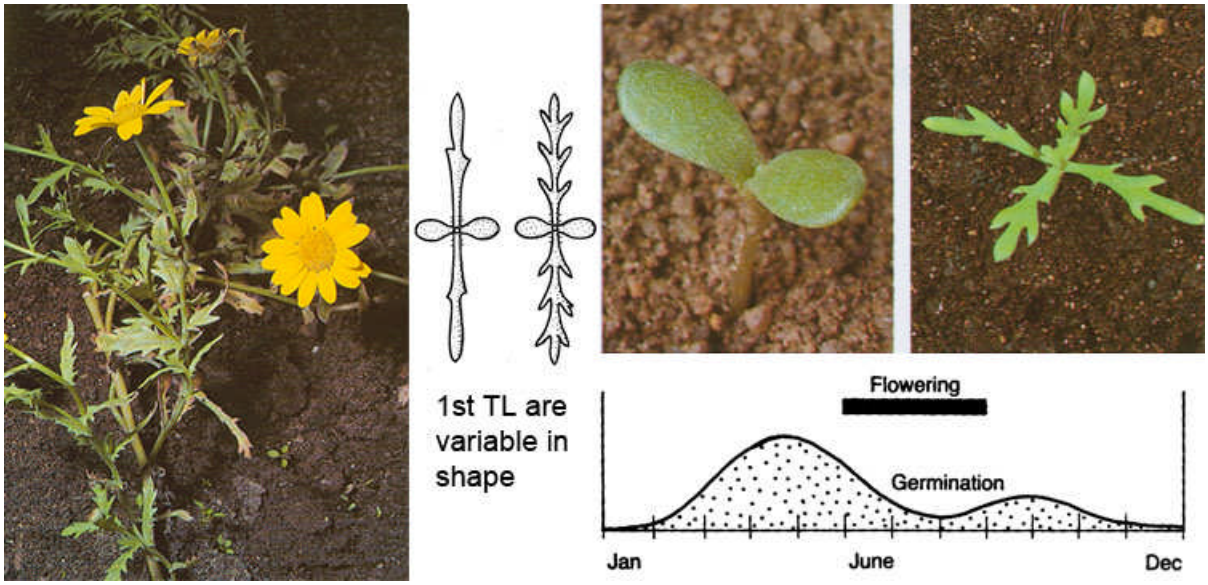
Spear thistle can appear just about anywhere – the airborne seeds which are typical of this family can parachute into gardens, waste ground, pasture, tillage fields and forestry plantations. It looks a bit like creeping thistle but differs in a number of respects. First of all it's a biennial – it germinates and develops a low growing rosette stage in year one and then in year two shoots up to over a metre tall, flowers from July to October and dies off in the autumn. The second difference is that while spread by seed is relatively unimportant in creeping thistle, spear thistle's sole method of survival is by seed. And it can produce prodigious amounts – up to 8000 seeds per plant. The image below shows the rosette stage.

Similar: the seedling stage looks similar to creeping thistle but the second true leaf can be large with plenty of spines whereas creeping thistle has fewer marginal spines.



Spear thistle Creeping thistle

Corn Marigold – *Chrysanthemum segetum* (A)

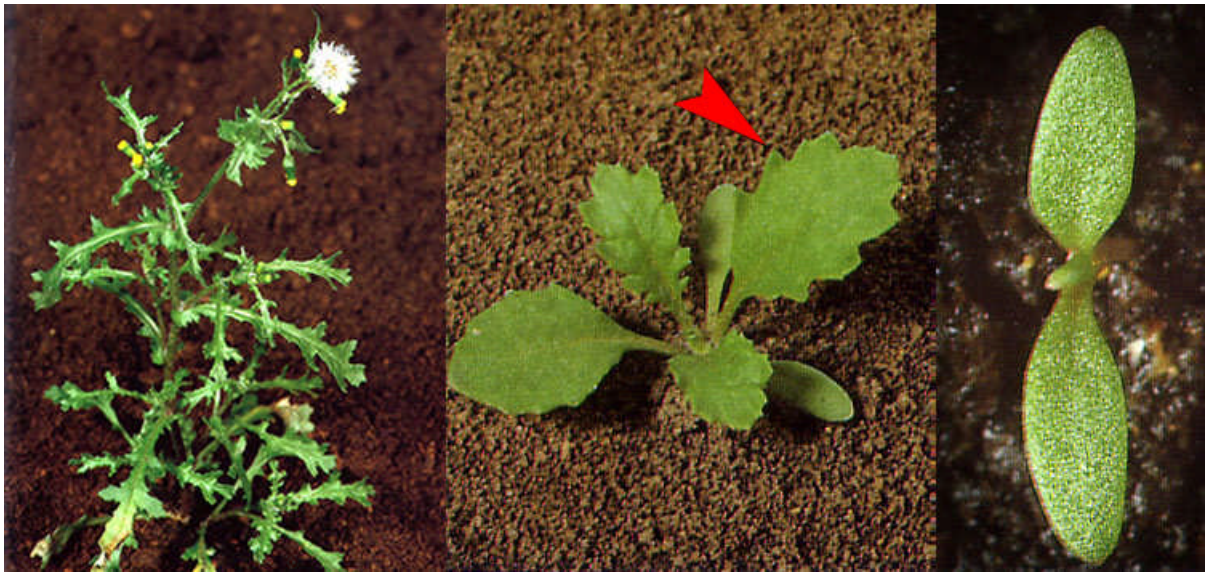


Corn marigold is an attractive annual weed occasionally found in tillage fields and waste places, usually on acid ground. The cotyledons are fleshy, hypocotyl is long and the foliage is a waxy bluish green colour. When in flower the large bright yellow daisy like flowers are a dead giveaway.

Once abundant in corn fields its been decreasing in recent years due to herbicide use and lime spreading. To quote from *British Flora, Bentham and Hooker, 1905* : "A cornfield weed, probably of Mediterranean origin, but now common all over Europe. Abundant in Britain". Tilled fields, locally frequent in the north and east, rather rare elsewhere.

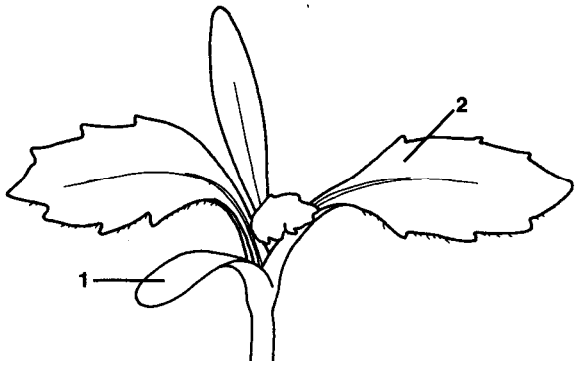
Corn marigold growing in a parsnip field near Skerries Co Dublin on pH 5.6. Acid indicator.

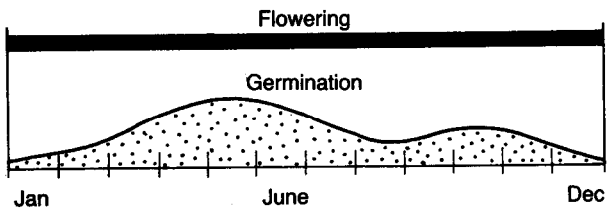
Groundsel – *Senecio vulgaris* (A)



Groundsel is an abundant annual tillage weed. Height varies anywhere from 10-35 cm high. Once you get to know it, it's a very distinctive weed in the adult stage both in leaf and general habit. Very small seedlings are less easy to identify except to say that the cotyledons are small and narrow (1) and are frequently purple underneath. The first leaves show the characteristic serrations (2) that become even more obvious later in life. As you can see from the table groundsel germinates, grows and flowers all year around. Extremely successful weed.

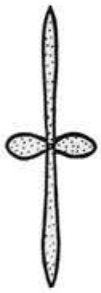
Underside of seed leaves

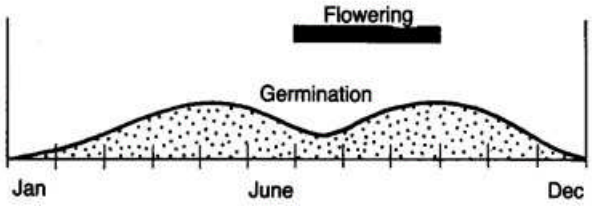




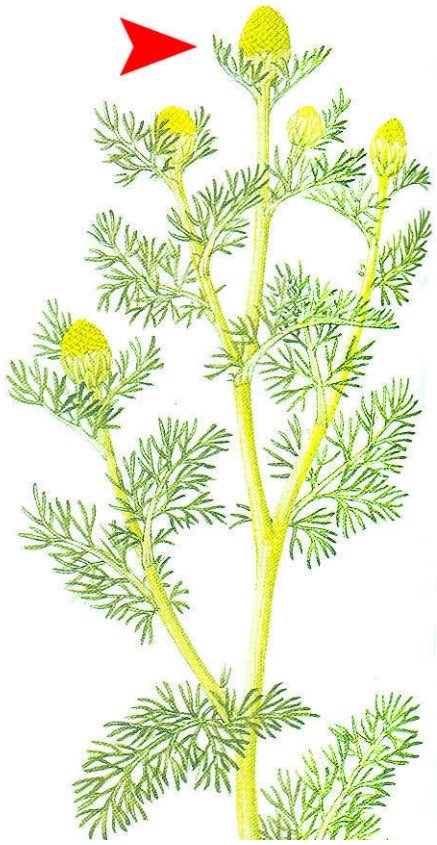
Stand of groundsel setting millions of seeds in a crop of Brussels sprouts. Seed germinates at once if conditions are wet. Can complete its lifecycle in 5-6 weeks.

Mayweed (Pineapple weed**) – *Matricaria discoidea* (A)**





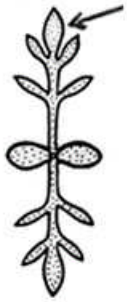
There are two mayweeds – mayweed (pineapple weed) and scentless mayweed – the former much more common than the latter. They are difficult to distinguish in the seedling stage but the first true leaves of mayweed have few or no lobes. The feathery foliage is common to both but they are distinctly different when in flower – mayweed has no petals and scentless mayweed has petals. Another difference is alluded to in the common names of both – if you crush the foliage between your fingers there is a strong smell (pineapple perhaps) from the mayweed and no smell from the scentless mayweed.

