

RED BALL TRAP INSTRUCTIONS

APPLE MAGGOT (*Rhagoletis pomonella*)

The AM is native to the eastern and Midwestern US and Canada. The adult resembles a small housefly in size, with a black body, eyes a dark red, the thorax and abdomen having distinctive white or cream colored bands. The AM is distinguished from other similar, and closely related flies by the dark banding on its wings. (See Figure 1).

The AM overwinters in the pupal stage in soil. As soil temperatures rise in early spring, development of pupae commences with adult flies first emergence beginning shortly thereafter (early summer, mid June in lower Michigan). A feeding and mating period (pre-oviposition) of approximately 7-10 days is followed by egg laying directly under the skin of the apple. Females may deposit eggs over an approximate 30 day period laying as many as 300-500 eggs. As eggs hatch, larvae tunnel through fruit flesh leaving a winding brown trail. Egg laying usually ceases in early to late August; however, it may continue longer if drought conditions exist throughout August.

MONITORING APPLE MAGGOT:
 When monitoring AM traps, AM's show a preference for transparents, although no variety is immune from attack. Sticky red spheres are effective monitoring devices for adult AM flies. Females are attracted to the sphere for mating and egg laying activities and are trapped by the sticky coating. Hang traps shortly before expected adult emergence (mid to late June in Michigan). First emergence may be detected by use of pheromone yellow board AM traps. Yellow AM traps work best by

placing some in an abandoned orchard or an alternate host area outside and some distance from your orchard. This alerts you to emergence in areas outside your orchard but near enough for you to start watching for activity in your trees as well. Also, have some yellow AM traps in the orchard in case emergence comes from within your block.

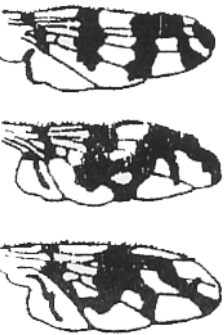


FIGURE 1: Wing banding patterns of key fruit flies in MI.
 TOP: Cherry Fruit Fly
 MIDDLE: Black cherry fruit fly
 BOTTOM: Apple and Blueberry maggot

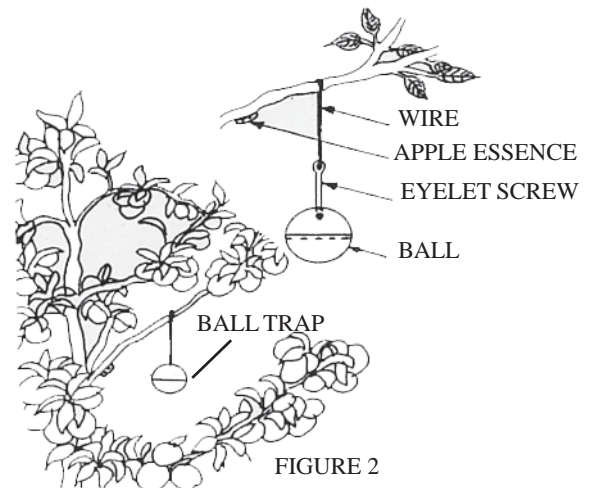
Emergence dates can also be obtained from your local County Extension office. Apple maggot may arrive at your orchard ready to lay eggs, after feeding at a point outside your orchard. This is why it is important to monitor alternate host sites. At this stage, they may fly right by the yellow board traps and go direct to the bait traps where they are caught. This is why it is important to use both systems when monitoring for AM. Move the ball traps to a different site at each inspection if you are not catching flies and are in a known time period for potential damage.

When using ball traps alone as a visual trap with no attractant, we recommend 6-12 traps per acre placed on the perimeter row. If using the apple essence attractant, this density can be reduced to the following recommendations: In a dwarf planting, place 1 trap every 20 trees on the outside border; in a standard tree planting, place 1 trap every 10 trees on the border. Traps should be placed towards a biased source (woodlot, abandoned orchards, fencerows with hawthorn or apple trees), otherwise place them evenly around perimeter. Orchards with severe AM problems in the past should place a few stations in the interior of the orchard.

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Hang the sphere in the proximity to fruit at eye level on the perimeter of the south or southeast side of the tree. Attach the ball to a sturdy stem about 1 foot above a fruit cluster of approximately 6-10, cleaning out the foliage and other fruit for at least 18 inches to sides and top of the trap so it is easily visible. The spheres attract the insects that come within a few yards of them; therefore, capture of ONE AM on any one trap at a time would indicate the need for an immediate control application. Once the pesticide is applied, AM captures are disregarded for the period during which the protective spray is effective (varies according to pesticide used. Consult your chemical rep to determine this data). At or near the end of this protective period, the traps should be cleaned of all flies and new sticky adhesive applied if necessary. All flies should be cleaned off the traps at each inspection 2-3 or more times a week. Keep record of all captures and map out trap placement in your orchard. This will help you in the future to determine the best places to put traps as certain patterns can be shown where population pressure is heaviest, etc.

Use of the apple volatile will increase the ball traps efficiency by attracting flies from a distance. Once they are close to the ball trap they will be attracted to it for mating and egg laying upon which they are captured. When using the apple essence, 5 flies per trap average now becomes the action threshold for making a spray decision, instead of 1 fly captured for using the trap with no attractant. Each vial contains enough attractant to last one full season. We recommend placing the vial about 12 inches away from the ball trap by tying it to the same scaffold limb the ball trap is hanging from (Figure 2).



Remember that the ball trap is a visual trap and it is very important that it be kept clean of debris and insects in order that it works at peak efficiency. Clean at each inspection and be sure an adequate amount of tangletrap is present to ensure that surface remains sticky so flies stick when they land.

IMPORTANT NOTICE: This guide is provided to aid in use of traps to monitor for the apple maggot. Certain modifications will be required according to your location. Spray programs should not be altered solely on the basis of data obtained from using this guide as information may vary according to your region. Please consult with a qualified pest management consultant or your local county extension office for advice.