

# Cover Crop

## Planting Specification Guide

## NH-340

### Selecting Cover Crops

Select cover crops, planting dates and seeding rates using either the Table 1 (located on pg. 4 of the cover crop standard) or Table 2b and Figure 1 at the end of this guide.

Ensure that crops are compatible with the cropping system and soils. Brief descriptions of the cover crops can be found at the end of this guide, and more detailed information can be found in the [Managing Cover Crops Profitably](#) publication or the [Cornell Cover Crop Guide](#).

Figure 1 shows the Major Land Resource Areas (MLRA) for NH. MLRAs are geographically associated areas that share a common land use, elevation and topography, climate, water, soils, and vegetation.

Figure 2 is the [USDA Plant Hardiness Zones](#) (PHZ) for NH and should be used to help determine when to plant within the defined seeding date range for a MLRA. If a farm is located in a colder/lower PHZ within a MLRA, consider planting the cover crop earlier in the seeding date range.

Germination % should be at > 80% or else the seeding rate should be increased to compensate. Consider using regional seed sources for improved reliability and performance.

### Establishing Cover Crops

Cover crops may be established using a variety of methods, including broadcasting, interseeding, drilling, frost/dormant seeding, manure slurry seeding, and aerial seeding. In general, seeding depth is related to seed size: larger seeds should be planted deeper. Care should be used to avoid planting small seeds too deep or large seeds too shallow.

Seedbed preparation will depend on the species used, and the timing and method of planting. It is essential to provide good seed-soil contact. Most cover crops will not perform well if broadcast on a compacted or crusted surface.

If seeding the cover crop prior to harvest of the primary crop, no seedbed preparation is needed.

Cover crops that are established with a grain drill are much more effective and economical than those established via broadcast.

### Frost and Dormant Seeding

Frost seeding involves broadcasting appropriate species just after snowmelt in late winter/early spring. The freeze-thaw action of the soil works the seed into the soil. Frost seeding should be done early in the morning when frost is still in the soil. Seed early enough allow for several freeze-thaw cycles.

Dormant seeding involves broadcasting appropriate species in the early winter just after the field has frozen and the air temperature is low enough to prevent germination. Ideally this is just prior to snowfall. Seeds remain dormant under the snow through the winter and emerge in the spring.

Both frost and dormant seeding are not completely reliable, but should be tried when a fall cover cannot be established. Do not plow, cultivate, or operate heavy equipment on wet/thawed soils. Broadcasting on top of a lot of snow cover is not recommended because the seed will tend to wash away.

### Fertility

Cover crops usually follow heavily fertilized crops and do not require fertilization. Fertilizer and lime recommendations are generally based on future cash crops. In some situations where a goal is to produce a lot of biomass and build organic matter with a crop like sorghum sudangrass, or produce a large root to reduce soil compaction with a crop like forage radish, additional nitrogen or manure may be necessary to achieve maximum growth.

On soils with a high N leaching index or P index, consider planting cover crops at least 1-2 weeks earlier to ensure excess nutrients are captured.

## Interseeding

Interseeding in this guide refers to the process of broadcasting a cover crop into a cash crop. Also known as undersowing or oversowing.

Companion planting refers to the simultaneous planting of 2 or more crops. Large seeded crops, in particular, are planted or drilled along with the another crop (e.g. corn and soybeans). Both crops tend to be harvested and have value, but one of the crops performs as a cover crop (i.e. soybeans provide N to corn)

Nurse crops refer to rapidly growing crops that assist with the establishment of a perennial crop or other crop that is slow to establish.

## Mixes

Common mixes for NH include a small grain like winter rye or oats with hairy vetch, red clover or peas. Other common mixes include annual ryegrass and clovers, timothy and alfalfa, and sorghum sudangrass or millets with soybean or cowpea. Trial unfamiliar combinations on a small-scale to determine if they will work.

When calculating a seeding rate for crops mixtures, ensure that the sum of the proportional rates used exceeds 100%. For example, if the full seeding rate for oats is 140 lbs/ac and hairy vetch is 35 lbs/ac, the combination of 80 lbs/ac oats ( $80/140=57\%$ ) and 20 lbs vetch ( $20/35=57\%$ ) would be acceptable because the  $57\%+57\%=114\%$ . A combination of 80 lbs/ac oats (57%) and 10 lbs/ac vetch (28%) would not be acceptable because  $57\%+28\%=85\%$ .

