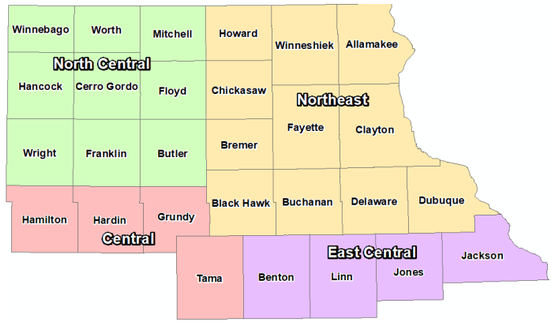

		Drilled or Broadcast - Incorporated (Lbs. /Ac. *)	Broadcast - No Incorporation (Lbs. /Ac. *)	Latest Seeding Dates			
				North Central	Northeast	Central	East Central
Brassicas	Camelina, Winter	3	4	11/1	11/1	11/5	11/6
	Kale	3	4	9/22	9/23	9/25	9/27
	Mustard	3	4	9/22	9/23	9/25	9/27
	Radish	5	6	9/22	9/23	9/25	9/27
	Rapeseed	3	4	9/22	9/23	9/25	9/27
	Turnip	3	4	9/22	9/23	9/25	9/27
Broadleaves	Buckwheat	45	50	9/8	9/9	9/11	9/12
	Flax	15	18	9/22	9/23	9/25	9/27
	Sunflower	3	5	8/26	8/27	8/28	8/29
Grasses	Barley, Spring	60	60	9/22	9/23	9/25	9/27
	Barley, Winter	60	60	9/22	9/23	9/25	9/27
	Millet	10	12	8/6	8/7	8/7	8/7
	Oats	60	60	9/22	9/23	9/25	9/27
	Rye, Winter Cereal	45	45	11/3	11/1	11/5	11/6
	Ryegrass, Annual	12	14	9/22	9/23	9/25	9/27
	Sorghum, Forage	15	17	8/6	8/7	8/7	8/7
	Sorghum-sudangrass	15	17	8/6	8/7	8/7	8/7
	Sudangrass	15	17	8/6	8/7	8/7	8/7
	Teff	4	5	8/26	8/27	8/28	8/29
	Triticale, Winter	45	45	11/3	11/1	11/5	11/6
	Wheat, Spring	60	66	9/22	9/23	9/25	9/27
	Wheat, Winter	45	45	10/19	10/19	10/22	10/24
Legumes	Beans, Mung	15	18	8/6	8/7	8/7	8/7
	Clover, Berseem	8	9	9/8	9/9	9/11	9/12
	Clover, Crimson	10	11	9/8	9/9	9/11	9/12
	Clover, Red	8	10	9/15	9/16	9/18	9/19
	Clover, White	5	7	9/15	9/16	9/18	9/19
	Cowpea	30	38	8/6	8/7	8/7	8/7
	Pea, Field/Winter	45	45	9/8	9/9	9/11	9/12
	Sunn Hemp	15	22	8/26	8/27	8/28	8/29
	Vetch, Common	20	26	9/8	9/9	9/11	9/12
	Vetch, Hairy	12	14	9/15	9/16	9/18	9/19

* Use bulk rate for seed with a minimum of 80% PLS.
Use rate based on PLS lbs. for all other seed

