

Table 1: Cover Crop - Common Species and Properties

| Cover Crop | Erosion Reduction | Increase soil organic matter | Capture, recycle, redistribute nutrients in the soil profile | Promote biological nitrogen fixation | Weed suppression | Provide supplemental hay | Provide supplemental grazing | Rooting Depth / Plant Water Use /1 | Minimize / reduce soil compaction | Seed size (Large or Fine) | Crop Type /2 | Seeding rate, lbs/acre | Seeding depth, inches | Salinity tolerance | C:N Ratio | Attract Beneficial Insects | Mycorrhizal fungi association | Tolerance to Frost | Approx. Seeds / lb | lb/bushel |
|-------------------|-------------------|------------------------------|--|--------------------------------------|------------------|--------------------------|------------------------------|------------------------------------|-----------------------------------|---------------------------|--------------|------------------------|-----------------------|--------------------|-----------|----------------------------|-------------------------------|--------------------|--------------------|-------------|
| annual fescue | G | G | G | P | G | F | F | SL | P | F | CG | 1 | 0.25 - 0.5 | P | L | N | P | G | 700000 | |
| annual ryegrass | G | G | G | P | G | F | F | SM | P | F | CG | 10 | 0.25 - 0.5 | G | H | N | F | P | 190000 | |
| barley | G | G | G | P | G | F | F | MM | F | L | CG | 48 | 1.5 - 2.0 | G | M | N | P | P | 14000 | 47/6R 50/2R |
| berseem clover | P | P | F | G | F | F | G | MH | F | F | CB | 8 | 0.5 - 1.0 | F | L | Y | P | P | 207000 | |
| buckwheat*** | G | F | G | P | G | P | P | SL | P | F | CB | 40 | 1.0 - 1.5 | P | L | Y | P | P | 19000 | |
| camelina | F | P | G | P | P | P | P | ML | G | F | CB | 4 | 0.25 - 0.5 | F | L | Y | N | P | 400000 | |
| canola | F | F | G | P | P-G** | F | F | MM | G | F | CB | 5 | 0.25 - 0.5 | G | L | Y | P | P | 140000 | |
| chickling vetch | F | F | F | G | P | F | F | DM | F | L | CB | 50 | 1.5 - 2.0 | P | L | Y | P | P | 2500 | |
| chickpea (Desi) | F | F | G | G | P | G | F | DL | F | L | WB | 60 | 1.5 - 2.0 | P | L | Y | G | F | 2300 | |
| chickpea (Kabuli) | F | F | G | G | P | G | F | DL | F | L | WB | 60 | 1.5 - 2.0 | P | L | Y | G | F | 1000 | |
| common vetch | F | F | F | G | G | G | G | SH | F | L | CB | 20 | 1.0 - 1.5 | F | L | Y | P | P | 8000 | |
| corn | G | G | G | P | P-G** | F | F | DH | G | L | WG | 25 | 1.0 - 1.5 | P | H | N | G | P | 2500 | 56 |
| cowpea | P | P | F | G | G | F | F | SL | F | L | WB | 30 | 1.0 - 1.5 | P | L | Y | F | P | 4000 | 60 |
| crimson clover | F | F | F | G | F | F | G | MM | F | F | CB | 10 | 0.25 - 0.5 | P | L | Y | G | P | 150000 | 60 |
| flax | F | F | F | P | P | P | P | SM | P | F | CB | 50 | 0.25 - 0.5 | P | H | Y | G | G | 80000 | 49 |
| hairy vetch | G | F | F | G | P | F | F | SM | F | L | WB | 20 | 1.0 - 1.5 | P | L | Y | F | G | 14000 | |
| horse bean | F | F | F | G | F | G | G | DM | G | L | WB | 20 | 1.0 - 1.5 | F | L | Y | P | F | 2500 | |
| kale | F | F | G | P | F | F | G | DH | G | F | CB | 3 | 0.25 - 0.5 | P | L | Y | P | G | 175000 | |
| kura clover | F | F | F | G | P | F | G | SH | F | F | CB | 2 | 0.5 - 1.0 | P | L | Y | P | G | 152000 | |
| lentil | P | P | F | G | P | F | F | SL | P | F | CB | 50 | 1.0 - 1.5 | P | L | Y | F | G | 20000 | |
| medic | P | P | G | G | F* | F | F | MM | F | F | CB | 2 | 0.25 - 0.5 | P | L | Y | F | G | 265000 | |
| millet | G | G | F | P | G | G | F | SL | F | L | WG | 12 | 0.25 - 0.5 | F | M | N | G | G | 130000 | 50 |
| mustard, tame | F | F | G | P | G | F | F | ML | F | F | CB | 5 | 0.25 - 0.5 | P | L | Y | P | F | 140000 | |
| oat | G | G | G | P | F | G | F | MM | F | L | CG | 50 | 1.0 - 1.5 | P | M | N | P | F | 16000 | 36 |
| pea | P | P | P | G | F | G | F | SL | P | L | CB | 50 | 1.5 - 2.0 | P | L | Y | F | F | 3500 | |
| phacelia | F | F | F | P | F | P | F | SL | P | F | CB | 5 | 0.25 - 0.5 | P | L | Y | F | G | 225000 | |
| radish | P | P | G | P | G | P | G | DH | G | F | CB | 4 | 0.25 - 0.5 | P | L | Y | P | F | 25000 | |
| Red beet | P | P | G | P | F | P | F | DH | G | L | CB | 4 | 0.5 - 1.0 | F | L | N | P | F | 170000 | |
| red clover | F | F | F | G | G | F | G | DM | F | F | CB | 8 | 0.25 - 0.5 | P | L | Y | G | F | 22000 | |