## Inoculants

All legume seed shall be [inoculated](#) with a pure culture of nitrogen-fixing bacteria prepared specifically for the species. For best results, consider selecting pre-inoculated, coated seed when available.

## Cover Crops for Silage Corn

Red clover and annual ryegrass can be [interseeded into corn](#) after last cultivation or sidedressing nitrogen when corn is 12-24 inches tall after June 1<sup>st</sup>. Cool-season small grains can be aerial seeded into corn during late August- Early September. Use untreated seed when aerial seeding. [Manure slurry seeding](#) is an emerging technology that can be used in NH if there is access to equipment.

Consider dormant seeding appropriate cover crops like annual ryegrass and red clover to protect the soil in the spring.

## Grazing

A number of cover crops can be grazed prior to termination to improve the overall value of the cover crop. Check each cover crop to ensure that the crops pose no danger to livestock. A few examples are: (i) sorghum-sudangrass may cause prussic acid and nitrate poisoning if the young growth is grazed or if the crop is grazed after frost, (ii) seed of chickling vetch contain a neurotoxin that may cause illness, (iii) alsike clover may be toxic to horses and other livestock, (iv) turnips may cause copper toxicity in sheep, (v) red clover contains phytoestrogens that may complicate sheep breeding, and (vi) many of the legumes may cause bloat and should not be grazed when wet.

## Living Mulches

Vegetable crop producers should consider using living mulches to prevent erosion, improve soil structure and microbial population, improve water relations, and provide beneficial insect habitat. Legume living mulches like berseem clover are well suited for NH and provide supplemental N if they are mown and blown to adjacent cash crop rows. Living mulches can be established before or after the cash crop is planted, and can be used alone or in combination with plastic mulch. Using a biodegradable black plastic mulch and seed the alley with a living mulch is an management practice that is becoming popular in NH. Typically living mulches should be low growing and tolerate mowing. Mulches should be mowed if becoming overly competitive or if going to seed.

## Terminating Cover Crops

In general, terminate cover crops at least 1-2 weeks prior to planting the cash crop. Small grain cover crops should be at least 12-18 inches high. For organic, no-till systems cover crops can be terminated on the same day as planting.

Monitor crop maturity carefully to time termination. When terminating cover crops by mowing or crimping, plants must often be in full flower or fully mature in order to completely kill. Avoid future weed problems by ensuring that cover crops are terminated prior to seed set (unless a reseeding cover is the goal).

## **Cool-Season Annual Grains**

**Winter Rye** (*Secale cereale*) is the most reliable cool season cover crop. Rye establishes easily, produces a lot of biomass, and suppresses weeds. It can be planted the latest in fall and is the most hardy. The '[Aroostook](#)' variety was developed for the Northeast for seeding after late harvested crops. NH NRCS recommends the use of Aroostook over Common Rye (VNS). Rye may tie up N if not grown with a legume or if incorporated when too mature, though it may mow kill if mowed after it heads out. It is generally incorporated when it is 12-18" tall, about 2 weeks before planting. May be allelopathic if vegetable seeds are planted immediately after rye termination. Commonly mixed with hairy vetch or red clover.

**Wheat, Triticale, and Spelt** (*Triticum spp.*) are hardy cover crops that can suppress weeds and produce a moderate to high amount of biomass. Triticale is a cross between wheat and rye, and spelt is an ancient subspecies of wheat. [Wheat, Triticale, and Spelt](#) will not produce as much biomass as rye, and may not tie up as much N in the spring. Hessian fly can be a problem with wheat and spelt harvested for grain, but is generally not a problem if used solely as a cover crop. Wheat is a good nutrient catch crop and prefers well-drained, fertile soils. Spelt may perform better on poor soils. Winter wheat can be sown in spring and will produce some growth, then die on its own. Spring wheat can be planted in the early spring and will produce a lot of biomass later into the summer. Commonly mixed with peas, vetch, and clover.

**Barley** (*Hordeum vulgare*) is an easy to grow, deep-rooted crop that is good at controlling erosion, suppressing weeds, and producing biomass. It does poorly in wet, heavy soils, and is more drought tolerant than other small grains. It is less winter hardy than rye or wheat, and may winterkill in NH. Check for newer winter barley varieties for improved hardiness. Barley can be killed by mowing or rolling at milk stage. Commonly mixed with peas, oats, and crimson or red clover.

