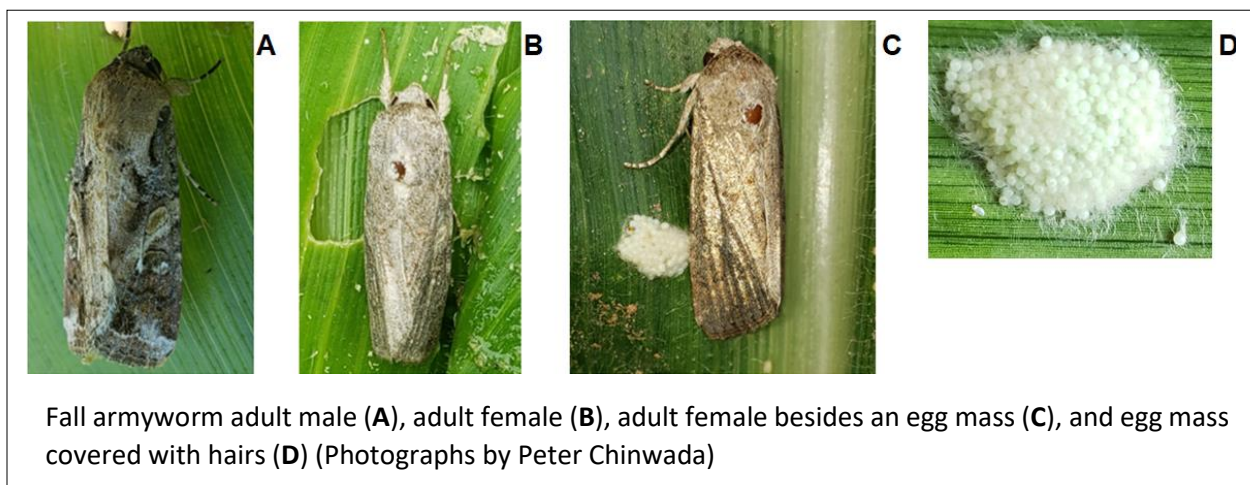




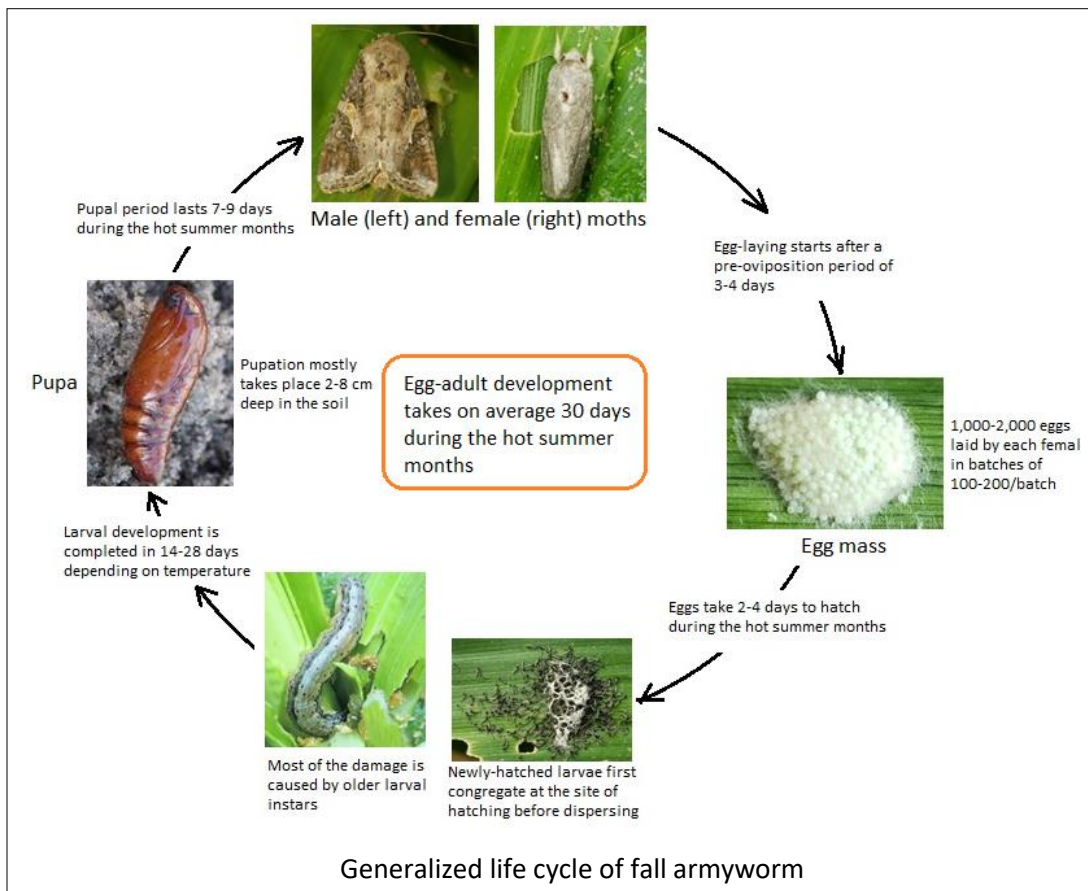
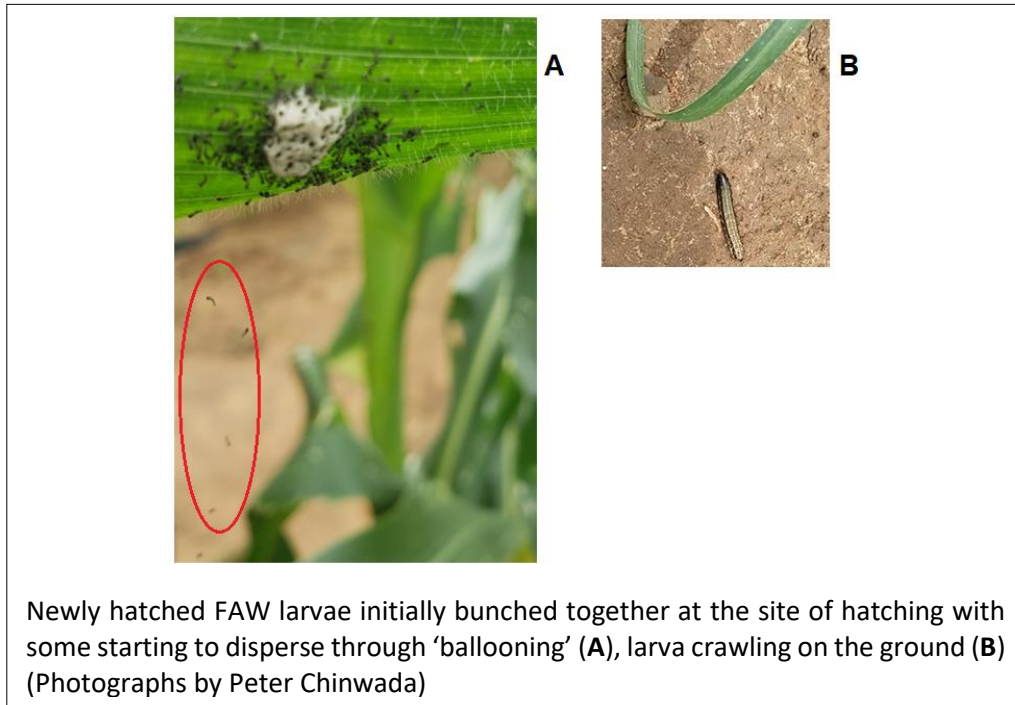
## Biology of Fall Armyworm (*Spodoptera frugiperda*)

