IPM Planning Guide

instructions

Pest Worksheet Instructions

GCSAA

What is the Pest Worksheet?

The Pest Worksheet is an intermediate step in developing your IPM plan that enables you to clearly identify your key pests, as well as the practices and products that you want to use to manage them. Portions of the information you generate on this worksheet will be transferred onto your final IPM plan.

Estimated time (steps I-IV): 2 hours per management zone

Materials needed:

Completed forms:

- Completed Climate Appraisal Form
- Completed Management Zone Inventory

Forms:

- A Pest Worksheet for each of the management zones on your golf course.

References:

- The Pest References on each targeted pest
- Using threat temperatures for IPM planning

Examples:

Sample Pest Worksheets have been provided for guidance.

Instructions

You will need to complete a separate Pest Worksheet for each of the management zones you identified in your Management Zone Inventory.

I. Insect pests

On your Pest Worksheet, list the top five insect pests you deal with in the management zone of interest, in order of importance. The first insect listed (I-1) should be your most important insect pest, while I-5 represents the least important pest. Then, for each insect listed:

1. **Determine your control strategy:**

- Decide whether you want to use preventive control (treatment BEFORE the insect appears) or curative control (treatment AFTER the insect appears).
- Use a “P” or “C” in the column next to each insect’s name to indicate whether you plan to use preventive or curative control.
- Consult the Pest References (or other available reference information) for each of your target pests for information on the feasibility of preventive vs. curative control for each pest.
- If you opt for preventive control based on a history of infestation with this pest, consider attaching documentation of past infestations (notes, photos, etc.) to the final version of your Pest Worksheet.

2. **Determine target life stage.** Determine whether your control measures will target larvae (“L”) or adults (“A”) or both by consulting the Pest References (or other available reference information) for each of your target pests. Indicate the target life stage with an “L” or “A.”
3. **Determine when insects are likely to appear:**
    - Consult the weather reference entitled “Using threat temperatures for IPM planning” to determine the conditions that are conducive to development of each of your key pests. To confirm the accuracy of the forecasted threat period, review your historical records (if available) and identify the earliest date and the latest date that the targeted stage of each pest has been observed in the past. These dates define the beginning and end of the insect’s threat period.

      Now, on your Pest Worksheet, use a yellow marker to highlight the threat period for each insect. If using the electronic Pest Worksheet form, use the “shading” option in Excel to highlight each insect’s threat period.
    - Ideally, each of the two methods above will identify similar threat periods. If they differ somewhat, it is safest to assume the earliest start date and the latest stop date — in other words, the longest threat period possible.
4. **Decide when to begin control measures.** Using your Pest References (or other available reference information)**,** determine when control measures for each insect should begin. If available, you should also consult historical records to see on which dates successful control measures were implemented in the past. Mark an “X” on the appropriate line of your Pest Worksheet to indicate potential dates for starting chemical, biological or cultural control measures.
5. **Decide where to make control measures.** If pesticide applications are called for, consult historical records, management zone forms and/or scouting records and maps to determine whether pests require broadcast applications, or whether pesticide inputs can be reduced by using spot applications. Mark a “B” (for

broadcast) or “S” (for spot treatment) next to the name of each pest, based upon your decision.

II. Diseases

On your Pest Worksheet, list the top five diseases that you deal with in the management zone of interest, in order of importance. The first disease listed (D-1) should be your most important disease, while D-5 represents the least important. Then, for each disease listed:

1. **Determine control strategy:**
    - Decide whether you want to use preventive control (treatment BEFORE the pest appears) or curative control (treatment AFTER the pest appears).
    - Use a “P” or “C” in the column next to each pest’s name to indicate whether you plan to use preventive or curative control.
    - Consult the Pest References (or other available reference information) for each of your target pests for information on the feasibility of preventive vs. curative control. If you are uncertain, a good rule of thumb is to focus on preventive control if you have had a history of problems with the disease in question, and curative control to deal with less serious problems as they arise.
    - If you opt for preventive control based on a history of infestation with this pest, consider attaching documentation of past infestations (notes, photos, etc.) to the final version of your Pest Worksheet.
2. **Determine when diseases are likely to appear:**
    - Consult the weather reference entitled “Using threat temperatures for IPM Planning” to determine the conditions that are conducive to development of each of your key pests. To confirm the accuracy of the forecasted threat period, review your historical records (if available) and identify the earliest date and the latest date that the targeted stage of each pest has been observed in the past. These dates define the beginning and end of the disease’s threat period.