**Oats** (*Avena sativa*) are commonly used in NH as a spring and fall cover. Oats establish rapidly and are easily killed. They provide good erosion control, and tend to leave a clean seedbed.

Oats will winterkill in NH and are often used by vegetable growers prior to early spring crops. Commonly used as a nurse crop and mixed with alfalfa, hairy vetch and field peas. Fall oats must be planted earlier than other small grains, and when planted with hairy vetch the cover can provide sufficient soil N for [sweet corn](#) growth.

## **Warm-Season Annual Grains**

**Buckwheat** (*Fagopyrum esculentum*) is one of the quickest growing summer annuals, and is commonly used as a smother crop, nurse crop and insectary. Buckwheat tolerates poor soils and can extract nutrients from the soil. Plants mature in 6-8 weeks, and residue degrades rapidly. If mown prior to flowering, the crop should regrow. Buckwheat should be mown or incorporated into the soil before seed set so that it does not become a weed problem.

**Sudangrass and Sorghum-Sudangrass** (*Sorghum bicolor x S. bicolor var Sudanese*), also known as [Sudax](#), is a vigorous warm season grass that produces large amounts of biomass, increases organic matter, reduces compaction and nematodes, and can provide excellent forage and insect habitat. Sudax can be mowed 2-3 times when it reaches a height of 3-5 feet (leave at least 6" or 2 nodes for regrowth). Very responsive to nitrogen fertility. Sudax planted in mid-July will frost kill. Mix with a buckwheat nurse crop or with forage [soybeans and cowpeas](#).

**Japanese Millet** (*Echinochloa esculenta*), **Pearl Millet** (*Pennisetum glaucum*) and **Foxtail Millet** (*Setaria italica*) are drought and heat tolerant summer annuals that produce a lot of biomass quickly. Plant Japanese and Foxtail millet early in the June because later plantings may be weak because of daylength response. Pearl millet is very tall and produces the most biomass. Pearl and Foxtail millet should mow kill, but Japanese millet will regrow. Commonly mixed with forage soybeans and cowpeas.

**Teff** (*Eragrostis tef*) is a fine-leaved African grain that shows a lot of potential as a living mulch. It is very drought tolerant, can be surface broadcast, does not need much mowing, and will not go to seed. Ensure a firm seedbed prior to planting. Teff is also a quality forage that can be grazed/hayed during dry summers.

## Legumes

**Red Clover** (*Trifolium pratense*) is a short-lived cool season perennial that is often used as an annual. Red clover is deep-rooted, produces a lot of N, and provides beneficial insect/pollinator habitat. It tolerates poorly drained and acidic soils. It can be interseeded with many crops, such as small grains after planting, silage corn at last cultivation, or into vegetables before harvest. Red clover does very well when frost-seeded and mixed with small grains or annual ryegrass.

**White Clover** (*Trifolium repens*) is a low growing perennial that produces moderate levels of N, and tolerates traffic and close mowing. Common [white clover](#) is the lowest growing type that tolerates the most traffic and compaction. Dutch and New Zealand are intermediate, widely available types that are commonly used as living mulches. Ladino clover is the tallest white clover and produces the most nitrogen. White clover does well interseeded or frost seeded, and is often mixed with annual ryegrass, small grains, or red clover.

**Alsike Clover** (*Trifolium hybridum*) is an upright hybrid of red and white clover that produces more N than intermediate types and does the best in poorly drained soil. Alsike can be toxic to horses.

**Yellow Sweetclover** (*Melilotus officinalis*) is a highly productive biennial legume and **White Sweetclover** (*Melilotus alba*) is an annual. Sweetclover produces a lot of N and biomass, has a deep root that breaks up hardpan, and provides beneficial insect habitat. Better suited for well drained and droughty sites. Yellow sweetclover will mow kill after flowering in the second year. Use yellow sweetclover only if it will be grown through the second year, otherwise use annual or 'Hubam'. Prefers spring seeding. Hard seed may remain viable in soil for years.

**Crimson Clover** (*Trifolium incarnatum*) is an annual legume that will winter kill like oats. It establishes easily, produces a moderate to high amount of N and biomass, suppresses weeds, and has beautiful flowers that attract a lot of beneficial insects and pollinators. Select regionally-adapted varieties for improved cold hardiness.