Table 1: Cover Crop - Common Species and Properties

| Cover Crop | Erosion Reduction | Increase soil organic matter | Capture, recycle, redistribute nutrients in the soil profile | Promote biological nitrogen fixation | Weed suppression | Provide supplemental hay | Provide supplemental grazing | Rooting Depth / Plant Water Use /1 | Minimize / reduce soil compaction | Seed size (Large or Fine) | Crop Type /2 | Seeding rate, lbs/acre | Seeding depth, inches | Salinity tolerance | C:N Ratio | Attract Beneficial Insects | Mycorrhizal fungi association | Tolerance to Frost | Approx. Seeds / lb | lb/bushel |
|----------------------------------|-------------------|------------------------------|--|--------------------------------------|------------------|--------------------------|------------------------------|------------------------------------|-----------------------------------|---------------------------|--------------|------------------------|-----------------------|--------------------|-----------|----------------------------|-------------------------------|--------------------|--------------------|-----------|
| safflower | F | F | G | P | F | F | G | DH | F | L | WB | 20 | 1.0 - 1.5 | F | M | Y | F | F | 15000 | |
| sorghum | G | G | G | P | G | G | F | MM | G | L | WG | 8 | 1.0 - 1.5 | P | M | N | G | F | 17000 | 57 |
| soybean | P | P | F | G | P-G** | F | F | SM | P | L | WB | 50 | 1.0 - 1.5 | P | L | Y | F | F | 3000 | 60 |
| spring rye or wheat | G | G | G | P | G | F | F | MH | F | L | CG | 60 | 1.5 - 2.0 | F | M | N | P | G | 15000 | 56/58 |
| subterranean clover | F | F | F | G | G | F | G | MH | F | F | CB | 8 | 0.5 - 1.0 | P | L | Y | F | F | 54000 | |
| sudangrass, sudan-sorghum hybrid | G | G | G | P | G | G | G | MM | G | L | WG | 20 | 0.5 - 1.0 | F | M | N | G | F | 25000 | 28 |
| sugarbeet | P | P | G | P | F | P | G | DH | G | F | CB | 2 | 0.25 - 0.5 | G | L | N | P | P | 22000 | |
| sunflower | F | F | G | P | F | P | G | DM | G | L | WB | 4 | 0.5 - 1.0 | F | M | Y | F | P | 8000 | 25 |
| sunn hemp | F | F | G | G | G | P | P | DH | G | F | WB | 5 | 0.5 - 1.0 | P | L | Y | F | P | 15000 | |
| sweet clover | G | F | F | G | F* | P | F | MM | F | F | CB | 6 | 0.5 - 1.0 | F | L | Y | F | G | 260000 | 60 |
| Teffgrass | G | G | F | P | G | G | G | SH | P | F | WG | 4 | 0.25 - 0.5 | F | H | N | G | G | 1000000 | |
| triticale | G | G | G | P | G | F | F | MH | F | L | CG | 60 | 1.5 - 2.0 | G | M | N | P | G | 15000 | 48 |
| turnip | P | P | G | P | G | P | G | DH | G | F | CB | 4 | 0.25 - 0.5 | P | L | Y | P | P | 175000 | |
| turnip - psaja | F | F | G | P | F | P | G | DH | G | F | CB | 4 | 0.25 - 0.5 | P | L | Y | P | F | 180000 | |
| white dutch clover | F | F | F | G | P | F | G | MH | P | F | CB | 3 | 0.5 - 1.0 | P | L | Y | P | G | 712000 | 60 |
| winter canola | F | F | G | P | P-G** | F | F | MM | G | F | CB | 5 | 0.25 - 0.5 | G | L | Y | P | F | 140000 | |
| winter rye or wheat | G | G | G | P | G | F | F | MH | F | L | CG | 60 | 1.5 - 2.0 | P | M | N | P | F | 18000 | 56/60 |

