

Artificial Diet for Insect Rearing

Flenadia Moore

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Supervisor: Maribel Portilla

Insect rearing has increased in complexity and sophistication as the need has grown for insects in entomological research and pest control. Wide varieties of insects are produced in millions by using artificial diet and used them in various pest control programs. Insect diets are essential to the maintenance of healthy laboratory insects. Today, scientists are developing less complicated diets, easy to prepare, avoiding ingredients that can have possible detrimental effects on insects and human health (Portilla et al 2011, Elvira et al 2010).

My name is Flenadia M. Moore. I have been part of the STEP program since Jun 2010. I have been working with the Southern Insect Management Research Unit for a little over a year, and I have and will constantly learn new and amazing things. I moved to the National Biological Control Laboratory in November 2010 to work with the project *Beauveria bassiana* under the supervision of Maribel Portilla.

In this project I have been in charge mainly with the preparation of different diets and lygus colony maintenance. After a several times of diet preparation I learned that the texture of the Lygus diet is crucial for obtaining high quality progeny and good hatchability. There are different processes to follow for the lygus colony maintenance such as gel preparation package for lygus oviposition, diet packing for lygus feeding depending on lygus stage development, setting cages periodically for lygus immature colonies. The lygus diet can be stored for over two months but we normally prepare 3 liters every month to feed five cages of lygus adults and nymphs of different instars. The adult cages (1 or 2) produce eggs every day, but we collect oviposition gel packs every other day. The lygus diet consists in the combination of wheat germ, lima bean, soy flour, eggs, agar, and some preservatives.

The diet we make the most is mostly known as Evaluation diet or Bioassay diet. The process of preparation is different but most of the ingredients are the same as lygus diet. We use this diet to evaluate the infection of *B. bassiana* in different insects. The diet with the infected

insects can last for over a month without contamination. Sporulation of the infected insects is easily observed.

Even though I have been in charge with the diet preparation, I also assist in setting up bioassays which include: production of *B. bassiana* powder, preparation of different formulations, hemocytometer counting, *B. bassiana* application, mortality and sporulation evaluation. The insects that we have evaluated are: lygus bugs (*Hesperus and Lyneolaris*), ladybugs, green lacewings, minute pirate bug, fall army worm, tobacco budworm, corn earworm, jumping spiders, crab spiders, and most recently: Cabbage Looper, Diamond back Moth, European corn borer, Beet army worm, and Black Cut Worm.

Working for USDA ARS Southern Insects management Research Unit has truly been a great experience. I think that everyone should consider themselves scientists regardless of our work or profession. So I am first and foremost a scientist and permit it to direct my thinking in all other areas. We all use the scientific method whether we are aware of it or not; it doesn't make any sense to say that you rely on unreason or irrationality. That's exactly why I love what I do and would do for a hundred more years! I think that this program is a great opportunity for young people, especially the one's interested in science and I hope it continues....

References

1. Portilla M, Snodgrass, G. and Streett, D. 2011. Effect of modification of the NI artificial diet on the biological fitness parameters of mass reared western tarnished plant bug, *Lygus hesperus*. J. of Insec. Sciec. In press 2011.
2. Elvira, S. Munoz, D. Williams, T. and Caballero P. 2010. A simplified Low-Cost Diet for rearing *Spodoptera exigua* (Lepidoptera: Noctuidae) and its effect on *S. exigua* Nucleopolyhedrovirus Production. J. Econ. Entomol. 103 (1): 17-24.