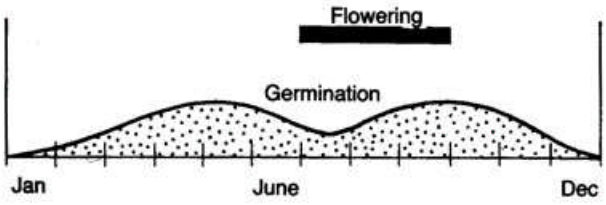


Mayweed is an alien species possibly originating in north-east Asia, though now well established throughout most of Europe. It was first recorded in Co Dublin in 1894. Much of its rapid spread is thought to be due to the seeds being carried on car tyres. It is a common weed of footpaths, gateways, roadsides, waste and arable ground and is very tolerant of trampling. Abundant.

Similar: scentless mayweed as detailed above. Could also be confused with swine cress in the seedling stage, but the small cotyledons distinguish it – swine cress has long narrow cotyledons.

Scentless Mayweed – *Tripleurospermum indorum* (A)

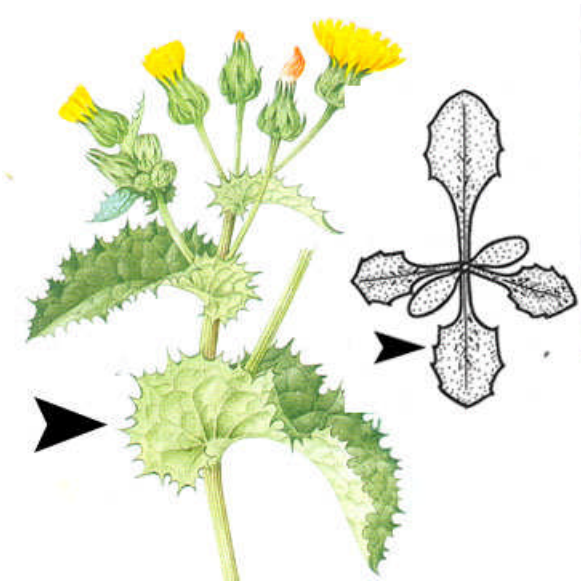


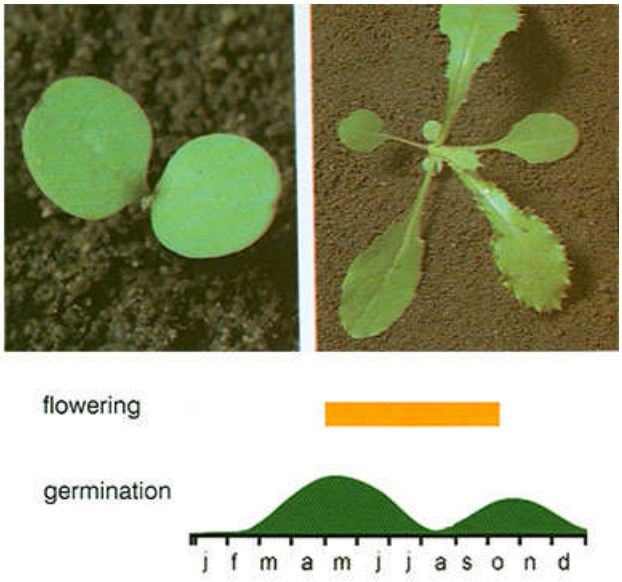


Taller and much less common than its cousin mayweed, this species is attractive when in flower during July to September. The first true leaf (arrowed) is lobed in comparison to mayweed. In the adult stage the finely divided leaves combined with large attractive daisy like flowers will guide you to the identification of this species. Found on waste ground, roadsides and occasionally on arable ground. Grows 30-80cm high. Occasional.

Similar: looks like mayweed as previously described but the leaves are scentless and are more finely divided.
The flowers are very similar to oxeye daisy (*Leucanthemum vulgare*), a common wild flower, but the leaves are completely different in the two species – the leaves on the right are those of oxeye daisy.

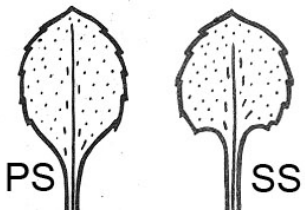
Prickly Sowthistle – *Sonchus asper* (A)



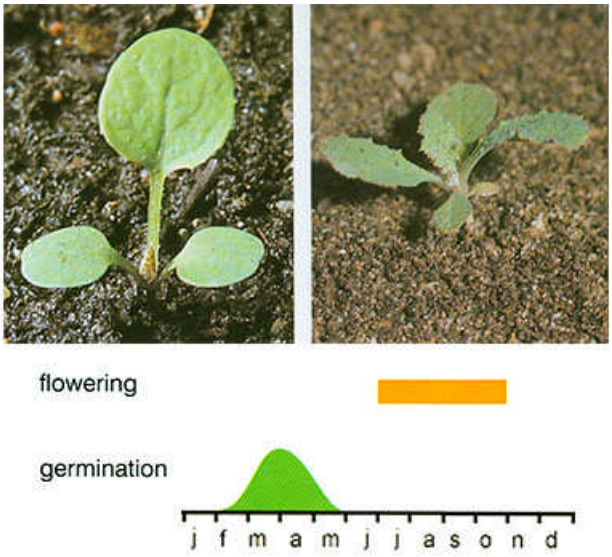


Though not quite so common as smooth sowthistle you won't have too many problems finding prickly sowthistle. Both species look somewhat alike but the difference between the two lies in the common names – if you grasp common sowthistle it's smooth or soft to the touch whilst prickly sowthistle feels softly sharp. The other key difference is the leaf bases – in prickly sowthistle they are rounded, in common sowthistle they're pointed. The leaf of the prickly sowthistle is shiny and usually wavy whilst those of the common variety are a slight bluish-green and flatter. Take note that the all the sowthistles have downward pointing teeth on the leaf margin of the first true leaves.

Similar: smooth sowthistle, as above and the base of the first true leaf is less cut away than with smooth sowthistle.



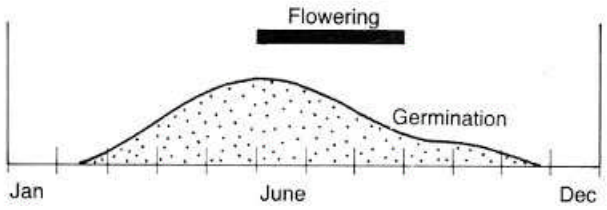
Perennial Sowthistle – *Sonchus arvensis* (P)



There are 3 sowthistles and this one is the least common of all – you'll occasionally find patches of it in tillage fields. It can be awkward to control with selective herbicides as it comes equipped with an underground rhizome root system. This allows it to persist in fields.

Perennial sowthistle growing from a root stock

Smooth Sowthistle – *Sonchus oleraceus* (A)



This is an extremely common annual weed of disturbed ground and waste places. Sometimes found in arable fields but not of great importance as a tillage weed. The cotyledons are oval shaped and the first leaves are markedly cut away at the base. The adult leaves are a dull bluish-green colour. The stem is hollow and exudes a white sap if cut. Yellow dandelion like flowers are produced from June to August.

Sowthistle seedlings

Similar: could be confused with prickly sowthistle but if you grasp this species the leaves are sharp to touch whereas smooth sowthistle is smooth to touch. Another difference are the bases of the clasping leaves – smooth sowthistle has pointed ends (arrowed), the prickly sowthistle has rounded ends. Also similar to nipplewort in the early plant stage but the leaves are smooth not hairy.

Colt's Foot – *Tussilago farfara* (P)

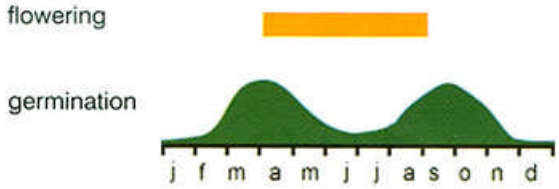
This is a perennial weed that you more associate with rough ground and roadsides but can occasionally become established in tillage fields. Local in occurrence but can be a nuisance because it's difficult to control with herbicides. Associated with heavy, damp clay soils.

Whilst seedlings do occur most plants will arise from root fragments. Colt's foot also develops underground stems called rhizomes that spread the weed over a wide area and subsequent cultivations can result in even greater dispersal.

The first leaves are broad, hairy and have teeth on the margins. Subsequent leaves are large, angular and are covered with downy white hairs on the underside of the leaf. The bright yellow flowers are distinctive in that they flower in March and April before the leaves appear.

BORAGINACEAE

Forget-me-not – *Mysotis arvensis* (A)



We don't have many blue flowered weeds – Forget-me-not is one of them. It's a annual or biennial plant that you'll find on rough ground and the odd time in arable situations, usually on dry, well drained soils. The cotyledons are small, round, dark green and have the unusual feature of hairs. The seedling appears to be close to the ground. Those that germinate late will overwinter as a rosette. Key features are the dull hairy leaves and small blue flowers, that appear any time from April to August. Widespread and frequent but not a problem in tillage fields – more of a garden weed.

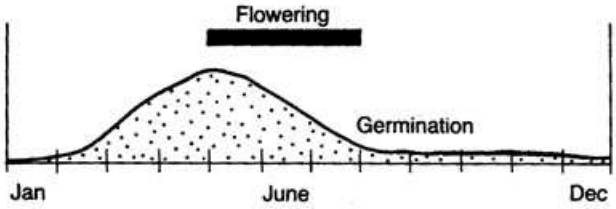
Similar: in the seedling stage can be confused with common mouse-ear - see bottom of page 21 for differences. Also looks rather similar to the garden variety, *Mysotis sylvatica*, which has been reported as a garden escape, but the flowers of *M. arvensis* (3-4 mm) are smaller than those of *M. sylvatica* (6-8 mm).