Fall armyworm (FAW) adults (moths) are active at night. Virgin female moths which are ready to mate emit a sex pheromone which males respond to. Females mate once per night but can mate again in subsequent days. Mating activities peak prior to midnight, depending on temperature and time of season. Mating can take place locally within the area where adult emergence occurred, or the moths can migrate for some distance before they mate. Egg-laying starts after a pre-oviposition period of 3-4 days and by then adults may have migrated a considerable distance away from the location where initial mating took place. Eggs are laid in batches each of which is covered by a layer of greyish scales and hairs from the female moth, giving them a furry or mouldy appearance. They are deposited on the leaf (both upper and lower surfaces) and sometimes on the stem. In its adult life span, a female moth lays 1,000-2,000 eggs in batches of 100-200 eggs each. At mean temperatures of 21–27°C, the egg takes 2-4 days to hatch. On average, adults can live for 12-14 days.



Newly emerged larvae first eat the eggshells before starting to feed on the leaves. They are initially bunched together but shortly afterwards start to disperse over the leaf. Some “balloon” from one leaf/plant to the next via silken threads which they secrete. Some can be seen crawling on the ground from grasses outside the field or from one plant to the next within a field. There are typically six larval developmental stages or instars (L1-L6) in the field but under laboratory conditions, larval development may not go beyond L5. The amount of food eaten varies among instars. The first three instars consume only 1.8% of the total food, while L4, L5 and L6 consume 4.7, 16.3 and 77.2%, respectively. The last instar larva drops from the plant and pupates 2-8 cm deep in the soil. The depth burrowed depends on soil texture, moisture and temperature. Larval development can be completed in about 14 days during the hot summer months but can take about 28 days in cooler weather. Pupation occurs inside a loose, oval cocoon which the larva constructs by tying together particles of soil with silk. If the soil is too hard to penetrate, the larva may web together leaf debris and other material to form a cocoon on the soil surface. Pupation has also been noted to occur inside maize cobs. Adult emergence occurs after about 7-9 days during the hot summer months but can take more than 20 days in cold weather. Egg-adult development

takes on average 30 days in warm tropical climates. Fall armyworm does not have a resting stage (diapause) thus survival is guaranteed by migration of moths to areas where maize is in season. Despite being able to feed and develop on a wide range of plant species, members of the grass family (Poaceae or Gramineae) are the most preferred and suitable for the development of FAW.



## Further Reading

- Buntin, G.D. 1986. A review of plant response to fall armyworm, *Spodoptera frugiperda* (J.E. Smith), injury in selected field and forage crops. *Florida Entomologist* **69**, 549-559.
- da Silva, D.M., de Freitas Bueno, A., Andrade, K., dos Santos Stecca, C., Neves, P.M.O.J. & de Oliveira, M.C.N. 2017. Biology and nutrition of *Spodoptera frugiperda* (Lepidoptera: Noctuidae) fed on different food sources. *Scientia Agricola* **74**, 18-31. <http://dx.doi.org/10.1590/1678-992X-2015-0160>.
- Sparks, A.N. 1979. A review of the biology of the fall armyworm. *Florida Entomologist* **62**, 82-87.