USDA United States Department of Agriculture

Iowa NRCS
Cover Crop Quick Reference Guide
Northeast Area

		Erosion Fighter	Good Grazing	Grain/Seed Harvest Value	Interseed with Cash Crop	Lasting Residue	Mechanical Forage Harvest Value	Nitrogen Scavenger	Nitrogen Source	Quick Growth	Soil Builder	Weed Fighter
Brassicas	Camelina, Winter (C)	2	0	2	2	1	0	2	0	2	2	1
	Kale (C)	1	4	0	3	2	0	2	0	1	2	4
	Mustard (C)	1	0	1	2	1	0	2	0	3	2	1
	Radish (C)	1	2	1	2	1	0	2	0	4	2	2
	Rapeseed (C)	1	0	2	2	1	0	2	0	3	2	1
	Turnip (C)	1	3	0	2	1	0	2	0	2	2	1
Broadleaves	Buckwheat (W)	1	2	3	2	0	0	2	0	4	2	3
	Flax (C)	2	1	2	2	2	1	2	0	2	1	0
	Sunflower (W)	1	2	4	0	2	2	3	0	3	2	1
Grasses	Barley, Spring (C)	3	3	4	3	2	2	3	0	4	3	2
	Barley, Winter (C)	3	3	4	3	2	2	3	0	4	3	2
	Millet (W)	2	4	2	0	3	3	3	0	4	3	3
	Oats (C)	3	3	3	3	2	3	3	0	4	3	2
	Rye, Winter Cereal (C)	4	4	4	4	4	3	4	0	4	4	4
	Ryegrass, Annual (C)	2	3	0	3	3	3	2	0	3	3	2
	Sorghum, Forage (W)	3	3	2	0	4	4	4	0	4	4	4
	Sorghum-sudangrass (W)	3	3	1	0	4	4	4	0	4	4	4
	Sudangrass (W)	3	4	1	0	4	4	4	0	4	4	4
	Teff (W)	2	3	2	0	2	3	2	0	2	2	2
	Triticale, Winter (C)	4	4	4	4	4	4	4	0	4	4	4
	Wheat, Spring (C)	3	4	4	3	2	4	3	0	4	3	2
	Wheat, Winter (C)	4	4	4	4	4	4	4	0	4	4	4
Legumes	Beans, Mung (W)	1	1	1	2	1	1	1	3	2	1	1
	Clover, Berseem (C)	1	4	0	1	1	4	2	4	2	2	1
	Clover, Crimson (C)	1	2	0	1	1	2	1	3	2	2	1
	Clover, Red (C)	2	3	0	2	1	3	2	4	2	3	2
	Clover, White (C)	1	1	0	1	1	1	1	2	1	1	1
	Cowpea (W)	2	3	2	3	1	2	2	3	3	2	1
	Pea, Field/Winter (C)	1	2	0	1	1	1	1	2	2	2	0
	Sunn Hemp (W)	2	2	0	2	3	1	1	3	3	3	1
	Vetch, Common (C)	1	2	0	0	1	1	1	3	2	1	0
	Vetch, Hairy (C)	2	0	0	2	1	0	1	3	1	2	0

4 = Exellent
3 = Very Good
2 = Good
1 = Fair
0 = Poor

C = Cool Season
W = Warm Season

Ratings obtained from Midwest Cover Crops Council "Cover Crop Decision Tool"

Annual Ryegrass

- Annual
- Recommended for advanced cover croppers only
- Recommended to use a variety rather than VNS
- Can overwinter with spring control difficult
- Good at increasing organic matter
- Deep rooted
- Germination Temperature: 40 degrees
- Winter Survival: Seldom
- 190,280 seeds per pound
- Low C:N Ratio (20:1 –31:1)
- Seeding depth: ¼ - ½ inch

Berseem Clover

- Annual
- Legume (N-fixation)
- Germination Temperature: 42 Degrees
- Winter Survival: Seldom
- 206,880 seeds per pound
- Low C:N Ratio (18:1 – 23:1)
- Seeding depth: ¼ - ½ inch

Buckwheat

- Annual
- Good for beneficial insects (flowers 3 weeks after planting)
- Enhances soil phosphorus availability
- Germination Temperature: 50 Degrees
- Winter Survival: Never
- 20,400 seeds per pound
- Low C:N Ratio (8:1 – 32:1)
- Seeding depth: ½ inch

Cereal Rye

- Winter annual
- Good at increasing organic matter
- High water use
- Assists in weed control for subsequent crops
- Rated 'Very good' at scavenging nitrogen from the soil
- Germination Temperature: 34 Degrees
- Winter Survival: Expected
- 18,160 seeds per pound
- Medium C:N Ratio (14:1 young, 40:1 boot stage)
- Seeding depth: ¼ - 2 inches

Common Vetch

- Annual or biennial
- Legume (N-fixation)
- Prostrate plan architecture (Vine)
- Common Vetch is different than Hairy or Chickling Vetch
- Attracts pollinators
- Germination Temperature: 60 Degrees
- Winter Survival: Expected
- 16,320 seeds per pound
- Low C:N Ratio (10:1 – 19:1)
- Seeding depth: ½ - 1 ½ inches

