

Proceedings of the American Bee Research Conference

The 2006 American Bee Research Conference was held January 9-10 at the Embassy Suites Hotel in Baton Rouge, Louisiana. The twentieth American Bee Research Conference will be held in conjunction with the American Honey Producers' Association at the Sheraton Crescent Hotel in Phoenix, Arizona on January 8-13,2007. The following are abstracts from the 2006 Conference.

7. Gregory, P.G.a – PROTEIN DIETS AND THEIR EFFECTS ON WORKER WEIGHT, LONGEVITY, CONSUMPTION AND HEMOLYMPH PROTEIN LEVELS OF *APIS MELIFERA*

– Physiological parameters of Africanized and European honey bees were explored when fed 4 different protein diets. The treatments were: (1) freshly frozen bee collected pollen, (2) dry powdered old pollen, and two artificial protein diets, (3) Bee Pro® and (4) Feed Bee®. Bee Pro® is a soy meal based diet and has been the industry's standard. Feed Bee® is a recently developed non-soy based diet. Results are from a laboratory caged experiment that started with 100 newly emerged bees and from a field cage experiment carried out in 5 frame nucs started with a queen and 500 grams of newly emerged bees. The laboratory caged experiment demonstrated that honey bees consumed as much Feed Bee® as freshly collected pollen and bees weighed as much as bees fed fresh pollen. The field experiment showed that longevity varied among bees fed different diets (fresh pollen > Feed Bee® > Bee Pro® > old pollen. From the laboratory caged experiment the total hemolymph protein levels (via Bradford assays) were similar between bees fed a diet of fresh pollen and Feed Bee® (Figure). Bees fed Bee Pro® and old pollen had lower total hemolymph protein than those fed Feed Bee® or fresh pollen. The sugar content of the diets was analyzed for two artificial protein diets. Sugars were extracted by homogenizing the samples in 80oC ethanol and analyzed using HPLC with a refractive index

detector. Feed Bee® contained 34.9 mg sucrose and 2.03 mg stachyose, whereas Bee Pro® contained 8.85 mg sucrose and 4.55 mg stachyose. Stachyose is toxic to honey bees; however, the toxic effects are reduced when diluted with 50% sucrose to 4% or less (Barker, 1977, *J. Nutrition* 107: 1859-1862). Future research will be conducted to determine which dietary components of artificial protein diets have negative physiological results on honey bees. From these data, different ingredients may be eliminated or substituted.

Figure- Total protein analysis of hemolymph from adult bees of various ages. Africanized and European honey bees that were fed different diets have differences in their protein levels with regard to age and diet.

