the virus disease affects storability of the crop. It is difficult to achieve when refrigeration, humidity, and control of atmospheric gasses are required.

3.2. Plant Testing

Selection for agronomic performance among transgenic lines is largely a process of eliminating lines that do not meet performance standards of the parental cultivar (**Note 3**). It begins with elimination of lines with obvious defects and progressively becomes more stringent, until final selections require large-scale testing with careful statistical analysis. The selection process becomes progressively more costly at each step, and much saving can be realized if defective lines are identified and eliminated early in the process.

3.2.1. Agronomic Appearance of New Transformants

Off-type plants can often be identified among new transformants in tissue-culture media by their lack of vigor or by conformational aberrations. Transformants with distinct and serious defects may be eliminated immediately. However, a degree of caution must be exercised in discarding the initial transformants. These plants sometimes exhibit some transitory off-type growth that may be caused by stresses associated with regeneration or with the tissue-culture medium.

3.2.2. Agronomic Appearance of Tissue-Culture-Propagated Plants

The next step in the selection process after regeneration of transformed plants involves micropropagation of the transformants in vitro and transfer to soil flats. Off-type lines, especially those with low vigor, are more easily recognized when they are viewed as groups of plants in flats and compared with control plants propagated at the same time than when viewed as individual plants. In our experience, transformed potato plants that grow slowly in soil flats always perform poorly when they are transferred to the field. Aberrant growth in soil flats is sometimes a transitory condition.

3.2.3. Agronomic Characteristics of Plants in First-Year Field Tests

More subtle vigor and growth aberration defects that are not obvious at an earlier stage are often exhibited after plantlets are transferred from soil flats to the field, and most lines that do not rate serious consideration for commercialization can be eliminated in the first year of field testing, either on the basis of susceptibility to virus disease or poor agronomic performance. It is important to remember that the micropropagated plantlets used in many early trials of some crop species may not produce the same agronomic performance as the seed used in commerce. Agronomic performance is important only among lines that exhibit adequate disease resistance. Vigor and foliage characteristics of