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**Erika Asano\*** (easano@mail.usf.edu) and **Suzanne Lenhart**. *Optimal resource allocation strategy for the fire ant (*Solenopsis invicta*) over multiple seasons*. Preliminary report.

In monogyn form, each ant colony is a family composed of the offspring of a single queen. Each virgin queen mates, finds a shelter and raises her first brood. Then, the founding queen spends the rest of her life by laying eggs and her sterile workers forage, take care of the queen and broods, and defend their nest from predators. The queen of the fire ant (*Solenopsis invicta*) mates only once at the beginning of her reproductive life. She produces offspring (sterile workers and reproductives) until she uses up the sperm which she initially received. In the field, typical lifespan of queen is about 6 - 7 years although some may live much longer. A mature colony consists of up to a quarter of a million workers. In our model, monogyne form of the fire ant colony is considered. We formulate and analyze a model using a system of differential equations to study the optimal resource allocation strategies over multiple seasons under different scenarios including seasonal variation in foraging activity and worker mortality rate. (Received September 25, 2012)