[Crimson clover](#) is easily crimped with a lasting residue. It has potential to be frost seeded, crimped, and used as mulch for late planted no-till pumpkin transplants. Often mixed with annual ryegrass, small grains, and brassicas. Caution: may support nematodes that impact tomatoes.

**Subterranean Clover** (*Trifolium subterraneum*) is a low growing, self-seeding annual hardy to 0-15° F. It produces a moderate amount of N, provides beneficial insect habitat and is best used as a [living mulch](#). It is a shade tolerant crop that tolerates wet soils, acidic soils, mowing and grazing. Subterranean clover and teff may make a great living mulch. Subterranean clover will reseed and should be mowed or killed prior to seeding if growing leafy greens or other crops where it could be a problem.

**Berseem Clover** (*Trifolium alexandrinum*) is a summer annual with traits similar to subterranean clover. It is a quick growing, heavy N producer that tends to be used as a living mulch. It establishes well with an oat nurse crop, and tolerates most soils except sands. Mix with teff, ryegrass or small grains.

**Hairy Vetch** (*Vicia villosa*) is the most commonly used cool season legume. It is very winter hardy, an excellent N producer, increases nutrient availability, and provides beneficial insect habitat. It is slow to establish and often needs to be grown late into the spring/early summer to produce maximum N. It can provide [sufficient N](#) for many vegetable and late planted crops and partially replace N for corn. Smothers spring weeds. Commonly planted with winter cereals. Can be mow killed if in full flower.

**Chickling Vetch** (*Lathyrus sativus*) is an annual legume used that is a heavy N producer and is commonly used as a living mulch. It nodulates earlier than most legumes and produces a lot of nitrogen early on. It does well under low soil moisture and most soil conditions, yet does not establish well if broadcast. Mow before flowering if regrowth is desired.

**Field Pea** (*Pisum sativum*) is also known as Canadian Field Pea or Austrian Winter Pea. It is a large seeded, cool-season annual that produces a large amount of nitrogen. Peas generally require support from another cover crop, and should be grown with another small grain like oats. Peas make for a good companion crop as long as the seed is planted deep enough. Though they are cold-tolerant, peas will winterkill in NH.

**Soybean** (*Glycine max*) and **Cowpea** (*Vigna unguiculata*) are summer legumes that produce a lot of N and are best grown with sorghum-sudangrass or millets. Soybean is more cold tolerant than cowpea and tends to produce more biomass and N, though it is more susceptible to pests and drought. Use regionally adapted forage varieties for maximum benefit. Cowpea requires warmer conditions than soybean, but is more tolerant of poor soils, drought, heat, and pests. Cowpea grows quickly, suppresses weeds, and provides beneficial insect habitat.

**Alfalfa** (*Medicago sativa*) is a perennial cool-season legume that is a superior N fixer, reduces soil compaction, and provides habitat for beneficial insects. It prefers well-drained, fertile soils near pH 7, and is best grown with a small grain nurse crop or perennial grass. Choose varieties with a fall dormancy class of 1-4. More hardy varieties (closer to class 1) tend to yield higher in the spring, but mature later.

### **Brassicas**

Brassicas can be especially useful for planting after early vegetable crops. Brassica cover crops are well-suited for scavenging residual nitrogen in the fall because they grow rapidly during periods of cool weather. Some Brassicas are used to reduce the level of soil pathogens through [biofumigation](#); however, Brassica cover crops should not be used before or after other Brassica vegetables. Mix with annual ryegrass and clovers.

**Forage Radish** (*Raphanus sativus*) and **Forage Turnip** (*Brassica rapa*) are deep-rooted cover crops that can reduce surface and [subsoil compaction](#), scavenge N, and suppress weeds. Plant early enough to ensure that roots mature and grow deep. Will winterkill and leave a clean seedbed for early vegetable crops. *Do not let it go to seed.*

**Mustard and Canola** (*Brassica* spp.) grows rapidly in the spring and fall and can produce abundant biomass. These species are effective at scavenging nutrients, preventing erosion, and decreasing soil-borne pathogens. *Do not let them go to seed.*

**Arugula** (*Eruca sativa*) is an effective biofumigant that will overwinter. Mow and incorporate in the spring before seed set and seal soil with plastic, irrigation, or by rolling for at least 10 days.

