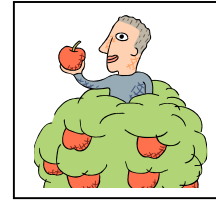


## Apple Orchard IPM Program Development Simulation

**Your role:** Pretend you are an apple orchard farmer in Pennsylvania.

**Your goal:** Grow healthy apples to sell for profit \$\$\$\$

**Your problem:** a pest called the **European Red Mite (*Panonychus ulmi*)**



As you might expect, it is unlikely that a farmer would know everything about every type of pest possible and the particulars about the IPM program for that pest. Therefore, just as a farmer, you are going into this without a whole lot of knowledge about particulars. **The resources available to you on the website are exactly what is available to the general public.** (In fact, if you had just one apple tree in your yard, theoretically you could consider that as your orchard...) Right now, you will be using this class time to gather the information you need to decide how to deal with your pest problem. Using the guidelines below, create a procedure for yourself in dealing with your pest problem following IPM guidelines. Record how you will do the following to save your orchard and protect your investment.

**To Begin, read over the information at the website**→ <http://tfpg.cas.psu.edu/284.htm>

### Monitoring Program Outline:

1. Describe the type of damage mites do to plants and apple trees.

2. How would you calculate/determine the percent infestation of mites in your orchard?

3. If you determined infestation to be **65%**, what would be the values below?

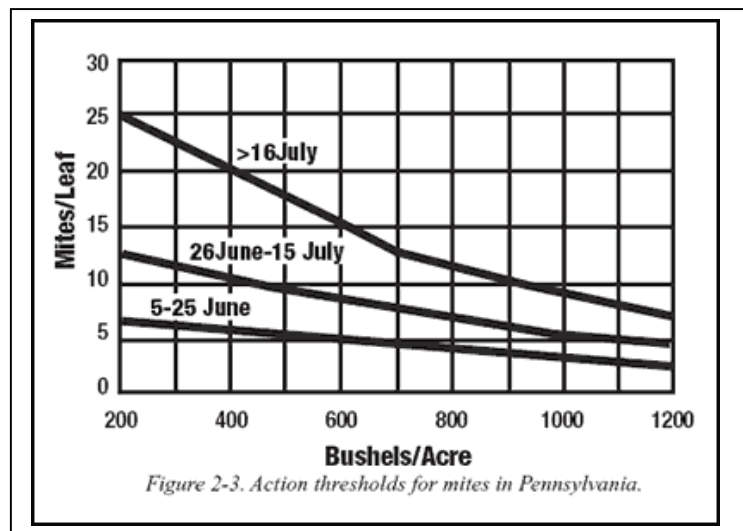
See→ [http://resources.cas.psu.edu/TFPG/Table2\\_3.pdf](http://resources.cas.psu.edu/TFPG/Table2_3.pdf) **List the values in the table below.**



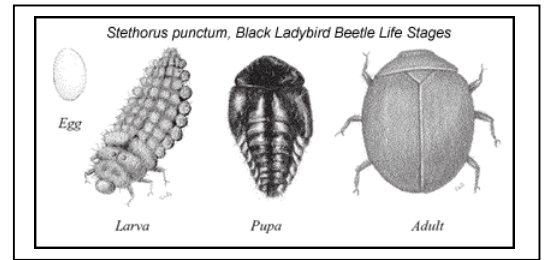
Expected density in mites/leaf	Limits of mite populations in mites/leaf <sup>b</sup>

4. What is the Procedure for Determining **Action Threshold**? Why is it important to know this?

5. If the mites/leaf level was **15 mites per leaf** on **July 30<sup>th</sup>** and your require productivity of **500 bushels** and acre to stay in business, would you treat or not treat the mite problem according to the action threshold graph?



5. What is ***Stethorus***? What is its function in apple orchard management?



6. What is the basic procedure for monitoring beneficial predatory insects like ***Stethorus***?

7. Why is a predatory insect to mite ratio of **2.5** so important? How is this related to determining if chemical pesticides are needed?

8. Choose the best chemical pesticide for ERM (ERM = European Red Mite) on apples.

(see [http://resources.cas.psu.edu/TFPG/Table4\\_7.pdf](http://resources.cas.psu.edu/TFPG/Table4_7.pdf) Why did you choose that particular pesticide?

9. What are some suggestions on chemical pesticide application effectiveness and strategies according to the website?

10. What is the MSDS information on your pesticide of choice? What precautions are necessary in dealing with exposure to your pesticide of choice? Consult the MSDS info. **Here**⇒ <http://hazard.com/msds/index.php>

11. Name and describe the utilization of another predatory insect besides ***Stethorus***.

( see <http://tfpg.cas.psu.edu/348.htm> )

12. Which pesticides would be the worst in term of negatively affecting beneficial insects like ***Stethorus***?

[http://resources.cas.psu.edu/TFPG/Table4\\_5.pdf](http://resources.cas.psu.edu/TFPG/Table4_5.pdf)

13. What are some other pest management options/strategies for an apple orchard besides beneficial insects and pesticides? You may want to search the Internet or refer to your text Ch. 23.