**Table 3.** Range of tile drainage P concentrations reported in the literature.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Location** | **Time Base** | **Land Use** | **Soil texture** | **[TP]**  **mg/L** | **[TSP]**  **mg/L** | **[SRP]**  **mg/L** | **[PP]**  **mg/L** | **Reference** |
| VT | Seasonal | Alfalfa, corn | Silt loam |  |  | <0.02 |  | Benoit 1973 |
| NY | Annual |  | Muck |  |  | 0.2 – 7.8 |  | Duxbury and Peverly 1978 |
| NY | Annual | Corn | Silty clay loam | 0.11 – 9.8 |  |  |  | Geohring et al. 2001 |
| NY | Annual | Corn | Loam, silt loam |  |  | 0.009 – 0.441 |  | Hergert et al. 1981 |
| NY | Multi-event | Corn silage | Silty clay | 0.029 |  | 0.012 |  | Klaiber 2015 |
| NY | Multi event |  |  | 0.098 |  | 0.024 |  | Young 2015 |
| Quebec | Seasonal | Corn-soybeans | Coarse | 0.011 – 0.075 |  |  |  | Beauchemin et al. 1998 |
| Quebec | Seasonal | Corn-soybeans | Medium | 0.017 – 0.037 |  |  |  | Beauchemin et al. 1998 |
| Quebec | Seasonal | Corn-soybeans | Clay | 0.015 – 1.17 |  |  |  | Beauchemin et al. 1998 |
| Quebec | Annual | Corn-soybeans | Loam-sandy loam | 0.01 – 0.13 |  | 0.01 – 0.03 | 0.02 – 0.11 | Beauchemin et al. 2003 |
| Quebec | Annual |  | Sandy loam | 0.06 – 0.08 |  |  |  | Enright and Madramootoo 2004 |
| Quebec | Annual |  | Sandy clay loam | 0.10 – 0.37 |  |  |  | Enright and Madramootoo 2004 |
| Quebec | Seasonal |  | Sandy clay loam | 0.11 |  | 0.04\* |  | Jamieson et al. 2003 |
| Quebec | Seasonal | Corn | Sandy loam, clay loam |  |  |  | 0.03 – 0.27 | Poirier et al. 2012 |
| Quebec | Annual | Corn | Clay loam | 0.2 |  | 0.04 | 0.1 | Simard 2005 |
| Quebec | Annual | Barley-soybeans | Clay loam | 0.2 |  | 0.02 | 0.1 | Simard 2005 |
| Quebec | Annual | Corn | Sandy loam | 0.011 – 0.053 |  | 0.001 – 0.012 | 0.01 – 0.012 | Simard 2005 |
| Quebec | Annual | Corn, grains, grass | Silty loam | 0 – 2.726 | 0 – 0.916 |  | 0 – 2.688 | Goulet et al. 2006 |
| Ontario | Seasonal | Corn, soybean, alfalfa | Sandy loam, silty clay |  |  | 0.03 – 0.24 |  | Ball Coelho et al. 2010 |
| Ontario | Annual | Corn |  |  |  | 0.004 – 0.016 | 0.027 – 0.035 | Ball Coelho et al. 2012 |
| Ontario | Annual | Corn, oats, alfalfa | Clay |  | 0.17– 0.22 |  |  | Bolton et al. 1970 |
| Ontario | Annual | Corn, oats, alfalfa | Clay loam | 0.08 – 1.17 | 0.04 – 1.10 |  |  | Culley et al. 1983a |
| Ontario | Single event | Barley | Clay loam | 0.48 – 9.75 |  |  |  | Frey et al. 2013 |
| Ontario | Annual | Corn | Clay loam |  |  | 0.2 – 1.07 |  | Gaynor and Findlay 1995 |
| Ontario | Multi-event | Soybeans | Silt-clay loam | 0.02 – 1.35 |  | 0.02 – 0.43\* |  | Gottschall et al. 2009 |
| Ontario | Annual | Corn, soybeans, wheat | Loam, slit loam | 0.044 – 1.55 |  | 0.009 – 0.549 |  | Macrae et al. 2007 |
