

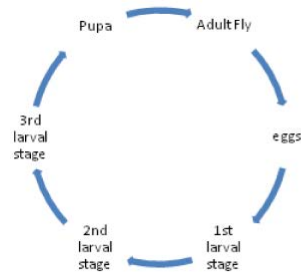


Practical Biosecurity Programs
Standard Biosecurity Protocol (SBP)
SBP 18

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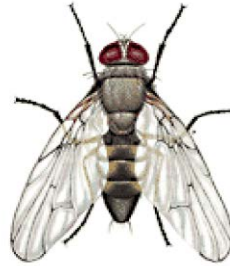
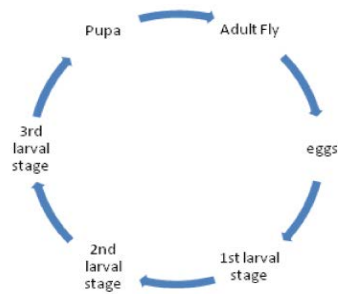
Pest Control: Flies

1. **Purpose:** To prevent disease transmission by insects
2. **Responsibility:** Farm Staff
3. **Frequency:** Ongoing
4. **Biosecurity Protocols**
 - 4.1 Flies are potential disease spreading vectors which are both serious problems to a farm's sustainability
 - 4.2 Minimize fly populations to maximize bio-security along with limiting public relation problems
 - 4.3 The fact that many farm-sites are located in close proximity to each other means fly control is also a community effort
 - 4.4 Common flies found on animal operations are the Common House Fly, Lesser House Fly, Blow Fly, Stable Fly etc.



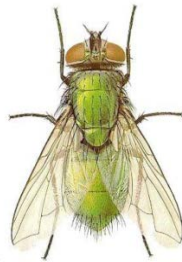
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Common House Fly & Life Cycle



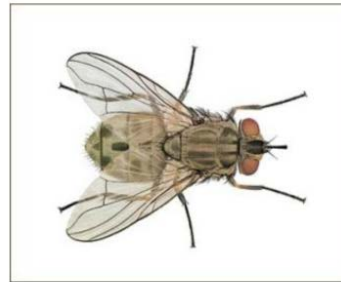
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Lesser House Fly & Life Cycle



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Blow Fly



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Stable Fly

- 4.5 What is known about the species present, their lifecycles, preferred habitat and their potential hazards for disease vectoring is disturbing as these seem to lend themselves well to livestock and poultry operations
- 4.6 Flies cannot be totally eliminated and as the number of animals increases on a farm site, so will the fly population
- 4.7 The emergence of adult flies is the symptom of a larger problem. Many people want to treat for the adult flies (ie. insecticide) but this does not manage the source of the fly problem; which is the ideal breeding conditions in the manure
- 4.8 The main issues that impact fly development are:
- poor water drainage on the farm site
 - poor air circulation between barns and in barns
 - infrequent manure removal
 - excess water leakage from drinkers
 - excess feed wastage
 - inadequate manure storage facilities



Picture 18.1



Picture 18.2

Oderkirk, 2010

4.9. Control flies using an integrated fly control program

- i. Integrated fly control is a component of an overall pest management concept called Integrated Pest Management (IPM)
- ii. IPM uses all available methods of pest control in a way that minimizes economic, health and environmental risks while optimizing production and financial return. The key to an IPM program is prevention.
- iii. This is done by creating an environment that is inhospitable or at least not preferred by many fly species. In general, flies like warm, high moisture environments that are high in organic material in order to reproduce. The waste collection areas in most animal production facilities are ideally suited for fly reproduction
- iv. Adjust farm management techniques in and around the barn to change the conditions in these areas. Flies do not like excessively dry or excessively wet conditions. The best and most sustainable approach would be to create an area with dry manure storage and well drained manure collection areas.



