

Potential of Trajectories for Monitoring Insect Movements (R. Weiss, AAFC-Saskatoon)

Agriculture and Agri-Food Canada (AAFC) and Environment and Climate Change Canada (ECCC) have been working together to study the potential of trajectories for monitoring insect movements since the late 1990s. *Trajectory models are used to deliver an early-warning system for the origin and destination of migratory invasive species, such as diamondback moth.* In addition, plant pathologists have shown that trajectories can assist with the prediction of plant disease infestations and are also beginning to utilize these same data. **We receive two types of model output from ECCC: reverse trajectories and forward trajectories.**

'Reverse trajectories' refer to air currents that are tracked back in time from specified Canadian locations over a five-day period prior to their arrival date. Of particular interest are those trajectories that, prior to their arrival in Canada, originated over northwestern and southern USA and Mexico, anywhere diamondback moth populations overwinter and adults are actively migrating. If diamondback adults are present in the air currents that originate from these southern locations, the moths may be deposited on the Prairies at sites along the trajectory, depending on the local weather conditions at the time that the trajectories pass over our area (e.g. rain showers, etc.). Reverse trajectories are the best available estimate of the "true" 3D wind fields at a specific point. They are based on observations, satellite and radiosonde data.

'Forward trajectories' have a similar purpose; however, the modeling process begins at sites in USA & Mexico. The model output predicts the pathway of a trajectory. Again, of interest to us are the winds that eventually end up passing over the Prairies.

Access all the [Historical Wind Trajectory Reports](#).