| Ontario | Multi-event | Corn-soybeans | Various | 0.03 – 0.24 |  | 0.015 – 0.072 |  | Miller 1979 |
| Ontario | Annual | Corn-soybeans | Clay | 0.417 – 0.530 |  | 0.02 – 0.05 | 0.31 – 0.44 | Tan and Zhang 2011 |
| Ontario | Annual | Wheat, corn, soybeans | Silt loam, clay loam | 0.03 – 0.08 |  | 0.003 – 0.007 |  | Van Esbroeck 2015 |
| Ontario | Annual | Various | Clay loam | 0.40 – 0.54 |  | 0.09 – 0.35 |  | Zhang et al. 2015b |

\* ortho-P reported

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Location** | **Time Base** | **Land Use** | **Soil texture** | **[TP]**  **mg/L** | **[TSP]**  **mg/L** | **[SRP]**  **mg/L** | **[PP]**  **mg/L** | **Reference** |
| MI | Annual | Corn-soybeans | Loam | 0.10 – 0.15 | 0.04 – 0.07 |  |  | Gold and Loudon 1989 |
| MI | Multi-event | Corn silage | Loam | 0.40 – 1.08 |  | 0.17 – 0.30 |  | Haack and Duris 2008 |
| WI | Annual | Corn silage | Fine loamy | 0.54 – 1.76 |  | 0.23 – 0.95 |  | Madison et al. 2014 |
| WI | Annual | Corn-soybeans | Fine loamy | 0.08 – 0.19 |  | 0.07 – 0.14 |  | Madison et al. 2014 |
| WI | Annual | Pasture | Fine loamy | 0.84 – 1.78 |  | 0.63 – 1.41 |  | Madison et al. 2014 |
| WI | Annual | Continuous corn |  | 0.5 – 0.7 |  |  |  | Ruark et al. 2012 |
| WI | Annual | Corn-soybean |  | 0.22 |  |  |  | Ruark et al. 2012 |
| WI | Annual | Pasture |  | 1.31 |  |  |  | Ruark et al. 2012 |
| MN | Annual | Corn-soybeans | Clay loam | 0.024 – 0.038 |  | 0.006 – 0.036\* |  | Logan et al. 1980 |
| MN | Seasonal | Various | Various |  | 0.03 – 0.09 | 0.02 – 0.14 |  | Oquist et al. 2007 |
| MN | Annual | Corn | Clay loam | <0.03 - <0.035 |  | <0.01 - <0.019\* |  | Randall et al. 2000 |
| IL | Annual | Corn-soybean | Silty clay loam |  |  | 0.083 – 0.194 |  | Algoazany et al. 2007 |
| IL | Annual | Row crop | Loess | 0.16 – 0.406 |  | 0.027 – 0.314 |  | Gentry et al. 2007 |
| IL | Annual | Corn-soybean |  |  |  | 0.08 – 0.18 |  | Xue et al. 1998 |
| IN | Multi-event | Corn-soybean | Sandy loam, silt loam |  |  | 0.003 – 0.478 |  | Ahiablame et al. 2011 |
| IN | Multi-event | Soybeans | Loam, silt loam | 0.05 – 0.17 |  | 0.005 – 0.024 |  | Vidon and Cuadra 2011 |
| IN/MN | Annual | Corn, wheat, soybeans | Silty clay | 0.28 – 0.35 |  | 0.02 – 0.06 | 0.22 – 0.26 | Bottcher et al. 1981 |
| OH | Annual | Corn, soybeans | Silt loam, clay loam | 0.11 – 0.30 |  | 0.08 – 0.27 |  | King et al. 2016 |
| OH | Multi-event | Corn | Silt loam | 0.072 – 0.112 |  |  |  | Logan and Schwab 1976 |
| MO | Annual | Corn | Silt loam |  |  | 0.09 – 0.15 |  | Nash et al. 2015 |
| IA | Single event | Corn | Loam |  |  | 0.01 |  | Allen et al. 2012 |
| IA | Annual | Corn | Loam | 0.01 – 0.037\*\* |  |  |  | Daigh et al. 2015 |
