

Listener Email
11 May 04

Dear John,

With regard to your interest in translating phenological events into a geographic context, the rule that you are looking for is called Hopkin's Law, which is based mostly on the flowering times recorded in orchards across the U.S. Hopkin's Law states:

Phenological events vary at the rate of 1 day for each 15 minutes of latitude, 1.25 days for each degree of longitude, and 1 day for each 100 feet of elevation, being later northward, eastward, and upward. Thus along meridians at the same elevation, the same phenological event at one point will happen 17.25 miles north the following day...e.g. if bloodroots bloom in Hill City, they will bloom the following day in Grand Rapids. Along parallels at about the latitude of Grand Rapids, the same phenological event at one point will happen 37 miles east the following day...e.g. if ginger emerges in Hill City, it will do so the following day in Meadowlands. If red maple buds break along the shore of Pokegama Lake, they should do so the following day on the new water tower hilltop.

And now to add to your confusion. Ignoring the modest elevational changes across Minnesota, phenological isolines run from the northwestern corner of the state to the southeastern corner... rather parallel to the lines that separate our vegetation types... wonder if there is a connection? Also this law probably applies only in the spring. Curiously Minnesota has some late-flowering species, especially composites that bloom earlier in the north than the south. Presumably this is due to shortening day-length. I have no idea if Hopkin's Law works in reverse during the fall. It would be fascinating to look at dates of wild rice harvesting as folks normally follow the ripe rice from Canada to Minnesota each fall.

And now for the grand experiment. If you had a bunch of potted plants of the same species and started in Red Wing by putting one plant in the road ditch, and dropping plants off 37 miles west and 17 miles north of each other until you hit North Dakota, would they all bloom on the same day? It seems to depend upon the plant. Many would, but others will not. Presumably there is a certain level of genetic control that can't be overridden by the physical signs of spring responsible for Hopkin's law.

John from Hill City