antee problems will not occur. The very nature of managing a golf course predisposes it to stress since the turf is maintained at its very edge of survival. For example, golf greens are generally mowed below 1/4 inch, which is much lower than grasses are naturally adapted. This results in a precarious balance between the needs for grass maintenance and those for grass survival. The following steps have proven successful in developing an IPM program and should provide a good starting point for golf course superintendents.

1. Define the role and responsibility of all persons who are involved in the pest management program. This includes establishing communication between club officials, players, and crew members. These individuals must be aware of the new approach the superintendent is trying and that it is an ongoing experiment. They need to expect some successes and some setbacks. Assurance and understanding will be needed by all participants during initial stages of development to prevent misunderstanding and provide ample time for desirable results to occur.

   Scouts who are conscientious and trained to recognize turf pest problems provide the base for successful monitoring. The superintendent will probably want to begin as the primary scout until a feel for IPM strategies is attained. Once this occurs, this responsibility may be delegated to an assistant. However, it should be emphasized that all employees should play an important role in recognizing pests and/or damage produced. Take time to explain the pests and their symptoms to those who perform daily tasks such as mowing or irrigation, since these people have a close-up, daily view of the grass. The spray technician also should be familiar with pest identification and most important, its life cycle. Emphasize how each pest usually has a point in its life cycle in when it is most vulnerable.

2. Determine management objectives for specific areas of the site and correct all practices which favor pest development or put undue stress on the turf. Obviously, highly maintained areas such as greens and tees require a priority for pest control. Lower maintained grass, such as the driving range or roughs are a lower priority. A thorough inspection should be conducted of each site on the course before implementing the IPM program. This will provide the groundwork from which all management decisions can be based and also will provide a record allowing correcting problems made during course construction or from subsequent management to be justified. A field history form similar to **Table 1** should be used to record data. Included in this information should be the current turf species, its area, mowing schedule, soil analysis, soil drainage, fertilizer programs, irrigation scheduling, and shade and traffic patterns. Be prepared to improve existing problems which weaken the turf, or the potential success of the IPM program will be greatly reduced. Solicit funds for these improvements, as they will save money in the long run. Again, this relates back to providing open communication between club officials and the superintendent.

   It also is suggested that a weather monitoring system be installed. This will provide detailed, localized data on important variables such as rainfall patterns, soil temperature and moisture, wind movement, humidity, and sunlight indices. These climatic conditions usually play the most important role in specific turf growth patterns. Being able to track or pinpoint them enables the superintendent to modify cultural practices to supplement or offset its effects.

3. Set aesthetic or action thresholds and begin monitoring and recording pest levels. An aesthetic or action threshold is the point when pest populations or environmental conditions indicate that some action must be taken to prevent intolerable damage. These thresholds will vary according to the location of the course, the specific pest being scouted, level of use of the turf area, the expectations of club members, and budget constraints.

   The pest in question will partially determine its aesthetic threshold. For example, the number of mole crickets tolerated on an area basis is less than the number of sod webworms. Related to this threshold is the site in which the pest is found. Golf greens have a much lower aesthetic threshold for mole crickets than a rough or out-of-play area. Unfortunately, exact threshold numbers have not been developed for every pest encountered in turf. However, **Table 2** provides a starting point for several common turf insects.

   Determining ways of monitoring pests vary widely and range from simple visual inspection to the use of soil bioassays and immunoassays. For example, the following are used for routine insect detection: