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| |  | | --- | | We love to eat the honey that honey bees produce, but what do honey bees eat?  ARS researchers have discovered a new option on the honey bee menu that might feed and help protect them from factors that drive down their populations.  Agriculture Research Service September 2021  **Microalgae is the Bee’s Knees**  Microalgae could provide a strong, sustainably produced artificial diet for honey bees. (Photo by Vincent Ricigliano)  We love to eat the honey that honey bees produce, but what do honey bees eat?  The usual answer to this question is nectar and pollen. However, malnutrition in honey bees – a major reason why they’re growing more susceptible to pathogens, parasites, and pesticides – is a growing issue in the world of agriculture. This problem is exacerbated by habitat loss, climate change, decreases in flowering plant diversity, and the rise of crop monoculture, all of which have contributed to the loss of pollen sources that usually keep honey bees well-fed.  Fortunately, ARS scientists with the [**ARS Honey Bee Breeding, Genetics, and Physiology Research Laboratory**](https://www.ars.usda.gov/southeast-area/baton-rouge-la/honeybeelab/) in Baton Rouge, LA have discovered another option on the honey bee menu: microscopic algae, or “microalgae.”  According to ARS researchers Vincent Ricigliano and Michael Simone-Finstrom, different species of microalgae possess nutritional profiles that parallel that of pollen, making the algae an ideal substitute. This is an especially important finding for commercial beekeepers, who rely heavily on pollen replacements to feed their bees on a large scale.  “Although there are currently several artificial pollen diets available, they don’t always contain adequate levels of essential macronutrients (such as lipids and proteins), micronutrients (vitamins and minerals), and antioxidants,” explained Ricigliano. “These artificial diets try to incorporate a variety of ingredients like soy, corn gluten, yeast, egg, or milk protein, but they often fail to provide the nutrition needed by honey bees to thrive. On the other hand, microalgae are extremely rich in helpful compounds like amino acids, which are crucial for protein synthesis, immune function, and overall colony growth.”  In their research, Ricigliano and Simone-Finstrom concluded that bees that consumed microalgae diets grew to larger sizes, had more healthy bacteria in their guts because of the algae’s prebiotic qualities, and were generally more vigorous than honey bees that consumed other pollen alternatives.  Ricigliano believes that there are many species of microalgae that have the potential to improve honey bee health in different climates and seasons.  These single-celled organisms are easy to grow on a large scale, requiring just sunlight, nutrients, and shallow bodies of water to produce highly nutritious food for bees. Furthermore, microalgae are even capable of thriving in places where other crops cannot be grown, said Ricigliano. Its ecological viability, affordability, nutritional benefits, and ability to act as a biofertilizer and biofuel has enabled microalgae to be a ‘wonder crop’ of the future. And its benefits as a healthy pollen alternative for honey bees has the whole world buzzing. –  by Georgia Jiang, ARS Office of Communications. USDA September 2021 | |

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| |  | | --- | | **Novel Nutrient Management Method: Applying Poultry Litter in Subsurface Bands**  By Nina Prater, Sustainable Agriculture Specialist August 25, 2021  Getting nutrients right in farming is a balancing act. When planning to apply fertilizers and soil amendments, farmers must consider their soil type, climate, the time of year, the crops they are raising, water availability, soil health, water quality concerns, and the nuances of the many different macro- and micronutrients that plants require. The way nutrients are applied is also an important consideration. A series of research projects have been conducted at the Dale Bumpers Small Farm Research Center in Booneville, AR, to assess a new way of applying poultry litter (the manure and bedding removed from commercial poultry houses) by inserting it into the soil.  A tractor pulls the subsurfer attachment across a field.  Poultry litter is a National Organic Program (NOP) approved fertilizer and is readily available in many parts of the U.S. The litter is often surface applied, but this can lead to nutrient loss through nitrogen volatilization or surface runoff. A novel technology has been developed to reduce nutrient loss from poultry litter. Named the “Subsurfer,” it is an implement pulled behind a tractor that inserts poultry litter into the soil in bands and reduces nutrient losses to the air, soil, and water by over 70%. The Subsurfer was initially developed for use in pastures, but researchers have been conducting studies to determine best practices for its use in organic cropping systems. While not yet commercially available, the results of the studies suggest that it is a promising technology that can help solve nutrient-loss issues while maintaining productivity and improving both crop quality and soil health.  Dr. Amanda Ashworth, Research Soil Scientist with USDA’s Agriculture Research Service (ARS) Poultry Production and Product Safety Research Unit, has conducted research to determine the optimal crop row distance from the poultry litter bands for the greatest crop yield and quality. Planting directly into the litter would damage the plants, so the litter has to be inserted to the side of the plant row. But what distance is best for different crops?  **How Litter is Applied**  The ARS Subsurfer is pulled behind a tractor, inserting the litter approximately 4 inches beneath the soil surface, with wheels that close the soil up over the litter after it is inserted. The litter must have a moisture content of 35% or less. A seeder can be attached to the Subsurfer so that the fertilizing and seeding can be done in one pass. In these research plots, a GPS was used to ensure accurate spacing of seeds and litter bands.  An additional finding of the research was that the crop quality was improved with the use of the Subsurfer, even as compared to plots that were fertilized with urea. Dr. Ashworth found the additional nutrients contained in poultry litter led to this improved quality. The liming properties of the poultry litter, as well as additional macro- and micronutrients it contains, provide a more complete “diet” to the crop in ways that urea, which only supplies N, could not.  There is potential for the Subsurfer to help with nutrient management on small to medium-sized farms, organic and conventional alike. The equipment can only cover approximately 20 to 30 acres in one day, so it is not likely to work well on farms in the thousands of acres, but for smaller-scale operations, it could provide a way to fertilize efficiently.  **Citations**  Ashworth, A.J., D.H. Pote, T.R. Way, and D.B. Watts. 2020. [**Effect of seeding distance from subsurface banded poultry litter on corn yield and leaf greenness**](https://acsess.onlinelibrary.wiley.com/doi/10.1002/agj2.20186). Agronomy Journal. 112:1679–1689.  Ashworth, A.J., C. Nieman, T.C. Adams, J. Franco, and P.R. Owens. Subsurface banded poultry litter distance influence on the multifunctionally of edamame (Glycine max Edamame) yield and leaf greenness. Pending Publication.  Photos courtesy of USDA ARS | |

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| |  | | --- | | **Secretary's Corner**  As most of you know Dr Gary Davis announced at our last meeting that he was stepping down after numerous years as our Executive Secretary. He has always Been There taking care of enrolling our new members, handling the finances for the Club, Preparing the Minutes, Arranging our meeting locations, Hotels and Meals and our Guest Speakers. He has kept our Web site up and prepared and sent out the Club’s Newsletters each month. As well as our Facebook Page. In other words, Our “Go to Person” when a question needed answering or something needed to be done.  Dr. Gary, On behalf of The South Eastern Gamebird Breeders & Hunting Preserve Association members we would like to "Thank You" for your numerous years of Service to our Organization.  I have been asked to step in by the Board As Dr Gary prepares for his much deserved Retirement from our Club's day to day management.  Thank you,  Cheryl Webster  www.segamebirds.us | |