Cowpea

- Annual
- Legume (N-fixation)
- Resembles or looks like soybean
- Low water use/shallow rooted
- Germination Temperature: 58 Degrees
- Winter Survival: Never
- 3,600 seeds per pound
- Low C:N Ratio (18:1 – 22:1)
- Seeding depth: ¾ - 1 inch

Crimson Clover

- Annual
- Legume (N-fixation)
- Easy to establish
- Germination Temperature: 42 Degrees
- Winter Survival: Seldom
- 149,760 seeds per pound
- Low C:N Ratio (16:1 – 19:1)
- Seeding depth: ¼ - ½ inch

Hairy Vetch

- Annual or Biennial
- Legume (N-fixation)
- Germination Temperature: 60 Degrees
- Winter Survival: Expected
- 16,320 seeds per pound
- Low C:N Ratio (10:1 – 19:1)
- Seeding depth: ½ - 1 ½ inches

Oats

- Annual
- Good at increasing Organic Matter
- Self-pollinator (wind)
- Rated 'Very good' at scavenging nitrogen from the soil
- Germination Temperature: 38 Degrees
- Winter Survival: Never
- 19,600 seeds per pound
- High C:N Ratio (33:1)
- Seeding depth: 1 - 2 inches

Radish

- Annual
- High water use
- Does not form arbuscular mycorrhizal associations
- Rated 'very good' at scavenging nitrogen from the soil
- Flowers attract pollinators
- Germination Temperature: 45 Degrees
- Winter Survival: Never
- 34,000 seeds per pound
- Low C:N Ratio(19:1 – 20:1)
- Seeding depth: ¼ - ½ inch

Rapeseed

- Good cold tolerance
- Large taproot
- High Drought tolerance
- Does not form arbuscular mycorrhizal associations
- Germination Temperature: 41 Degrees
- Winter Survival: Seldom
- 156,960 seeds per pound
- Low to High C:N Ratio (12:1 – 37:1)
- Seeding depth: ¼ - 1 inch

Sorghum-Sudangrass

- Annual
- Good for silage, grazing or hayed
- Excellent for increasing Organic Matter
- High tonnage potential
- Rated 'Excellent' at nutrient scavenging
- Stress conditions that limit growth (e.g., drought, frost) can contribute to prussic acid accumulation in leaves
- Germination Temperature: 65 Degrees
- Winter Survival: Never
- 17,280 seeds per pound
- Low to Medium C:N ratio (10:1 – 30:1)
- Seeding depth: ¾ - 1 ½ inch

Sunhemp

- Annual
- Has an extensive taproot
- Germination Temperature: 42 Degrees
- Winter Survival: Never
- 15,000 seeds per pound
- Low to Medium C:N Ratio (14:1 – 30:1)
- Seeding depth: ½ - 1 inches

Turnip

- Biennial
- Does not form arbuscular mycorrhizal associations
- Rated 'Good' at scavenging nutrients
- Flowers attract pollinators
- Germination Temperature: 45 Degrees
- Winter Survival: Never
- 192,800 seeds per pound
- Low C:N Ratio (20:1 –30:1)
- Seeding depth: ¼ - ½ inch

Note: This is not an all inclusive list. Refer to the 340 IR for more species information.

Winter Camelina

- Winter Annual
- Does not form arbuscular mycorrhizal associations
- Option to diversify winter survival mixes
- Germination Temperature: 32 Degrees
- Winter Survival: Expected
- 400,000 seeds per pound
- High C:N Ratio (40:1 – 95:1)
- Seeding depth: ¼ - ½ inch

Winter Pea

- Annual
- Large seed does not work well for aerial seeding
- Germination Temperature: 41 Degrees
- Winter Survival: Occasional
- 1,840 seeds per pound
- Low to High C:N Ratio (13:1 – 83:1)
- Seeding depth: 1 - 3 inches

Winter Triticale

- Annual
- Less aggressive growth than rye in the spring
- Germination Temperature: 38 Degrees
- Winter Survival: Expected
- 22,700 seeds per pound
- Medium C:N Ratio (20:1)
- Seeding depth: 1 ½ - 2 inches

Winter Wheat

- Annual
- Less aggressive growth than rye in the spring
- Germination Temperature: 38 Degrees
- Winter Survival: Expected
- 11,360 seeds per pound
- Medium C:N Ratio (20:1)
- Seeding depth: ½ - 1 ½ inches