major virus groups and places them in the perspective of the entire field of virology. The *Sixth Report of the International Committee for the Taxonomy of Viruses* ***(3)*** is the most thorough report to date and provides excellent capsule descriptions of each of the virus families. Finally, an indispensable collection beginning with the first set in 1970, is the CMI/AAB *Descriptions of Plant Viruses*, which provides detailed descriptions of individual viruses, virus groups, and families ***(4)***. The reader is referred to these and other references suggested in the text for more detail on specific subjects.

2. Plant Virus Symptomatology and Impact

A wide range of symptoms can be induced in plants by virus infection. Developmental abnormalities, such as stunting, leaf curling, and uneven growth, are often seen. The common symptoms most easily recognized as induced by virus infection, however, are mosaics, mottles, and ringspots. These symptoms may be so characteristic of infection of a host plant by a particular virus that nothing else is required for diagnosis. Plant virus names often provide descriptions of symptoms observed on economic hosts: Major observable symptoms of tobacco mosaic, tobacco ringspot, tomato yellow leaf curl, or tomato bushy stunt are easily envisioned.

Loss caused by virus infection may directly result from reduced quality or quantity of the crop itself, infection of propagation material, or from steps that must be taken to prevent virus infection of crops. Several virus diseases result in great worldwide losses on an annual basis, as summarized by Agrios ***(5)***. These include diseases of many grains caused by barley yellow dwarf virus (BYDV), and rice tungro disease, caused by the rice tungro bacilliform (RTBV) plus spherical virus (RTSV) complex. The latter has been the most important disease of rice in Southeast Asia for some years. Viruses such as these can result in continual crop losses of around 10%, with considerably greater damage in localized areas. Since chemical control measures are not available, plant virus control has come primarily from methods such as breeding for resistance and control of invertebrate vectors. This is likely to change through the increasingly common use of biotechnology, as discussed later in the chapter.

3. Plant Virus Architecture, Composition, and Structure

Plant viruses may have RNA or DNA genomes, either of which may be single- or double-stranded. Single-stranded (ss) RNA genomes of positive sense are most common, occurring in approx 75% of plant viruses ***(1)***, but ssRNA genomes may also be of negative sense. Although there is not a theoretical limit to plant virus genome size, viruses with extremely large genomes (>30 kb), which are common in vertebrates and insects, have not been identified in plants. Plant virus taxonomy is continuing to evolve, with an increasing