My overall objective was to evaluate the impact of adapting the SimCast model to predict the risk of late blight based on daily and monthly weather data. My first objective for this project was to develop disease prediction models based on daily and monthly weather means and compare to results based on hourly weather data. The second objective was to compare the blight unit predictions of models constructed from weather data sets specific to potato growing regions with models constructed with a data set that represents a broad range climate types. The third objective was to compare late blight risk predictions based on hourly, daily, and monthly weather averages to observed late blight severity data sets from four countries.

The first objective was to develop disease prediction models for use with coarse scale weather data and compare to fine-scale model output. To do this, I needed a data set with wide geographic coverage, hourly reporting, and extensive data quality control. To meet these criteria, I used the National Climatic Data Center Hourly United States Weather Obser- vations (HUSWO) 1990-1995 CD-ROM90 containing hourly, georeferenced weather obser- vations from 262 National Weather Service stations nationwide (Figure 2.2). Data from the 247 stations reporting hourly temperature, relative humidity, and precipitation were selected. Blight units for each location

The second objective was to compare the performance of these models when constructed from weather data sets more or less specific to potato growing regions.

The third objective was to compare SimCast Daily Means and SimCast Monthly Means output to disease severity observations from several countries. For the third objective, late blight severity and hourly weather data from 19 cultivar, site-year combinations