M. sylvatica

BRASSICACEAE (formerly CRUCIFERAE)

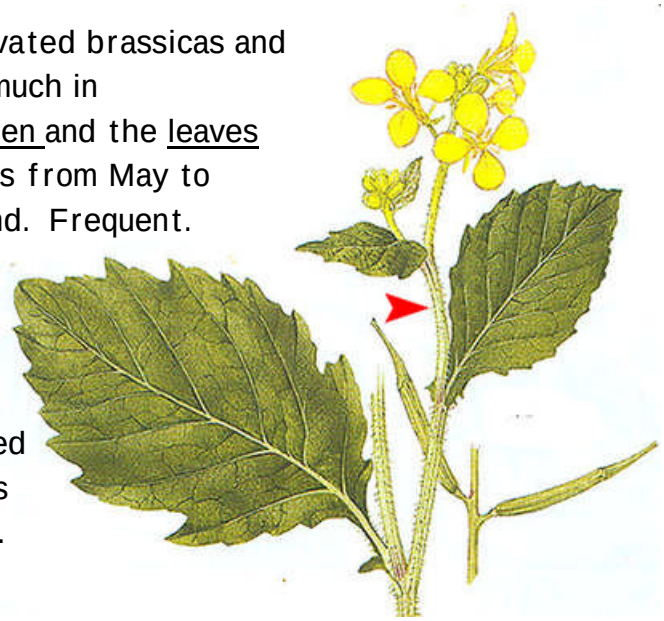
Crops: oil seed rape, cabbage, sprouts, cauliflower, broccoli, swede, radish, turnip, rocket

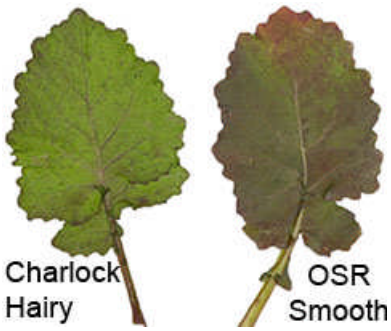
Charlock – *Sinapsis arvensis* (A)



If you are driving along in late spring/ early summer and you notice a profusion of tall yellow weeds at the side of the road, the likelihood is that they are either charlock or wild turnip (*Brassica rapa*). Charlock is a fairly distinctive brassica weed that is commonly found in arable fields, gardens, roadsides and waste places. It was a problem in cereals until the introduction of 2,4-D after the last war. And it's still is a problem in brassicas especially in swedes where there are no effective herbicides available to control it. It's also responsible a variety of brassica problems such as club root and cabbage root fly.

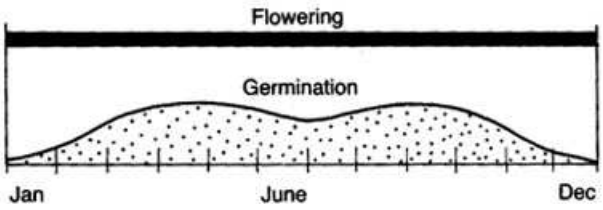
The seed leaves are very similar to cultivated brassicas and the typical 'brassica' flowers don't help much in identification but the foliage is dark green and the leaves and stems are rough to touch. It flowers from May to August. Prefers heavy, calcareous ground. Frequent.



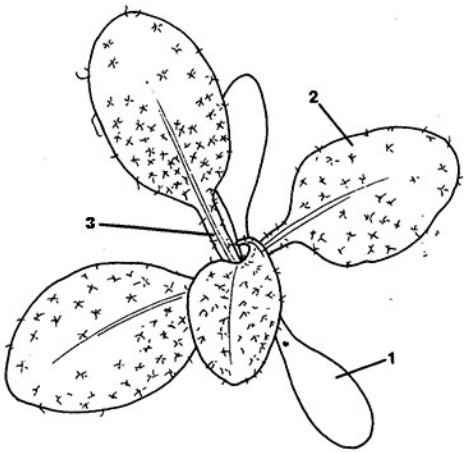


Similar: oil seed rape which has smooth leaves.

Shepherd's Purse – *Capsella bursa-pastoris* (A)



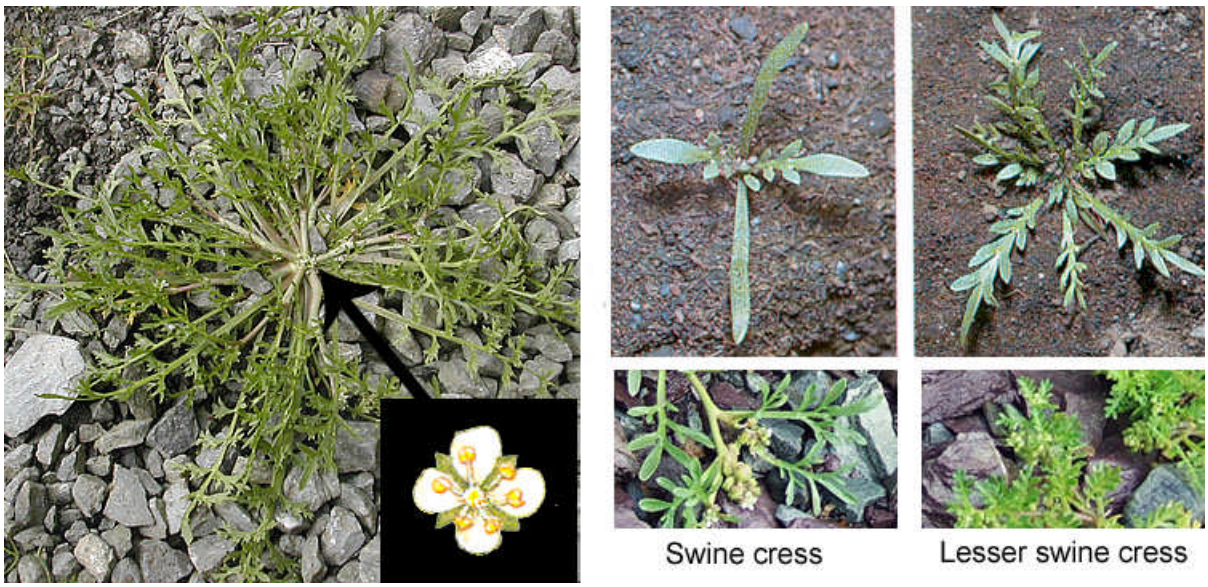
Shepherd's purse is a very common weed especially in vegetable fields as it's a member of the Brassica family and as such is resistant to a lot of the brassica herbicides. This weed not so easy to identify in its vegetative stage as you can get different phenotypes – just a big word meaning different leaf shapes. However the good news is that it's easy to identify when its characteristic triangular shaped seed heads are formed. The flowers are small and white. Waste places, arable ground and gardens. Abundant.



1. Cotyledons are small and narrow.
2. First true leaves with star like hairs.
3. First true leaves with distinctive stalks.

Close up of flowers

Swine Cress – *Coronopsis squamatus* (A)



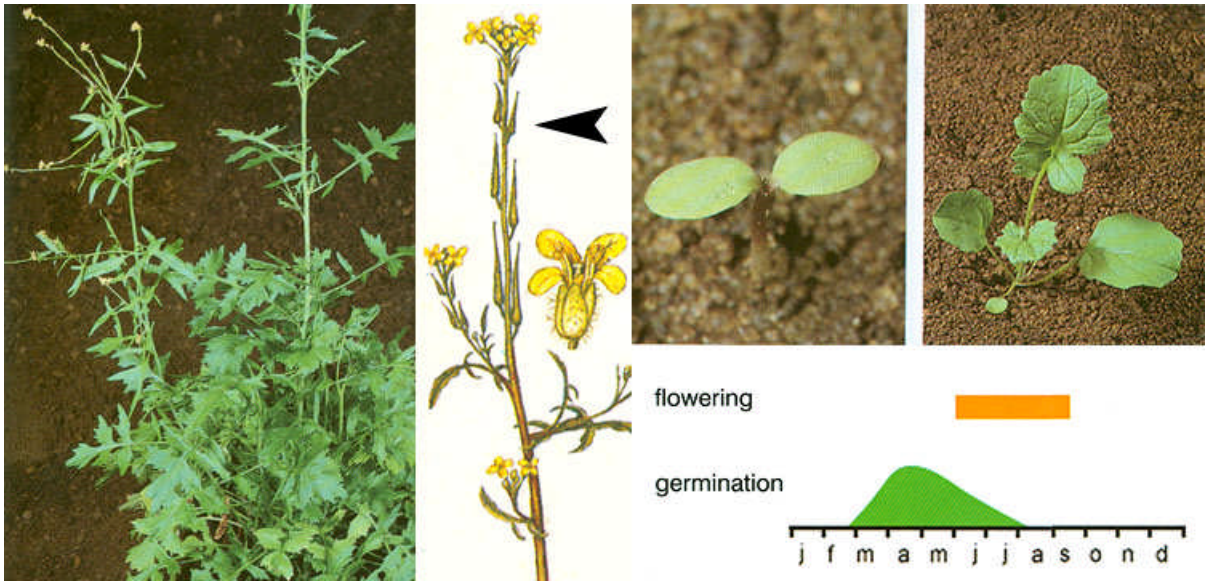
Swine cress is an occasional weed particularly in coastal counties that you'll come across in trampled ground conditions such as pathways, gateways and around cattle troughs but also on waste ground and sometimes in tillage fields.

It has a little brother called *C. didymus*, lesser swine cress, an annual weed from South America that's on the increase in this country particularly in the southern half. Both look rather similiar but there are a couple of defining differences. The foliage of swine cress is broader - see image above. In flower you'll notice that swine cress has very small (2-3 mm) but visible white flowers, the lesser version has no petals and are difficult to see. If there are no flowers present just crush the foliage between your fingers – lesser swine cress has a pungent cress smell, swine cress doesn't.

Above images: lesser swine cress. Foliage and fruit on the left with a close-up of fruit on the right showing characteristic notch at the top of the fruit.

Similar: could confuse these two with the mayweeds in the seedling to young plant stage but the long swine cress cotyledons distinguish them.