      Now, on your Pest Worksheet, use a yellow marker to highlight the threat period for each disease. If using the electronic Pest Worksheet form, use the “shading” option in Excel to highlight each insect’s threat period.
    - Ideally, each of the two methods above identify similar threat periods. If they differ somewhat, it is safest to assume the earliest start date and the latest stop date — in other words, the longest threat period possible.
3. **Decide when to begin control measures.** Mark an “X” on your Pest Worksheet to indicate potential dates for starting control measures (chemical, biological or cultural). For preventively controlled diseases, begin treatment two to four weeks

before the threat period begins (four weeks for root-infecting diseases such as summer patch, take-all patch, spring dead spot and Bermuda decline). For curatively controlled diseases, place an "X" at the beginning of the threat period.

4. **Decide where to make control measures.** If pesticide applications are called for, consult historical records, management zone forms and/or scouting records and maps to determine whether pests require broadcast applications, or whether pesticide inputs can be reduced by using spot applications. Mark a "B" (for broadcast) or "S" (for spot treatment) next to the name of each pest, based upon your decision.

III. Weeds

On your Pest Worksheet, list the top five weeds you deal with in the management zone of interest, in order of importance. The first weed listed (W-1) should be your most important weed, while W-5 represents the least important. Then, for each weed listed:

1. Determine control strategy:

- Decide whether you want to use preventive control (treatment BEFORE the pest appears) or curative control (treatment AFTER the pest appears).
- Use a "P" or "C" in the column next to each pest's name to indicate whether you plan to use preventive or curative control.
- Consult the Pest References (or other available reference information) for each of your target pests for information on the feasibility of preventive vs. curative control. If you are uncertain, a good rule of thumb is to focus on preventive control if you have had a history of problems with the weed in question, and curative control to deal with less serious problems as they arise.
- If you opt for preventive control based on a history of infestation with this pest, consider attaching documentation of past infestations (notes, photos, etc.) to the final version of your Pest Worksheet.

2. Determine when weeds are likely to appear:

- Consult the weather reference entitled "Using threat temperatures for IPM planning" to determine the conditions that are conducive to development of each of your key pests. To confirm the accuracy of the forecasted threat period, review your historical records (if available) and identify the earliest date and the latest date that the targeted stage of each pest has been observed in the past. These dates define the beginning and end of the weed's threat period.

  Now, on your Pest Worksheet, use a yellow marker to highlight the threat period for each weed. If using the electronic Pest Worksheet form, use the "shading" option in Excel to highlight each insect's threat period

- Ideally, each of the two methods above will identify similar threat periods. If they differ somewhat, it is safest to assume the earliest start date and the latest stop date — in other words, the longest threat period possible.

3. **Decide when to begin control measures.** Mark an "X" on your Pest Worksheet to indicate potential dates for starting control measures (chemical, biological or cultural). Consult the appropriate Pest References (or other available reference information) for more information.
4. **Decide where to make control measures.** If pesticide applications are called for, consult historical records, management zone forms and/or scouting records and maps to determine whether pests require broadcast applications, or whether pesticide inputs can be reduced by using spot applications. Mark a "B" (for broadcast) or "S" (for spot treatment) next to the name of each pest.

IV. Other pests

Pests such as birds and rodents that do not fall into the insect, disease or weed categories should be listed on your Pest Worksheet as well, using O-1 through O-5 to designate pests from most to least important. Then, for each "other" pest listed, follow the instructions under Section II (Diseases), modifying as necessary.

The next step

Use the information generated on the Pest Worksheet to complete the IPM Planner.

Preventive vs. curative control — Which one fulfills your IPM goals best?

Which management strategy is more in line with IPM principles — preventive or curative? In the authors' opinion, this is an irrelevant question. The more useful question to ask is: Based on what we know about this particular pest and about its history at this location, which strategies will be most effective, while at the same time the most economical and environmentally compatible?

For some pests — particularly those that are the most destructive, the most difficult to scout for and/or the most difficult to control, preventive control (treatment BEFORE the pest appears) is not only the most effective strategy, but is also frequently the most environmentally and economically appealing strategy. A pest that requires preventive control at one location due to a long history of difficult control may not require preventive control at another location where its numbers have been light enough to warrant very little concern.

Preventive measures include a wide variety of techniques, from the selection of pest-resistant varieties of turf, to cultural practices that improve plant health and therefore pest resistance, to application of pesticides in advance of symptoms of pest infestation. To time preventive pesticide applications, consult "Using threat temperatures for IPM planning," and use this in conjunction with current weather data from your location.

Curative measures, which are taken AFTER the pest or its symptoms are detected, are usually employed when the pest is easily controlled and/or it has caused minimal damage in the past at that location. In some cases, there are threshold levels of the pest or its damage that are used to trigger a control procedure. For these pests, scouting for early signs of pest activity is very important. The reference "Using threat temperatures for IPM planning" provides information on the threat temperatures that should trigger scouting for key pests.