**Supplemental Material**

**Supplemental Table 1.** Crops and ranges for supplementary nitrogen application, including references, along with the median N values for that range and the assumptions used to estimate the N value.

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| --- | --- | --- | --- | --- |
| **Crop** | **Range Nitrogen**  **(lbs N**  **acre-1 yr-1)** | **Median value**  **(lbs N acre-1 yr-1)** | **N and crop assumptions** | **Reference** |
| Barley (*Hordeum vulgare*) | 0-240 | 120 | Dependent upon soil N test values. | Stark and Brown (2003) |
| Blueberry  (*Vaccinium spp*.) | 100-165 | 132.5 | Assuming maturity after 5 years of establishment. | Hart et al. (2006) |
| Caneberry/red raspberry (*Rubus idaeus*) | 50-100 | 75 | Assuming maturity, range includes summer-bearing and primocane-fruiting values. | Barney et al. (2007) |
| Commercial tree: (*Pseudotsuga menziesii, Abies procera, Populus spp*.) | 0-150 | 75 | Dependent upon maturity and size. | Hart et al. (2009a) |
| Corn  (*Zea mays L*.) | 150-180 | 165 | Combined field, silage, and sweet corn into one average range. | Hart et al. (2009b);  Hart et al. (2010);  Hermanson et al. (2000) |
| Cranberry (*Vaccinium macrocarpon* Ait.) | 10-60 | 35 | Dependent upon cultivar and maturity. | Strik et al. (2002) |
| Flower bulb | 0-109 | 55 | Dependent upon species and variety. | Newman (2009) |
| Hay | 30-50 | 40 | Application per cutting. | Shewmaker and Bohle (2010) |
| Herb | 50-350 | 200 | Dependent upon species and variety. | Mitchell (1998) |
| Nursery | 60-176 | 118 | Dependent upon plant material. | Majsztrik (2018) |
| Orchard | 0-109 | 54.5 | Dependent upon maturity and trees acre-1. Includes apple and filbert. | Righetti (1998) |
| Other | N/A | 107† | Average value of all median values. | N/A |
| Pasture | 0-200 | 100 | Dependent upon species and variety. | Shewmaker et al. (2010) |
| Potato (*Solanum tuberosum spp.)* | 80-350 | 215 | Dependent upon variety and soil test N values. | Lang et al. (199) |
| Rye (*Secale cereale*) | 20-60 | 40 | Dependent upon soil test N values. | Oelke et al. (1990) |
| Seed | 120-180 | 150 | Dependent upon species and variety. Includes turfgrass and broccoli seed. | Hart et al. (2013); Anderson et al. (2014) |
| Strawberry (*Fragaria x ananassa*) | 50-100 | 75 | Assuming maturity. Includes June-bearing and Day-neutral cultivars. | Dixon et al. (2019) |
| Turfgrass | 43.5-175 | 109.25 | Dependent upon species and variety. Includes driving ranges, golf courses, and sod farms. | Landschoot (2017) |
| Vegetable | 131-218 | 175 | Dependent upon species and variety. Includes pumpkin, market crops, rhubarb, and hops. | Collins et al. (2013) |
| Vineyard | 30-140 | 85 | Dependent upon variety. | Moyer et al. (2018) |
| Wheat (*Triticum spp.*) | 60-180 | 120 | Dependent upon variety and soil test N values. | Hart et al. (2000) |

† Due to variation in crop type, the value estimated here is the mean of the crop median values listed in the table.

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