### **Grasses**

**Annual and Perennial Ryegrass** (*Lolium* spp.) are cool season grasses with a high utility value because they establish easily when surface broadcast and can be interseeded, frost-seeded, and dormant seeded. [Ryegrass](#) produces a tremendous amount of biomass, reduces surface compaction, scavenges nutrients, and is a strong erosion fighter. Annual varieties tend to be cheaper than perennial, are used as cool and warm-season cover, and are used as living mulches. Southern varieties will winterkill, whereas regionally adapted annual varieties may overwinter in warmer areas of NH. Perennial rye may be short-lived.

**Orchardgrass** (*Dactylis glomerata*) and **Timothy** (*Phleum pratense*) are perennial grasses that are commonly used forages in the NH. They are highly productive and should be planted with clovers. Like alfalfa and sweetclover, these grasses are best used as a cover crop if grown for a full season and terminated in the second year.

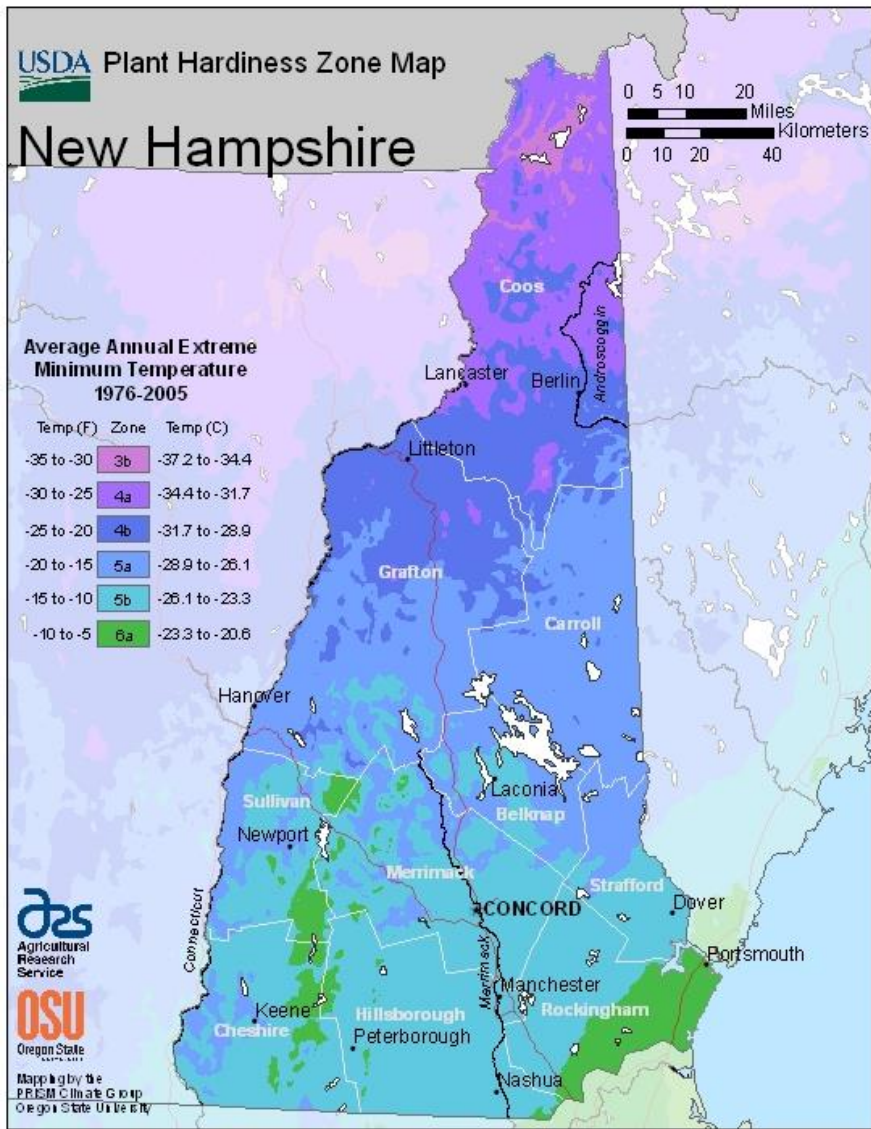


Figure 1

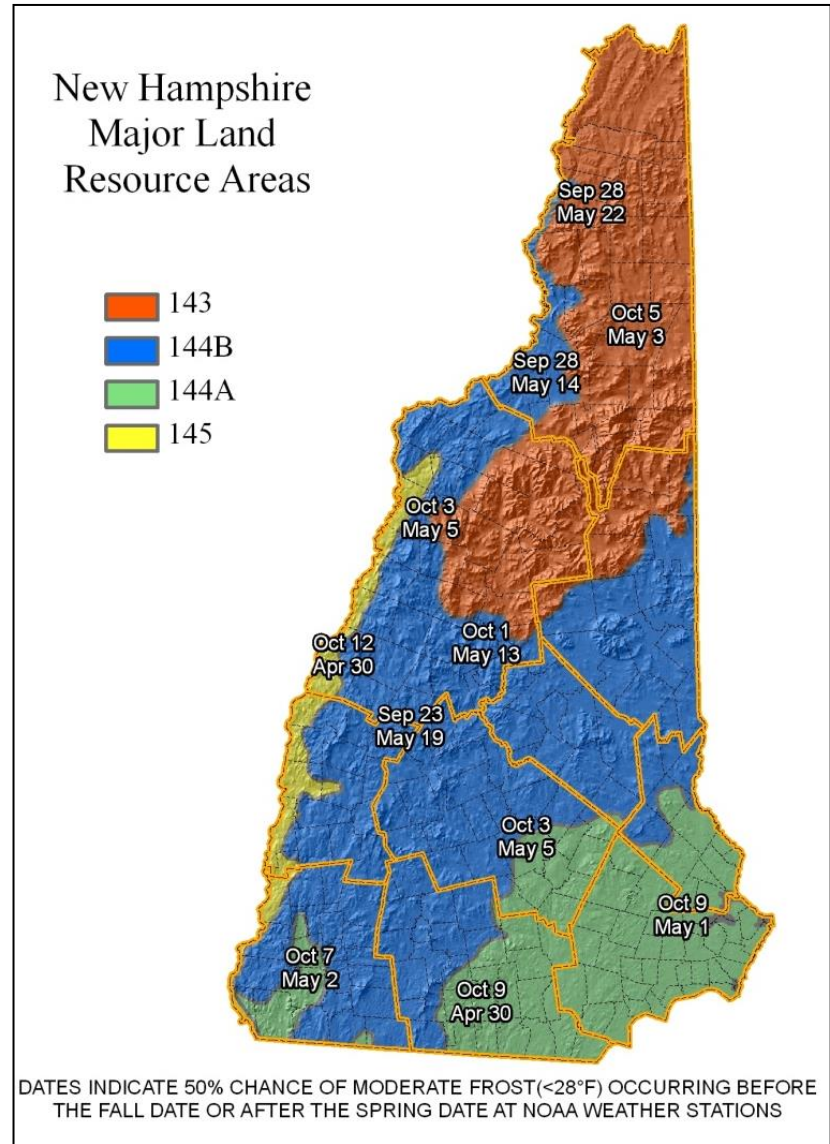


Figure 2

Table 2a - NH 340	Purpose									Other Roles & Characteristics											