Hedge Mustard – *Sisymbrium officinale* (A)

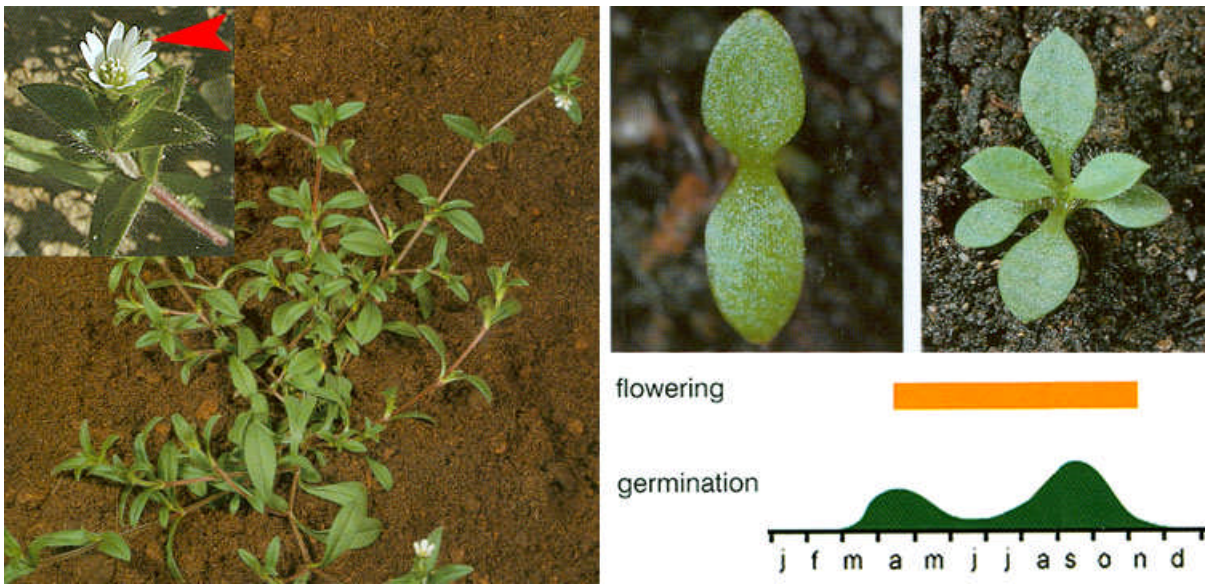


Hedge mustard is a common plant of hedgerows, road sides and waste places but less often in arable ground. When you do find it in tillage fields it's usually growing on headlands or close to the ditch.

It is an annual or over wintering annual and the image below shows a late germinating plant in the rosette stage. In the springtime it will shoot up to 30-70 cm tall to flower and set seed. It's a very distinctive weed in the seed stage as the small yellow flowers develop into seed heads that are pressed close in to the stem. Another feature to note is the flowering shoots grow at right angles to the main stem.

CARYOPHYLLACEAE

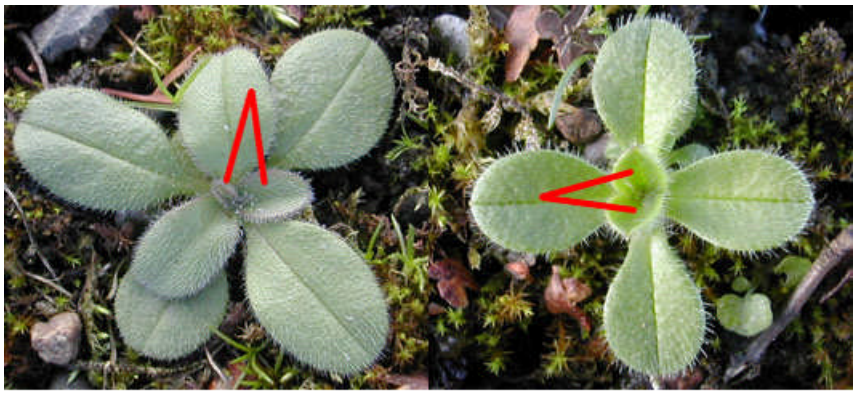
Common Mouse-ear – *Cerastium fontanum* (P)



This is a common wild flower that can occur in tillage fields but is a low growing, and largely inoffensive weed; not a problem. It has a loosely tufted appearance when young and later develops a sprawling habit with ascending flower heads. Widespread and common in grassland, waste places and cultivated ground.

It is a perennial plant by nature but acts as an annual in arable crops as it comes readily from seed. The cotyledons are very small and hairless and the adult leaves are hairy to the touch. The white flowers have distinctly notched petals.

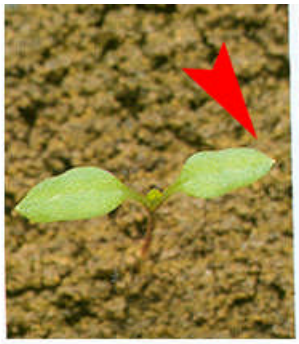
Similar: could be confused with forget-me-not in the small plant stage but the leaves of common mouse-ear are opposite on the stem and forget-me-not are alternate – see image below.

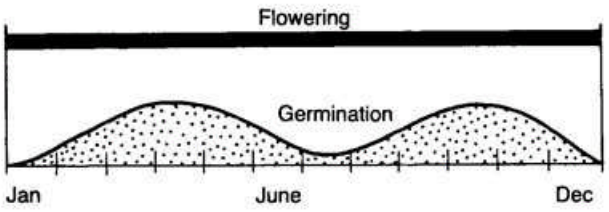


Alternate Opposite

X 1.5

Chickweed – *Stellaria media* (A)





One of the commonest weeds of arable fields and gardens is chickweed. It seemingly pops up every time you disturb the soil. You'll even see it growing alongside walls, on top of walls, cracks in pavements and sometimes will attempt to secure a toe-hold in lawns and grassland if there's a bit of bare ground within those habitats. The leaves and seeds are eaten by birds – hence its ability to spread widely.

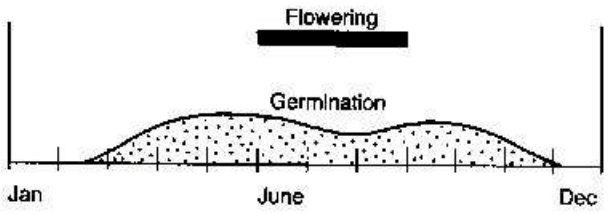
It has two main germination phases – spring and autumn - the cotyledons are a light pale green, oval in shape and pointed at the ends. Chickweed has shallow, fibrous roots which make it easy to hand weed. The plant's weak stems mostly trail along the ground and in fertile, friable ground can choke plants or a crop as it spreads e.g. autumn sown scallions. The stems branch very frequently and take root at the leaf junctions. If you look very closely at the stems, you'll see a single line of hairs running up the side, and you'll notice that the line changes sides at each leaf junction. The small white flowers can be seen every month of the year; it's a prodigious seeder – up to 15,000 per plant.

It will as happily grow in shaded areas as out in the open and can be found over a range of pH's except in very acidic soils.

Chickweed can flourish in the cooler, damper conditions of autumn – seen here doing its best to choke a crop of leeks.

Similar: common mouse ear but that has a hairy leaf.

Corn Spurrey – *Spergula arvensis* (A)



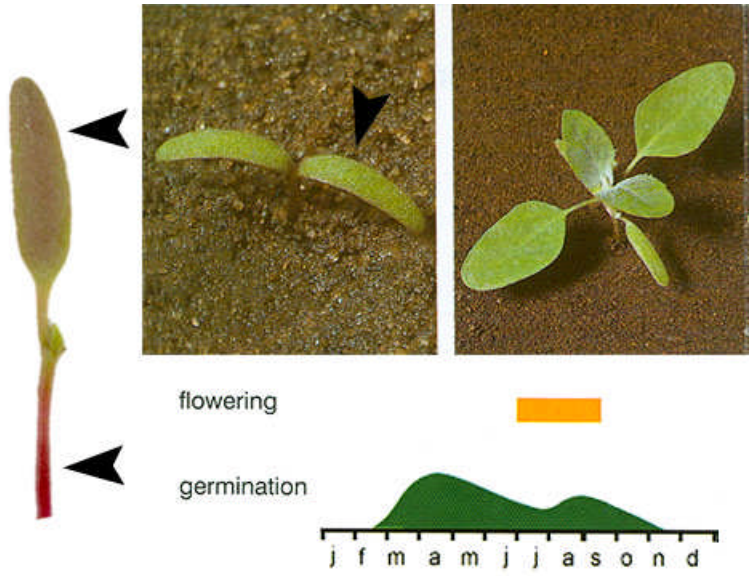
You will occasionally come across this weed, especially on light, acid ground. It is quite a distinctive weed with its long, thin cotyledons followed by equally long, thin adult leaves arranged in whorls. Up to two generations a year occur as seed can be set within 10 weeks of germinating. It's in flower from June to September and the small white flowers open for 3-5 hours per day from noon onwards. It's not a problem weed as most of the herbicides used in cereal crops can control it.

CHENOPODIACEAE

Crops: beetroot, spinach, Swiss chard

Two weeds in this family concern us: fat hen and orache. Both are very common annual weeds often found growing side by side. One can get confused between them as they look rather similar but there are differences to help tell them apart. These weeds germinate during the spring and summer – you won't see them in the winter.

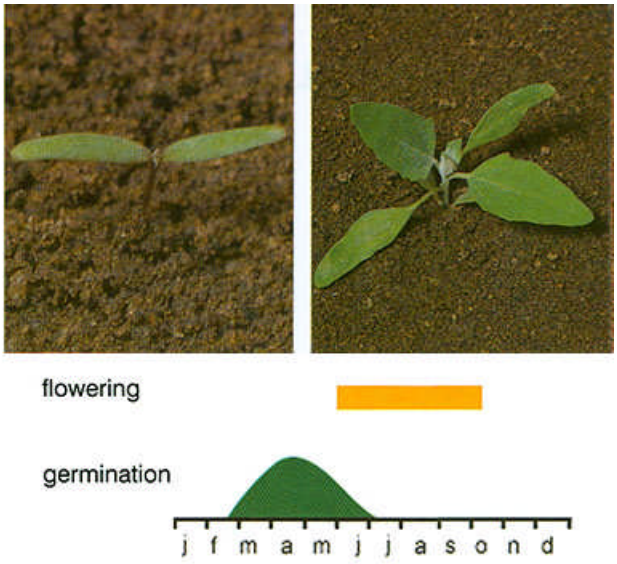
Fat Hen – *Chenopodium album* (A)



Fat hen or lamb's quarters is a common annual tillage weed that can grow as high as a house in rich ground if you let it. The seedling has strap shaped seed leaves with a distinctive purplish colouration on the undersides (see image above). The other characteristic of fat hen is its upright habit and the leaves are alternate and mealy (especially the youngest ones). Mealy is the term for the visible wax layer on the leaf gives a silvery look to them. Fat hen always keeps this mealy appearance right to the end – the flower heads look silvery in colour while the orache flower heads have a reddish hue to them. Fat hen was eaten as a vegetable from Neolithic times until the 16th century when it was replaced in the diet by spinach and cabbage. Frequent.