Picture 18.3



Picture 18.4

Oderkirk, 2010

4.10 Strategies to minimize fly infestations:

4.10.1 Short term management changes

- i. Keep the drinker system well maintained (fix leaky fittings). This prevents excess water from accumulating in the pen bedding or litter, under the barns and in manure collection areas
- ii. Decrease the practice of flushing drinker water or dumping drinker water during drinker cleaning onto the bedding or leaving in the barn
- iii. Keep feed contained in a feed pan, bin or area to minimize spillage
- iv. Closely monitor feed distribution (don't over feed). This reduces breeding material for flies
- v. Create air-circulation in barns and sheds
- vi. Using fans, etc. to move air to keep bedding/litter and floors dry
- vii. Keep vegetation between barns & sheds mowed. This minimizes shelter areas for flies and allows for adequate air circulation

4.10.2 Sanitation & Housekeeping

- i. Make sure feed mills or kitchens, sheds and surrounding grounds are kept clean
- ii. Feed spills should be cleaned up immediately
- iii. Spillage of manure during removal should be cleaned up immediately
- iv. Mortality should be dealt with quickly by removing the carcasses from the CAZ and disposing of them
- v. Change the pH of the manure collection areas by applying peat to these areas which will lower the pH and absorb moisture making it less hospitable for flies
- vi. Set up fly control mechanisms in barns, sheds and feed mills/kitchens
- vii. Use fly traps, bug zappers, sticky fly tape, insecticide bait traps etc in and around barns and other buildings on the farm site to help keep fly numbers at manageable levels



Picture 18.6



Picture 18.7

Oderkirk, 2005

4.10.3 Long term management changes:

- i. Develop adequate drainage around barns
- ii. Use proper grading to allow water to run away from the farm site and/or a drainage tile system that directs water to a waste water lagoon or wet land areas. This system would be set up to optimize microbial breakdown of the waste water
- iii. Develop an efficient manure removal process with removal on a regular basis (2 week schedule)
- iv. Remove the manure/litter waste from the CAZ



Picture 18.8



Picture 18.9

Oderkirk, 2010

- v. Develop an adequate manure storage away from the farm site and cover the manure by tarping



Picture 18.10, Tablonte & Malone, 2005



Picture 18.11, Biosecurity workshop, 2005

- vi. Develop a composting facility to process manure, mortality and other organic waste. Composting material must be kept covered
- vii. In enclosed manure storage sheds or deep pits, parasitic nematodes can be added to the manure piles on a 3-6 week schedule (*Steinernema feltia*). These organisms infest and multiply inside fly larvae

- viii Enclosed barns or sheds allow for better fly control with a controlled environment and increased biosecurity
- ix. Livestock/poultry facilities should have cement floors for ease of cleanup and sanitation

4.10.4 Acute Treatments:

- i. Environmental conditions and unforeseen circumstances can impact fly infestations beyond what preventative measures can control. In these cases, it is important to follow set protocols
- ii. Monitor manure piles regularly for maggots and signs of increasing fly populations and record observations on a **SBF6: Pest Control Chart**
- iii. In warm weather or fly season, monitor weekly (flies can complete their lifecycle in 14 days)
- iv. When maggots are noted, apply spot control measures
- v. Apply slaked lime or agricultural lime (safer product) or Diatomaceous earth directly to the maggots
- vi. **As a last resort**, there are knockdown pesticides that can lower populations in enclosed barns or applying them to the outside of buildings
- vii. **Pesticides use must always be done in conjunction with manure removal to ensure an effective knockdown**
- viii Record pesticide use on a **SBF 5: Disinfectant, Pesticide & Herbicide Use Chart**
- ix. This should only be used as a short term knockdown solution when adult fly populations spike
- x. Types of pesticides and their use are described in **SBP 15: Pesticides for Biosecurity Purposes**. Always follow the product label
- xi. Use these products very carefully around livestock & poultry as these products can be very toxic if applied improperly
- xii. Not all pesticide products would be acceptable for use in farm yards and around livestock. **Therefore, it is critical to read and follow each pesticide product label carefully before applying any product.** Consult with your chemical supply dealer before purchasing any product

5. Biosecurity Deviation Protocol

If a pesticide used for flies is ineffective, switch to another type of pesticide spray. Alternate the use of 2-3 pesticides to prevent flies from becoming immune or mutating resistance to a particular chemical

6. Biosecurity Records

SBF 5: Disinfectant, Pesticide & Herbicide Use Chart

SBF 6: Pest Control Chart

Reference: North Carolina State University IPM website, <http://ipm.ncsu.edu/>