Cover Crop	Reduce Erosion	Increase SOM	Recycle Nutrients	Fix Nitrogen Save Energy	Improve Biodiversity	Suppress Weeds	Remove Excess Soil Moisture	Loosen Topsoil	Reduce Subsoil Compaction	Grazing Potential	Living Mulch	Broadcast Interseed	Companion Crop	Nurse Crop	Reduce Soil Diseases	Rapid Growth	Drought Tolerant	Flooding Tolerant	Shade Tolerant	Reseeds (Potential Weeds!)	
<b>Cool-Season Grains</b>																					
Winter Rye (Common)	✓+	✓+	✓+			✓+	✓+	✓+		✓-		✓		✓	✓	✓	✓	✓-	✓	✓	
Winter Rye (Aroostook)	✓+	✓+	✓+			✓+	✓+	✓+		✓-		✓		✓	✓	✓+	✓	✓-	✓	✓	
Triticale and Spelt	✓	✓+	✓			✓	✓+	✓	✓-	✓				✓+		✓	✓-				
Wheat	✓	✓+	✓			✓	✓+	✓	✓-	✓				✓+		✓	✓-		✓-	✓-	
Barley	✓+	✓+	✓		✓-	✓	✓	✓	✓-	✓				✓+	✓-	✓	✓		✓-	✓	
Oats	✓-	✓	✓-			✓+	✓	✓		✓-	✓-	✓-	✓+	✓+	✓-	✓+		✓-			
<b>Warm-Season Grains</b>																					
Buckwheat		✓-	✓+		✓+	✓+		✓					✓+	✓		✓+				✓+	
Sorghum/Sudangrass	✓+	✓+	✓+		✓-	✓+	✓-	✓-	✓+	✓					✓	✓+	✓+	✓-	✓-	✓-	
Japanese/Foxtail Millet	✓	✓+	✓			✓+		✓		✓+				✓		✓	✓+			✓-	
Pearl Millet	✓	✓+	✓			✓+		✓		✓-						✓	✓+			✓-	
Teff	✓+	✓	✓-			✓-		✓+		✓+	✓+	✓-	✓-	✓			✓+				
<b>Legumes</b>																					
Red Clover	✓-	✓	✓	✓	✓+	✓-	✓	✓-	✓	✓+		✓+	✓+					✓-	✓		
White or Alsike Clover	✓	✓		✓	✓	✓	✓	✓		✓+	✓	✓	✓				✓-	✓	✓	✓+	