Similar: orache – see comments above.

Orache – *Atriplex patula* (A)



The orache cotyledons are similar in shape to fat hen but are green underneath rather than purple. The other common name of orache is creeping fat hen and this is a dead giveaway in distinguishing the two – if you come across large fat hen and orache growing side by side you'll plainly see the side shoots of orache sprawling on the ground as against the much more upright habit of fat hen. Other distinguishing features of orache are the little points at the base of the first true leaves and you may notice a slight redness to the edge of the leaf. The leaves are opposite each other rather than alternate as in fat hen.

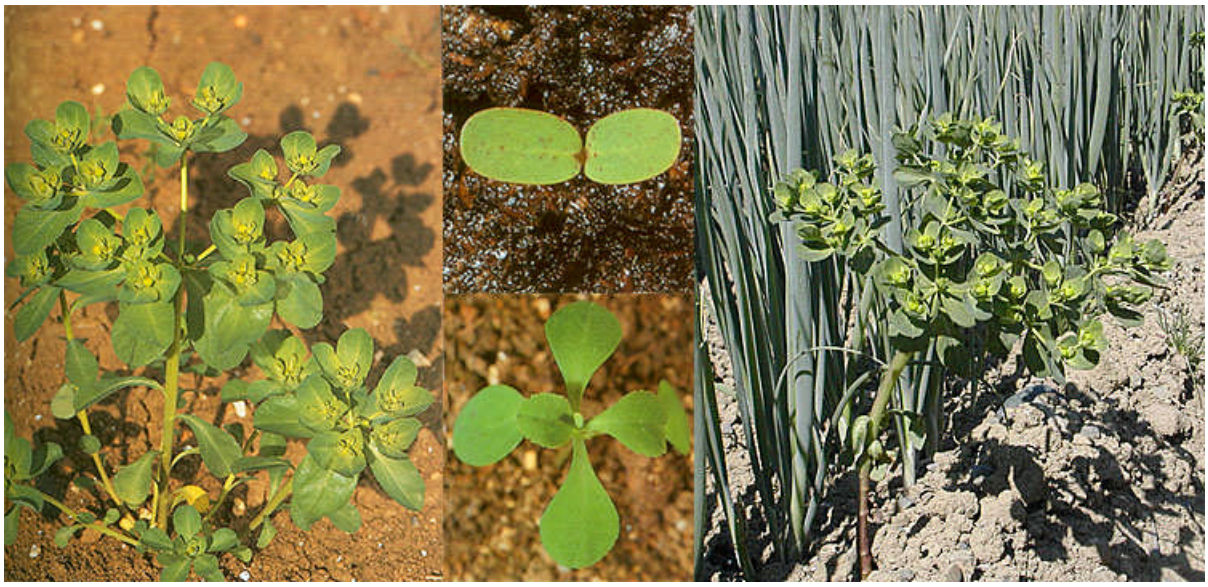
It flowers from July to September and the seeds can last in the soil for up to 30 years. You will note from the graphs that orache doesn't germinate as late in the season as fat hen. Tends to avoid the more acid soils. Frequent.

Similar: fat hen – see comments above.

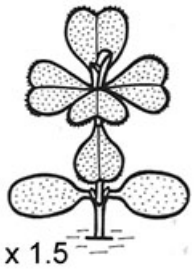
Typical sprawling growth of orache

EUPHORBIACEAE

Sun Spurge – *Euphorbia helioscopia* (A)

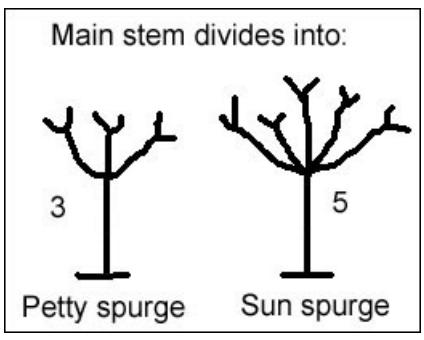


You'll find this weed in tilled ground and waste places. Quite commonly seen in vegetable fields but it never develops into a weed problem as it doesn't grow in stands. It tends to be single stemmed, but sometimes branched at the base, growing to 20-45 cm high – a taller and larger plant than petty spurge which is a common garden species. If you break the stem you get a characteristic white sap exuding. Seen above growing in a crop of scallions. Very frequent.



- Cotyledons long oval in shape often with brown markings.
- First true leaves are oval in shape and have small serrations towards the tip of the leaves, unlike petty spurge which are smooth.
- Cotyledons are purple underneath.

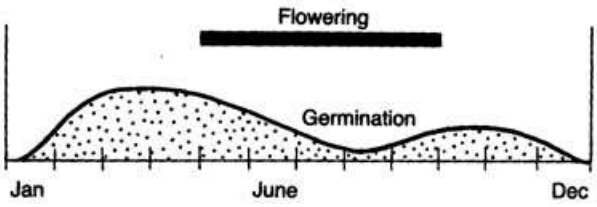
Similar: petty spurge (*E. peplus*), smaller in all its parts and the main stem divides into 3 flowering stems; sun spurge divides into 5 flowering stems.



FUMARIACEAE

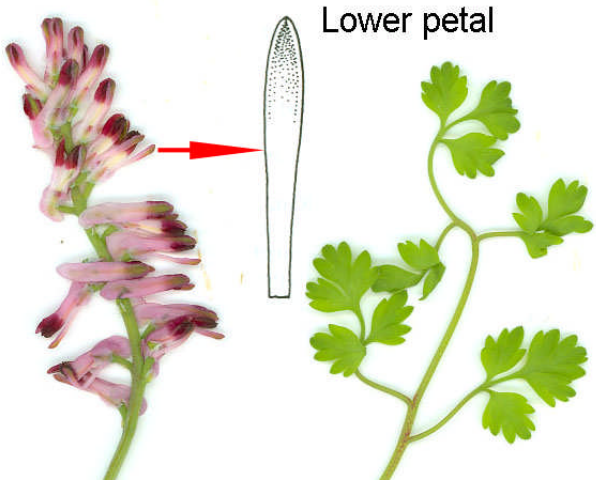
There are two species of fumitory both fairly commonly found in tillage fields, gardens and on waste ground with *F. muralis* slightly the commoner of the two. They both share the characteristic long strap shaped seed leaves and the feathery foliage - would remind you of carrots and certainly when you see either of them just germinated in a row of germinating carrots you have to check twice to differentiate the weed from the crop. The two species can be identified apart by leaf colour and when in flower.

Fumitory – *Fumaria officinalis* (A)



This is a common weed of arable land and gardens, particularly on light soils. Its foliage is feathery in shape and is distinctly more blue-green in colour than the leaves of common ramping fumitory. The flower length is also smaller – less than 1 cm. Note also the lower petal of the flower – it's spoon shaped.

Common Ramping Fumitory – Fumaria muralis (A)

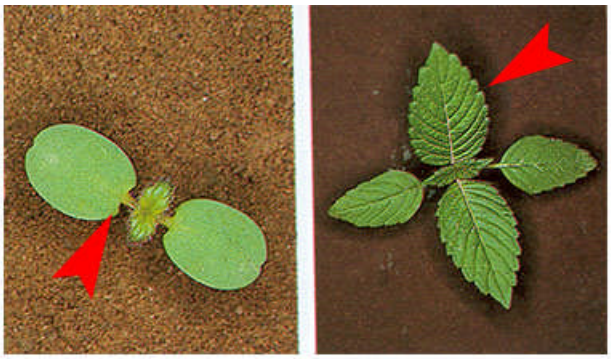


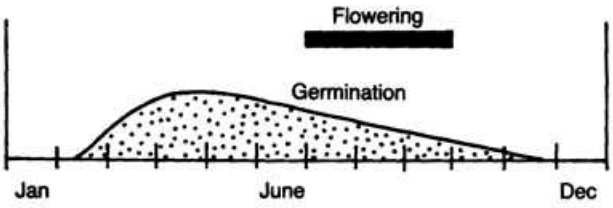
This species is distinguished from *F. officinalis* by the larger distinctly purple tipped (>1 cm) flowers that have a lower petal with parallel sides . The foliage is broader with less of a feathery look to it and is lighter green in colour.

LAMIACEAE (formerly LABIATAE)

Crops: mint, sage

Hemp-nettle – *Galeopsis tetrahit* (A)

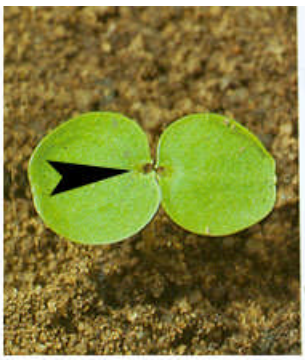


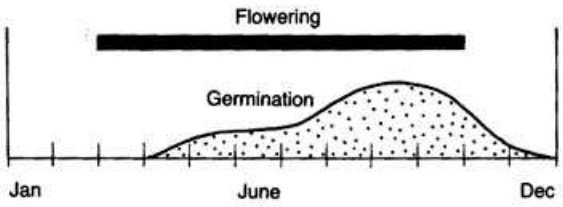


Hemp-nettle is a reasonably common arable weed that crops up in spring cereals and vegetable crops. Grows on a wide range of soils but possibly found more frequently on damper sites. Not a problem weed as most of the herbicides will control it. It's a spring germinator with large cotyledons that have backwardly pointing lobes. The leaves have distinctly regular veining and teeth. It flowers from July to September and the leaves are coarsely hairy. Square stems.