| IA | Annual | Prairie | Loam | 0.006 – 0.023\*\* |  |  |  | Daigh et al. 2015 |
| IA | Annual | Corn | Silt loam | 0.025 – 0.037 |  | 0.002 – 0.01\* |  | Baker et al. 1975 |
| \*ortho-P reported \*\* Total Reactive P reported (undefined) | | | | | | | | |
| **Location** | **Time Base** | **Land Use** | **Soil texture** | **[TP]**  **mg/L** | **[TSP]**  **mg/L** | **[SRP]**  **mg/L** | **[PP]**  **mg/L** | **Reference** |
| IA | Annual | Corn, soybeans | Silty clay loam |  |  | 0.005 – 0.013 |  | Nayak et al. 2009 |
| IA | Multi-event | Row crops, grass | Fine | 1.3 – 1.7 |  |  |  | Schilling and Helmers 2008a |
| IA | Seasonal | Corn | Loam |  |  | 0.013 – 0.163\* |  | Hruby 2015 |
| TX | Annual | Turf grass | Loamy sand |  |  | 0.09 – 0.13 |  | King et al. 2006 |
| Nova Scotia | Annual | Various | Various | 0.23 |  | 0.08 |  | Kinley et al. 2007 |
| Manitoba | Annual | Corn | Sandy loam |  |  | 0.04 – 0.32\* |  | Cordeiro et al. 2014 |
| England | Annual | Grassland | Clay loam |  |  | 0.3 |  | Hawkins and Scholefield 1996 |
| England | Annual | Grassland | Sandy loam, clay loam | 0.033 – 0.073 | 0.023 – 0.031 |  | 0.01 – 0.042 | Heathwaite and Dils 2000 |
| England | Single event | Wheat | Silt loam, silty clay | <0.1 – 2.75 |  | <0.01 – 1.8 | 0.01 – 1.3 | Heckrath et al. 1995 |
| England | Seasonal | Winter cereals | Clay | 0.26 – 0.60 |  | 0.03 \* 0.07 |  | Catt et al. 1998 |
| Ireland | Multi-event | Grassland | Clay | 0.042 – 0.172 |  | 0.002 – 0.006 | 0.004 – 0.13 | Ibrahim et al. 2013 |
| Netherlands | Annual | Grass | Sandy | 0.094 |  |  |  | Rozenmeijer et al. 2010a |
| Germany | Annual | Grass |  |  |  | 0.03 |  | Gelbrecht et al. 2005 |
| Spain | Seasonal | Cotton, sugar beets | Clay | 0.072 – 0.152 |  | 0.039 – 0.073 |  | Delgado et al. 2006 |
| Albania | Annual | Corn | Silty clay |  |  | 0.086 – 0.105\* |  | Grazhdani et al. 1996 |
| Denmark | Annual | Wheat | Sandy loam | 0.02 – 0.111 | 0.01 – 0.085 |  | 0.01 – 0.026 | Grant et al. 199 |
| Denmark | Annual | Various | Various | 0.05 – 0.62 |  |  |  | Kronvang et al. 2005 |
| Finland | Seasonal | Plowed fallow | Silty clay | 0.24 |  | 0.04 |  | Turtola and Paajanen 1995 |
| Finland | Multi-event | Barley-wheat | Clay | 0.46 – 1.42 |  | 0.03 – 0.078 |  | Uusitalo et al. 2001 |
| Sweden | Annual | Wheat, small grains | Clay | 0.72 |  | 0.19 |  | Ulen et al. 2016 |
| Sweden | Annual | Potato, small grains | Loamy sand | 0.022 |  | 0.006 |  | Wesstrom and Messing 2007 |
| Sweden | Annual | Barley | Sandy loam | 0.027 – 0.036 |  | 0.014 – 0.023 |  | Wesstrom et al. 2014 |
| NZ | Seasonal | Pasture | Silt loam | 1.2 |  | 0.33 | 0.83 | McDowell et al.2008 |
| NZ | Annual | Pasture | Silt loam | 0.074 | 0.029 | 0.023 |  | Monaghan et al. 2002 |

\* ortho-P reported