Berseem Clover	✓	✓+	✓+	✓+	✓-		✓+	✓		✓+	✓+	✓	✓	✓		✓+	✓-	✓-	✓		
Sweetclover	✓	✓+	✓+	✓+	✓+	✓	✓	✓+	✓+	✓						✓-	✓+			✓-	
Crimson Clover	✓	✓		✓	✓+		✓-	✓-		✓+		✓+	✓+			✓-			✓	✓+	
Subterranean Clover	✓	✓		✓	✓	✓+	✓+	✓-		✓	✓+	✓+	✓+			✓-	✓	✓-	✓	✓+	
Alfalfa	✓	✓+		✓+	✓		✓		✓+	✓+											
Hairy Vetch	✓-	✓+	✓-	✓+	✓	✓	✓	✓	✓-	✓-	✓-	✓	✓		✓-		✓-		✓-	✓-	
Chickling Vetch	✓	✓	✓-	✓+	✓-	✓	✓	✓		✓+	✓	✓	✓				✓-		✓-	✓-	
Field Pea	✓	✓		✓+	✓		✓	✓		✓			✓+	✓	✓	✓	✓-				
Soybean	✓-	✓		✓+				✓		✓			✓+				✓				
Cowpea	✓+	✓	✓-	✓+	✓	✓+		✓	✓-	✓-			✓			✓	✓		✓-		
<b>Brassicas</b>																					
Radish or Turnip	✓	✓	✓+			✓+		✓-	✓+	✓-		✓	✓-			✓			✓-	✓-	
Mustard or Canola	✓	✓	✓		✓-	✓-		✓		✓-		✓	✓-	✓-	✓+	✓	✓		✓-	✓+	
Arugula	✓	✓-	✓-					✓				✓			✓+	✓			✓-	✓-	
<b>Grasses</b>																					
Annual Ryegrass	✓+	✓+	✓+			✓+	✓+	✓+		✓+	✓	✓+	✓+	✓+	✓-	✓		✓	✓	✓+	
Perennial Ryegrass	✓+	✓+	✓+			✓	✓+	✓+		✓+	✓	✓+	✓	✓	✓-	✓		✓	✓	✓	
Orchardgrass	✓+	✓+	✓-			✓	✓+	✓		✓+		✓				✓		✓	✓-	✓	
Timothy	✓+	✓+	✓-			✓	✓+	✓		✓		✓-						✓-		✓	

Rating: Above Average (✓+); Average (✓); Below Average/Unknown (✓-). Blank = Not Recommended

Refer to text in accompanying Planting Specification Guide for more information about selecting and managing each cover crop.