| /1 Rooting Depth/Water Use | |
|-------------------------------------|-------------------------|
| SL= Shallow rooted/Low water use | Shallow = 6 - 18 inches |
| SM= Shallow rooted/Medium water use | Medium = 18 - 24 inches |
| SH= Shallow rooted/High water use | Deep = 24 + inches |
| ML= Medium rooted/Low water use | |
| MM= Medium rooted/Medium water use | |
| MH= Medium rooted/High water use | |
| DL= Deep rooted/Low water use | |
| DM= Deep rooted/Medium water use | |
| DH= Deep rooted/High water use | |

| /2 Crop types |
|----------------------------|
| CG = cool season grass |
| CB = cool season broadleaf |
| WB = warm season broadleaf |
| WG = warm season grass |

| Ratings | |
|---------------------|----------|
| L = Low | G = Good |
| M = Medium | F = Fair |
| H = High | P = Poor |
| N/A = Not Available | |

*These species are considered invasive on rangeland, avoid use in fields adjacent to rangeland.
 **Poor weed competitor, but herbicide-tolerant varieties are available.
 ***Refer to NRCS NB-190-16-8 ECS Exclusion of buckwheat in conservation plantings in or near commodity wheat fields for planning restrictions with buckwheat.

Table 1 is compiled from several sources listed below and in the ND NRCS Cover Crop Design and Installation Guide reference section and from field observations across North Dakota.
 Managing Cover Crops Profitably, 3rd edition, SARE
 NDSU-Ext. Service data and publications
 USDA-SARE publications and website
 The USDA-NRCS PLANTS Database
 Cover Crop Chart (v. 1.3) produced by the USDA-ARS Northern Great Plains Research Laboratory (NGPRL), Dr. Mark Liebig. As revised
 Midwest Cover Crops Council website
 Other relevant, peer-reviewed journal articles on cover crops from multiple sources throughout the U.S. and Canada.

Information on specific crops is occasionally generalized and/or approximate, and may not reflect performance in on-farm conditions. NRCS does not guarantee the performance of specific crops based on information provided within the Cover Crop Chart.