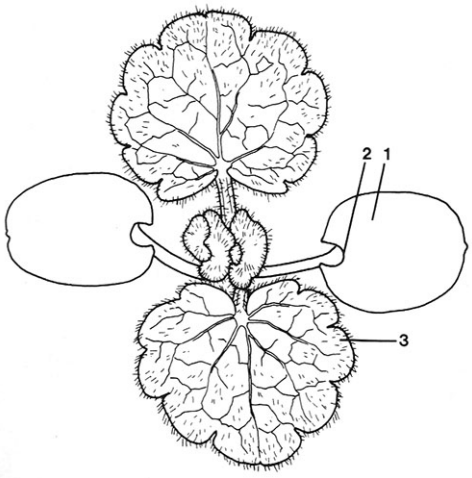
Close-up of the flowers

Red Deadnettle – *Lamium purpureum* (A)





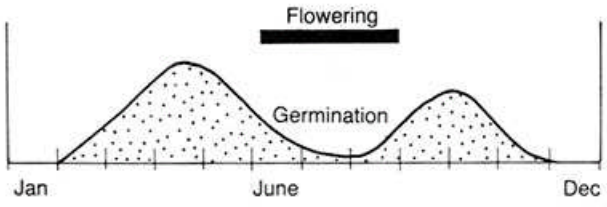
This common annual weed is easy to recognise in the seedling stage with its round notched seed leaves, the early leaves that are similar to the adult ones, and the square stem of the older plant, typical of the Lamiaceae family. You get large numbers of seedlings in the autumn. Purple flowers. The leaves somewhat resemble a nettle but don't sting, hence the name deadnettle. Found in waste places and tilled areas. Frequent.



1. Vertical hypocotyl and horizontal cotyledons make it stand away from the ground.
2. Distinctive notch at base of cotyledon.
3. First true leaves evenly notched, with prominent branched veins, hairy.

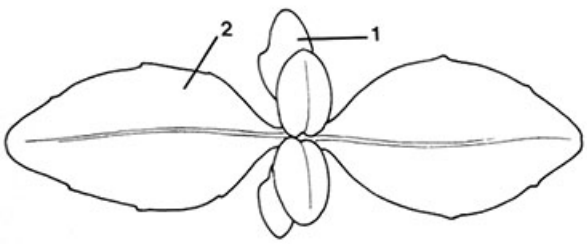
ONAGRACEAE

Broad Leaved Willowherb – *Epilobium montanum* (P)



Willowherb is a common plant in Ireland and there are quite a few different species that can be a bit confusing to tell apart. They all share one thing in common – the seed is spread by the wind and this means they tend to be widespread. Broad leaved willowherb can be found everywhere: cities, woods, waste ground, gardens, nurseries and on arable ground. Whilst it commonly appears in tillage fields it's not a problem weed.

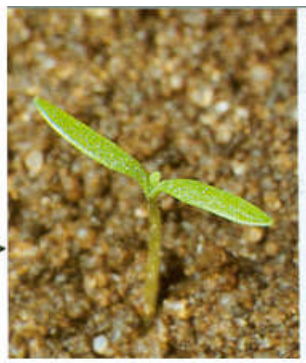
How do you tell this species apart from the other two common ones, American willowherb and hoary leaved willowherb? As the name suggests the leaves are broad, opposite and smooth. The pinkish mauve flowers are about 1 cm across and the stigma is 4 lobed. It tends to favour neutral to calcareous conditions.

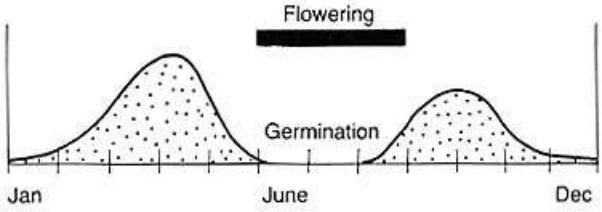


1. The cotyledons are very small and lie close to the ground.
2. The first true leaves are shiny, yellowish green and lie close to the ground.

PAPAVARACEAE

Common Poppy – *Papaver rhoeas* (A)





The striking red flowers of the poppy make this one easy to recognise. In flower from June through to September with the flowers lasting just a day before the petals drop off and blow away. It's a prodigious seeder with a possible output of 20,000 seeds per plant. The seed need light to germinate and is a shallow germinator. They can last for years in the soil until brought to the surface by cultivation or soil disturbance. Hence the appearance in their multitudes on the battle scarred terrain of Flanders and The Somme in World War 1. For similar reasons you'll also see them appear alongside new roads just after they are built. It has two periods of germination – spring and autumn and is more of a weed in cereals than vegetables. Frequent in the south, centre and east, rarer in the west and north.

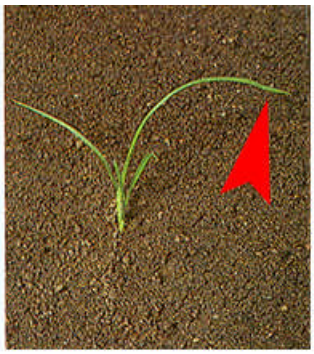
Similar: the coarse spreading hairs on the flower stem distinguish the common poppy from *P. dubium* where the hairs are not spreading and the flower is light red in colour rather than bright red. The rosette stage is a little similar to shepherd's purse but hairs are single and not star shaped – you'll need a hand lens to see this feature.

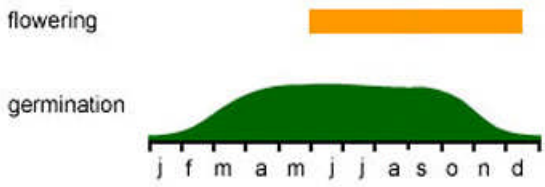
POACEAE

Crops: wheat, barley, oats, rye, millet, maize, rice, sugar cane

Hugely important family as it contains the cereals that supply a large proportion of the food we eat. It also contains a number of species that are weeds and because they are in the same family as cereals can be difficult to control in these crops. The most important grass weeds in cereals are: wild oats, annual meadow grass, sterile brome and rough stalk meadow grass. Grasses are known as monocots, which means that they only have one cotyledon or seed leaf unlike the rest of the broadleaved weeds which have two.

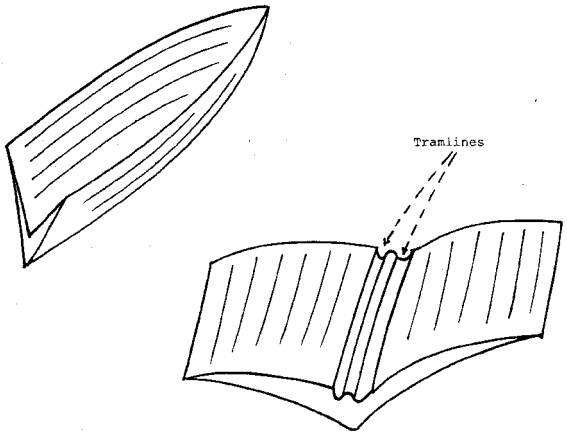
Annual Meadow Grass – *Poa annua* (A)



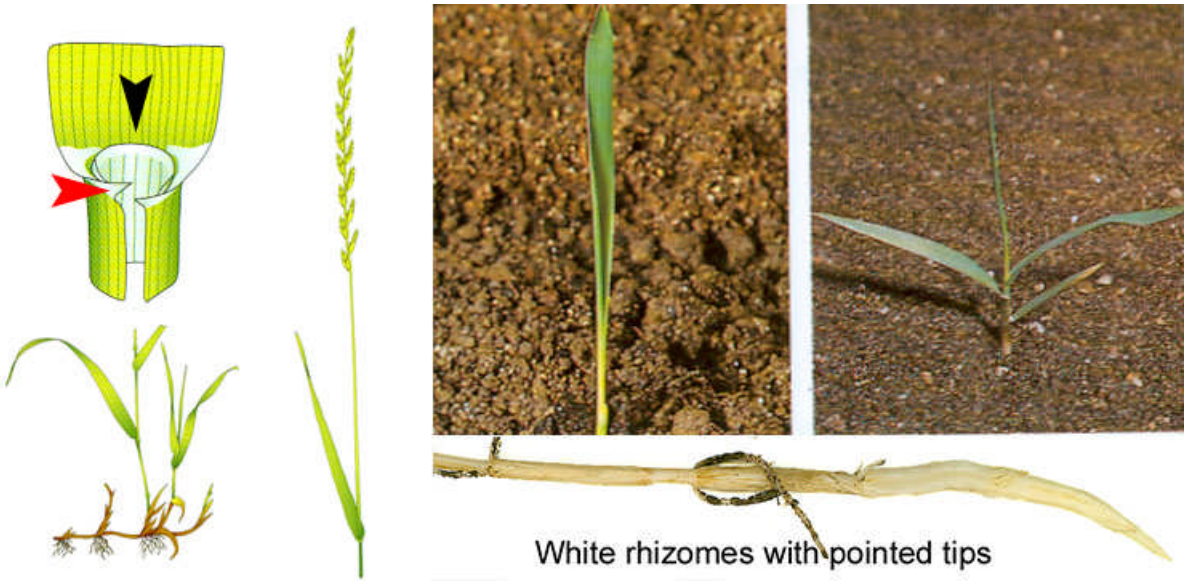


Annual meadow grass is an abundant tillage weed that can be found at any time of the year in virtually all fields. It's a tufted annual or short lived perennial, usually quite low growing. What it lack in scale it makes up for in numbers - one can have huge amounts germinating giving a mat of grass that can be quite competitive with crop growth.

It has light green hairless leaves that are flattened with a curved tip (boat shaped). The underside of the leaf has a central ridge, with tramlines on the upper surface. You will need a hand lens to observe these leaf features clearly. It flowers all year round and can complete its lifecycle in as short a period as 6 weeks.



Scutch Grass – *Elytrigia repens* (P)



Scutch grass which is referred to as couch in the UK is a very common weed of tillage crops. If allowed to establish it can become very competitive with all crops. Fortunately there are some very effective grass herbicides available to control it.