Table 2b - NH 340	Seeding Rate (lbs/acre)		Seeding Depth Inches	Planting Season								Termination Method						
	Broadcast	Drilled		Spring	Early Summer	Summer	Early Fall	Fall	Late Fall	Dormant	Frost	Mow	Till	Crimp	Frost	Winter	Chemical	
<b>Cool-Season Grains</b>																		
Winter Rye (Common)	150	110	1-2				✓	✓+			✓-		✓	✓	✓+		✓	
Winter Rye ( <i>Aroostook</i> )	150	110	1-2				✓	✓+	✓		✓-		✓	✓	✓+		✓	
Triticale and Spelt	150	110	1-2				✓	✓+			✓-		✓	✓+	✓		✓	
Wheat	160	120	½-1½	✓+			✓+	✓+			✓-		✓	✓+	✓		✓	
Barley	160	120	1-2	✓+			✓					✓-	✓	✓+	✓		✓-	
Oats	140	100	½-1½	✓+			✓+					✓-	✓-	✓+	✓		✓	
<b>Warm-Season Grains</b>																		
Buckwheat	90	70	½-1½		✓+	✓+							✓	✓+	✓+	✓	✓+	✓
Sorghum/Sudangrass	50	35	½-1½		✓+	✓+								✓		✓	✓+	✓
Japanese/Foxtail Millet	35	25	½-1½		✓	✓								✓		✓	✓+	✓
Pearl Millet	30	20	¼-½		✓	✓							✓	✓	✓	✓	✓+	✓
Teff	10	8	0-¼		✓	✓								✓		✓	✓+	✓
<b>Legumes</b>																		
Red Clover	15	10	¼-½	✓+			✓+				✓	✓		✓				✓
White or Alsike Clover	12	8	¼-½	✓+	✓		✓+				✓	✓		✓				✓
Berseem Clover	20	15	¼-½	✓+	✓+	✓	✓-				✓-	✓-		✓-		✓-	✓	✓
Sweetclover	20	15	¼-½	✓			✓				✓-	✓-	✓-	✓				✓
Crimson Clover	30	20	¼-½	✓+	✓+	✓	✓				✓-	✓-	✓	✓	✓+		✓-	✓
Subterranean Clover	30	20	¼-½	✓	✓+	✓								✓-		✓-	✓	✓
Alfalfa	20	15	¼-½	✓+			✓							✓			✓-	✓
Hairy Vetch	35	25	½-1½				✓+				✓-	✓-	✓-	✓-	✓+	✓-	✓	✓
Chickling Vetch	70	50	½-1½	✓+	✓	✓-					✓-	✓-	✓-	✓-	✓		✓	✓
Field Pea	140	100	1-3	✓+	✓		✓+						✓+	✓+	✓		✓	✓
Soybean	120	90	1-2	✓	✓								✓	✓+	✓-		✓	✓
Cowpea	140	100	¾-1½		✓	✓+							✓-	✓+	✓-	✓-	✓	✓
<b>Brassicas</b>																		
Radish or Turnip	15	10	¼-½				✓+				✓	✓	✓	✓+	✓	✓-	✓	✓
Mustard or Canola	15	10	¼-¾	✓+	✓		✓+				✓	✓	✓-	✓	✓	✓-	✓	✓
Arugula	4	3	¼-½				✓+							✓+				✓
<b>Grasses</b>																		
Annual Ryegrass	30	20	0-½	✓+	✓	✓-	✓+				✓+	✓	✓	✓+			✓-	✓
Perennial Ryegrass	35	25	0-½	✓+		✓-	✓+				✓-	✓-		✓+			✓-	✓
Orchardgrass	20	15	0-½	✓+		✓-	✓+				✓-	✓-		✓+				✓
Timothy	15	10	0-½	✓+		✓-	✓+							✓+				✓
<b>Reliability: Above Average (✓+); Average (✓); Below Average/Unknown (✓-). Blank = Not Recommended</b>																		
<b>Seasonal Seeding Date Ranges</b> by Major Land Resource Area (MLRA)		<b>Spring</b>		<b>Early Summer</b>		<b>Summer</b>		<b>Early Fall</b>		<b>Fall</b>		<b>Late Fall</b>		<b>Dormant</b>		<b>Frost</b>		
Northeastern Mountains	143	Apr 21-Jun 7		May 21-Jul 1		Jun 7-Jul 14		Aug 1-Sep 1		Aug 14-Sep 14		Aug 21-Oct 7		Nov 14-Snow		Snowmelt-Apr 21		
Northern NE Upland	144B	Apr 14-Jun 1		May 14-Jul 1		Jun 1-Jul 21		Aug 7-Sep 7		Aug 14-Sep 21		Aug 14-Oct 14		Nov 21-Snow		Snowmelt-Apr 14		
Southern NE Upland/Coast	144A	Apr 7-May 21		May 7-Jun 21		May 21-Aug 1		Aug 14-Sept 14		Aug 14-Oct 1		Aug 21-Oct 21		Dec 1-Snow		Snowmelt-Apr 7		
Connecticut River Valley	145	Apr 7-May 21		May 7-Jun 21		May 21-Aug 1		Aug 14-Sept 14		Aug 14-Oct 1		Aug 21-Oct 21		Dec 1-Snow		Snowmelt-Apr 7		