In North America, barley shares over 100 species of arthropod pests with other upland small grains and commonly affords sources of infestation to the summer cereal crops, maize and sorghum. Barley was perhaps severely attacked, at least initially, by indigenous pests after it was introduced into the western hemisphere by early European immigrants. Now, however, natural selection along with applied control measures has reduced losses to only about 5 to 7% of the annual grain production in the USA and Canada (Cramer, 1967). Yet even this small percentage projected worldwide translates into a production loss of about 12 million metric tons of grain. Such a loss to the world’s fifth leading crop (Harlan and Starks, 1980) seems excessive if we must double food production within the next 40 years in order to feed a doubling human population.

In addition to losses in grain production, arthropods also cause forage losses, which are difficult to document because of the confounding effects of plant growth conditions, and quality losses, especially in malting (Rautapää, 1968) and food barleys. In addition to causing direct damage, a few insects and mites are vectors of viruses that can cause widespread production losses.

No developmental stage of barley is free from arthropod damage. The crop, wherever grown, can be attacked in the seedling stage, throughout vegetative growth, and during seed storage. The pests are found in a wide variety of habitats and environmental conditions.

Most plant-feeding insects are polyphagous, attacking not only cultivated crops but also many weeds. Others are oligophagous, with only a few species of Gramineae as food plants. Only a few barley pests are monophagous.

Reproductive potentials of arthropod pests vary considerably. Some, such as white grubs, may require several years to complete their life cycle, whereas others, such as aphids, may complete 10 or more generations during a growing season. Even though some species have multiple generations and some fe-