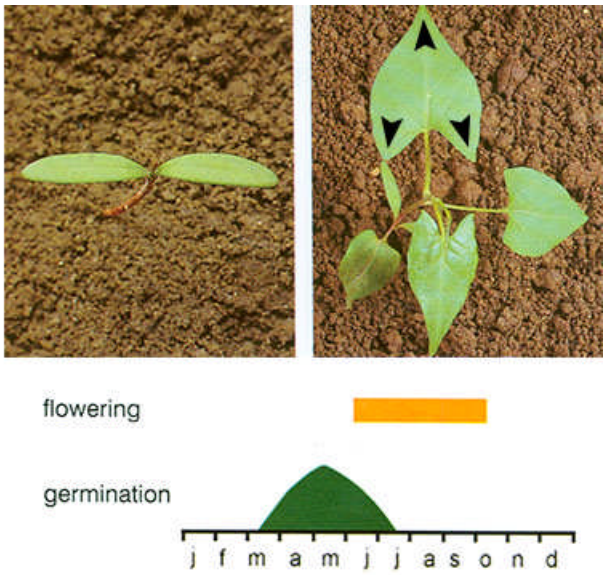
This is a perennial grass with vigorous underground stems called rhizomes which if broken up will readily regrow – see image below. The leaves are a dull green in colour, somewhat broad and the leaf is slightly rough to the touch if you pull the blade backwards between your fingertips. The ligule (black arrow) is very short (1 mm – hard to see!) and the auricles (red arrow) are short and pointed. It does flower but doesn't set a lot of viable seed and mostly spreads vegetatively through the growth of its rhizomes. Mature shoots die back in the late autumn but young shoots can overwinter.

POLYGONACEAE

Crops: rhubarb

This family includes the docks and three common tillage weeds – knotgrass, redshank and black bindweed, all of which have red coloured hypocotyls.

Black Bindweed – *Fallopia convolvulvus* (A)

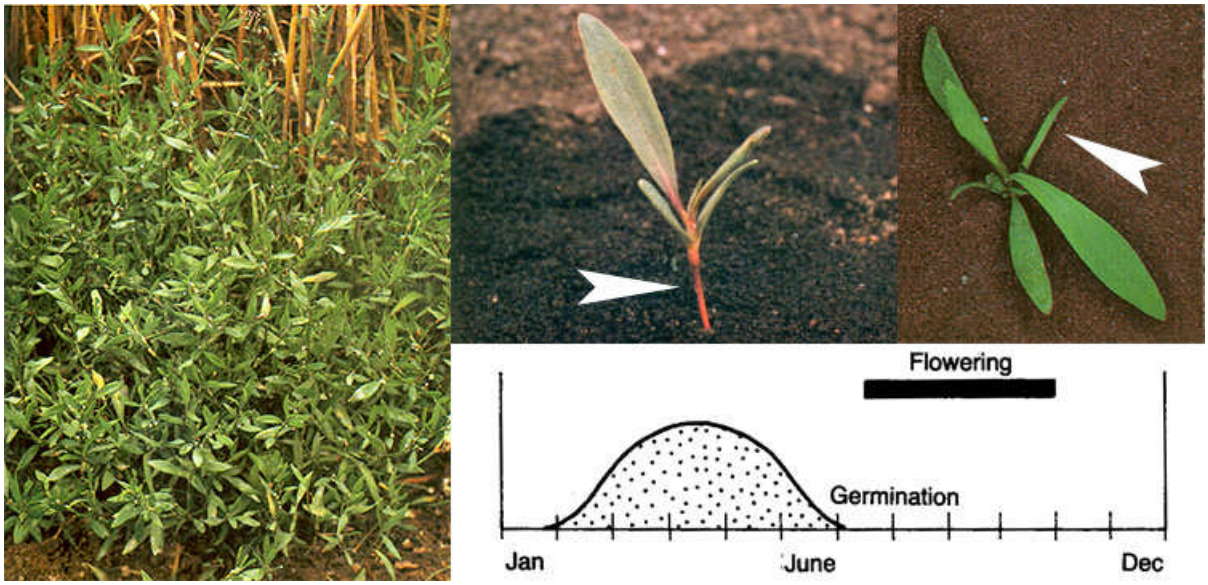


This is a common, annual, twining weed, that can choke crops if left unchecked. The flowers are insignificant, typical polygonums, not much to look at, so we're left with the leaves for ID purposes. Don't confuse them with the Convolvulus species, as they look similar and hence the common name reference of black *bindweed* and indeed the specific name *convolvulus*. The characteristic feature is a leaf with three pointed lobes – spear shaped. Very frequent.

Similar: the cotyledons could be confused with those of redshank as both have red hypocotyls but the seed leaves of black bindweed are long rather than the more oval redshank cotyledons. Once the first true leaf appears identification is much easier as it has the typical black bindweed leaf. Also field bindweed, which is uncommon in tillage, has a more rounded apex to the leaf.


Field bindweed

Knotgrass – *Polygonum aviculare* (A)



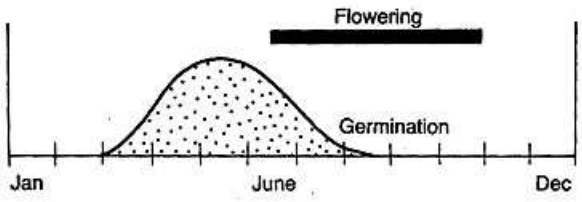
Knotgrass is a tough as old boots weed that is equally at home in the city centre surviving between paving cracks or luxuriating in a cereal field in the middle of the countryside. This is an annual weed that can grow to quite a size if it's let and unlike redshank is just at home on alkaline ground as acidic. Can be difficult to control with herbicides beyond the young plant stage. Common.

The key ID features are a red coloured hypocotyl and very thin cotyledons with a first leaf that could be confused with redshank – but look for the thin seed leaves.

Similar: redshank in the young seedling stage.

Knotgrass growing on hard, compact ground

Redshank – *Persicaria maculosa* (A)

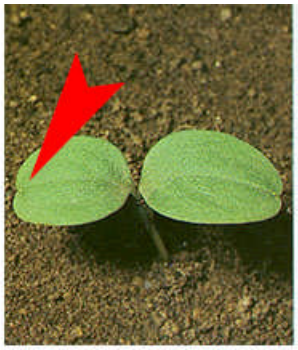


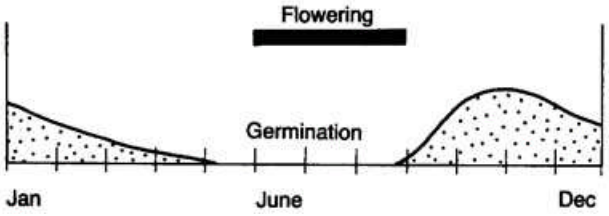
If ever there was a weed designed to smother a crop, redshank is it. It can germinate en-masse to give a sea of redshank covering an entire area, and end up half a metre tall with the crop disappeared from view. It's a species associated with damp, acidic soils but is frequently found on well drained ground as well. It is interesting to note that it's one of the few tillage weeds absent from the very alkaline soil of Kinsealy. It's a common weed in arable situations. It germinates in the spring and early summer with the seedlings having a distinctive red hypocotyl with oval dark green seed leaves . The mature plant can easily be recognised with the dark blotch in the centre of the leaf. The only other species that looks similar to it, is the much less common pale persicaria (*P. lapathifolium*) which doesn't have a blotch and can be found side by side with redshank. I have often noticed redshank germinating in crops after ploughing up old ley – seeds must be long lived. Abundant.

Here we have *P. persicaria* (red flowers) growing along with *P. lapathifolium* (white flowers)

RUBIACEAE

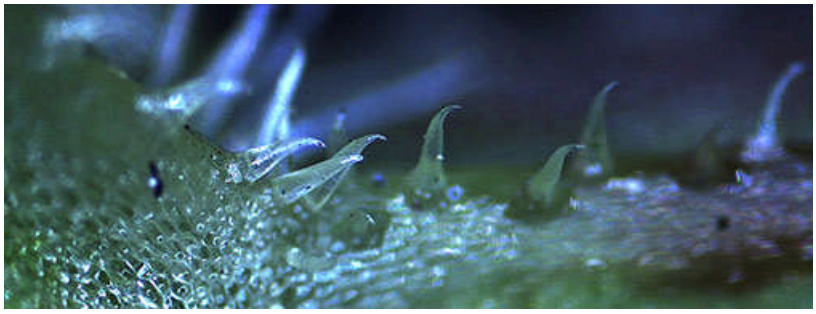
Cleavers (Robin-run-the-hedge) – *Galium aparine* (A)

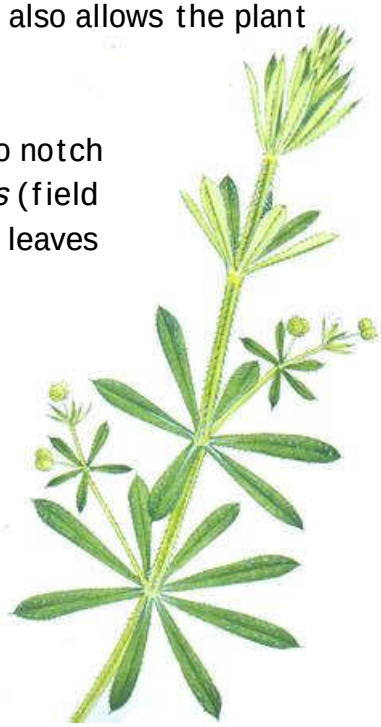




Cleavers is a annual weed that's commonly found in both gardens and arable areas and is a very competitive weed especially in cereals. It's often found near the margin of tillage fields where it moves out from the hedgerow. Can be an awkward weed with an ability to smother whatever its growing beside plus its resistance to a number of herbicides. Cleavers is distinctive in several ways. It's unusual in that it starts to germinate in the autumn, from September on, right through to spring. It has large seed leaves notched at the end and the subsequent adult leaves are produced in whorls, which look unlike any other weed. If you examine any part of the stem, leaf or seed closely you'll see them covered in tiny barbs (see image below) – this is a dispersal mechanism for the seed as they can hook onto animals passing through. They also allows the plant to clamber up others and get its head into the light.

Similar: ivy leaved speedwell in the cotyledon stage but no notch and cleaver is a stouter seedling. Also *Sherardia arvensis* (field madder) that looks a little like a mini-cleavers but smaller leaves and tiny blue flowers distinguish it.

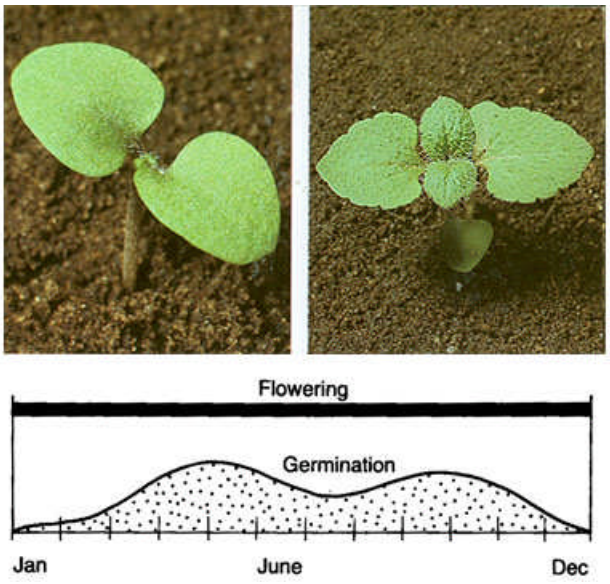




SCROPHULARIACEAE

There are two species of speedwell that you'll come across in tillage situations – common field speedwell and much less commonly, ivy leaved speedwell.

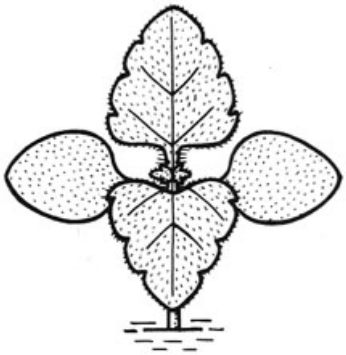
Common Field Speedwell – *Veronica persica* (A)



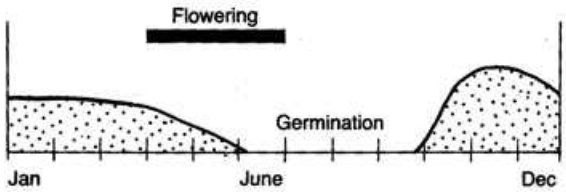
If you come across a weed with blue flowers in a tillage field or vegetable garden the likelihood is that it's this species – common field speedwell. As you can see from the chart it germinates and flowers throughout the year. The cotyledons are spade shaped, medium size and the first true leaf margins are shallowly and regularly notched and hairy. It has a sprawling habit, with large flowers on long stalks – well, large in comparison to the other veronica species. The leaves are light green in colour. Abundant.

This species is native to south-west Asia and first appearing in Europe around the 1800's. Irish records suggest that it arrived here prior to 1845 somewhere near Cork and was well established by the end of the 19th century.

Similar: the leaves on ivy leaved speedwell are dark green in colour.



Ivy Leaved Speedwell – *Veronica hederifolia* (A)



The Ivy leaved speedwell is more likely to be found in the garden than the field. Two things to point out about its early life – size of seed leaves and time of germination. If you see a weed seedling with large cotyledons on long stalks, in the middle of the winter, think ivy leaved speedwell. In comparison to the field speedwell the flowers are small, not that noticeable. If you see *V. hederifolia* growing alongside *V. persica* the ivy leaved version is darker green and the common field speedwell is a lighter green in colour.

Similar: the large cotyledons could cause confusion with cleavers, which are of a similar size and shape. However the cotyledons on cleavers have a distinctive notch at the apex and have a thicker stem.

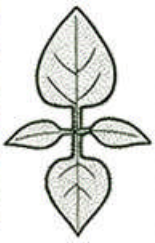
Look very similiar!

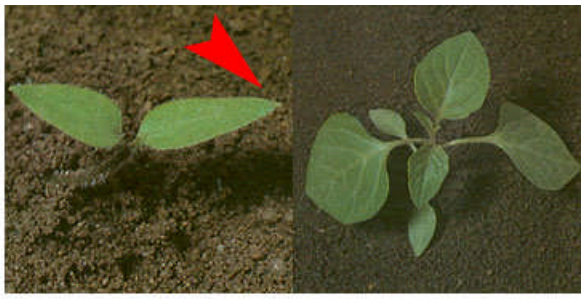
Leaf shape as an aid to identification can help and also confuse. The leaf of the ivy leaved speedwell is distinctly lobed in comparison to common field speedwell. But the smaller (younger) leaf of common field speedwell is very similar to that of red deadnettle and both are hairy. But one can tell them apart as the venation of the deadnettle is much more distinct and pronounced than that of the speedwell (unfortunately not evident from the image above).

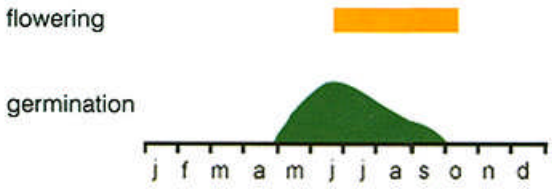
SOLANACEAE

Crops: potato, tomato, sweet pepper, chilli pepper, aubergine

Black Nightshade – *Solanum nigrum* (A)







Black because of the small black berries of this poisonous weed. All parts of the plants are potentially poisonous with the highest concentration in the unripened berries. I did hear of a case where nuns consumed the ripened fruit with no ill-effects. Divine intervention perhaps.

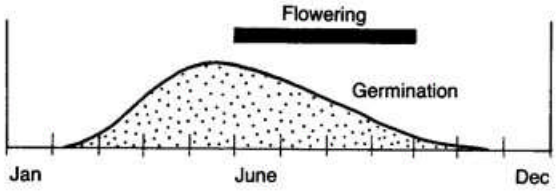
There is probably a heat requirement with this species as it is commonly found growing in old glasshouses and is associated with maize especially if it's grown under plastic. It also shows up in maize because nightshade is a late germinating weed. <u>The cotyledons are sharply pointed and hairy</u>. Being a member of the potato family it's hardly suprising that Black Nightshade looks a little <u>potato like in its appearance</u>. The <u>white potato like flowers</u> is also a key diagnostic feature. Take note that potato crops can the odd time produce fruit which germinates the following year – don't confuse them with nightshade seedlings. An occasional annual mostly seen in the south and east of the country.

Potato seedling

Similar: – potato seedlings as detailed above; you may come across bittersweet (*S. dulcamara*) in hedgerows and waste places. It's a pretty common shrubby type species <u>with purple flowers and red fruits</u>.

URTICACEAE

Annual Nettle – *Utrica urens* (A)



Every kid recognises nettles and wasps – they can both give you an unpleasant sting. Nettles are covered with tiny, nearly invisible stinging hairs that produce an intense, stinging pain, followed redness and skin irritation. The generic name comes from the Latin word, 'uro', which means 'I burn'. There are two species of nettle – the common nettle, a perennial found in grassland and annual nettle, found in arable fields.

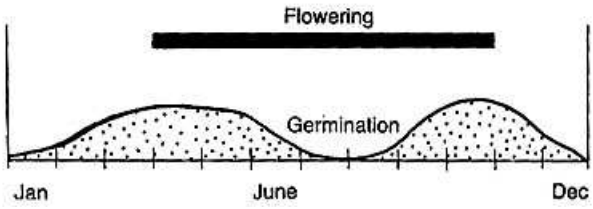
In North County Dublin annual nettle is known as 'the Rush weed' as it's extremely common on the rich sandy horticultural soils in that area. But it's found on heavier soils too, particularly those associated with market gardening.

The characteristic features of annual nettle at the germination stage is the apex of the seed leaf is notched and the first true leaf is very noticeably that of a nettle. The adult leaves look very similar to those of the common nettle except for one key difference – the base of the annual nettle is V shaped and the base of the common nettle is heart shaped. The other difference is size of plant; annual nettle is a lot smaller than the common nettle. Occasional.

Similar: the adult leaf makes annual nettle east to recognise but in the cotyledon stage it could be mistaken for red deadnettle, but that species has cotyledons that are very clearly notched at the base.

VIOLACEAE

Field Pansy (Heartsease) – *Viola arvensis* (A)



As the specific name suggests (arvensis = arable land) this is the pansy you'll find growing on tillage ground. As a weed it doesn't grow aggressively and is quite small in stature, so it normally doesn't cause big problems in crops. It's a pretty distinctive weed that you may occasionally come across – it's certainly not found everywhere. It's distinctive because it looks so like the familiar garden pansy, creamy white flowers with a yellow eye and the first true leaves have broadly rounded edges. Frequent in the south, east and NE, occasional elsewhere.

Similar: looks similar to the much less frequent wild pansy (*V. tricolor*) but the flowers of this species are violet-blue, cream in colour with the petals longer than the sepals.

List of illustrated weeds:

Apiaceae:	Fool's parsley
Asteraceae:	Creeping thistle, spear thistle, colt's foot, corn marigold, groundsel, mayweed, scentless mayweed, smooth sowthistle, prickly sowthistle, perennial sowthistle
Boraginaceae	For-get-me-not
Brassicaceae:	Charlock, shepherd's purse, swine cress, hedge mustard
Caryophyllaceae:	Chickweed, corn spurrey, common mouse-ear
Chenopodiaceae:	Fat hen, orache
Euphorbiaceae:	Sun spurge
Fumariaceae:	Fumitory, common ramping fumitory
Lamiaceae:	Hemp-nettle, red deadnettle
Papavaraceae:	Common poppy
Poaceae:	Annual meadow grass, scutch
Polygonaceae:	Black bindweed, knotgrass, redshank
Rubiaceae:	Cleavers
Scrophulariaceae:	Common field speedwell, ivy leaved speedwell
Solanaceae:	Black nightshade
Urticaceae:	Annual nettle
Violaceae:	Field pansy

Sources, acknowledgements and thanks:

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Weed Guide, by Bayer Crop Science
Encyclopaedia of Arable Weeds by HGCA
Irish Wildflowers website (recommended)

Stephen Alexander
Teagasc, Kinsealy, Co Dublin