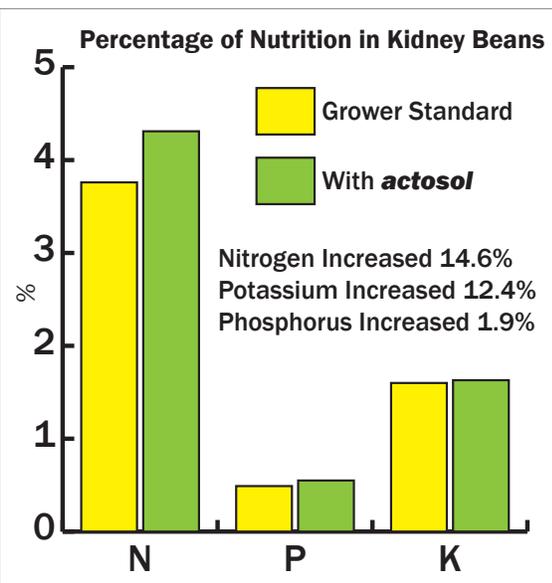
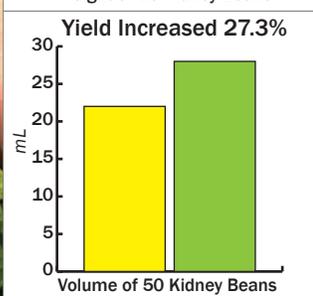
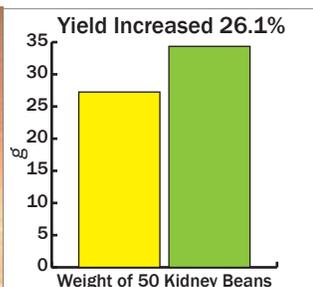


# actosol<sup>®</sup> in action

The Gold Standard of Humic Products

Spring 2014

## Increased Yields & Nutrition of Kidney Beans



Carlson Turkey Farms of Parkers Prairie, Minnesota is a three thousand acre, third generation crop and turkey farming operation in the west central part of the state. In 2013 the acres were split between three main crops, corn, dark red kidney beans, and soybeans with respective acreage's of 1486, 1314, and 169 acres. Corn has been the 'king' crop for years as it was grown to feed the turkeys; dark red kidney beans have been the cash crop grown because it too is a good source of protein for human food consumption.

Terry Carlson and his father Darrel have raised edible beans since 1973; navies, pintos, cranberries, pinks, and light and dark red kidney beans. When they started raising kidneys in 1987 they knew they were going to stick with them, with planted acres increasing from 300 acres then to over 1300 today. In 1992 Terrys' brother-in-law Lyle Oeltjenbruns came into the farming picture and has been overseeing the crops for the past 15 years. Kidney bean yields have averaged from 1500 to 2000 pounds per acre over that period, with the percent of acres being irrigated with center pivots increasing yearly to nearly 93% this year. While the past 3 years have each broken our own yield records and we would like to claim sole credit, we know better! Genetic improvements in seed, farming practices, nutrient application to soil and plants, nature and weather conditions have always played significant roles in crop yields; not to mention a little luck!

Following are Test Protocol and Results with cultivation of Montcalm variety of kidney beans. During the growing season lots of persistent rains with threat of snow kept us moving from one field to the next looking for "drier" harvestable beans, there was no way to keep track of yield by field, only the total combined cleaned

Tract A: Grower Standard	Tract B: Bioactivated <i>Agro actosol</i>
Control	@ one gallon per acre
Turkey manure	NO turkey manure application
Pre start application of 9-18-9	Pre start application of 9-18-9
Potash/lime pellets, 300-200 lb/acre	Potash/lime pellets, 300-200 lb/acre
25-0-0-6 sulfur/acre	25-0-0-6 sulfur/acre
Fertilizer enzyme breakdown application	Fertilizer enzyme breakdown application

bean yield of 2444 lbs /acre. Tract B harvest was very wet, beans were high moisture in the 30+% range BUT the four of us running the cutting and combining equipment felt there was definitely more beans across the field than the control. **actosol** application increase the size of the kidney bean by 27.3% as shown photo below. Also yield increased by 26.1%. The protein content measured as total nitrogen increased by 14.4% from the **actosol** treated area as shown above.

# actosol is Now Rightfully Called “The Giant of Desert” in Egypt

By Dr. Saad El Shall, The Egyptian American Company for Investment & Agriculture Development, Cairo, Egypt

**actosol** humic acid products were first introduced in Egypt in 2001 through several field experiments. Then it was registered and commercially used in 2003. More than ten years of research experiments and fields trials show that **actosol** products have an effective role in solving some of the problems that faces the agriculture sector in Egypt, like reducing the amount of chemical fertilizers and irrigation water, increasing the yield, improving crop quality and increasing the storability of fruits and vegetables. In addition, the results show that the treated plants have a high tolerance for salinity and adverse weather



conditions and a higher resistance to diseases especially to soil diseases. Moreover, the results confirmed that **actosol** can be used as a robust substitute to animal manures, which results in contaminating newly reclaimed desert lands since they contain weed seeds, nematodes, soil diseases and insects. Furthermore, **actosol** increases the soil fertility and enhances its physical, chemical and biological properties, which is a driving factor for increasing growth and production especially is calcareous soils.

These results were documents in more than 40 peer-reviewed articles in national and international journals, 2 PhD dissertations and 6 MSc theses. These research experiments were conducted in different soil types and different governorates in Egypt. The research work covered field crops, sugar crops, vegetables and fruits, aromatic and medicinal plants, ornamental plants, green areas and woody trees. This vast research work was conducted in different academic and research institutes in Egypt, which are the Agriculture Research Center, the National Research Center, Cairo University, Ain Shams University, Mansoura University, the African Studies Institute and the Desert Research Center. The following table summarizes the key results of more than ten years of research work on the actosol products in Egypt for some selected crops.

Crop	Location (Soil Type)	Crop Increase [ton/acre]	Crop Increase [%]	Extra Revenue from Crop Increase [LE/acre]	Chemical Fertilizers Reduction [%]	Chemical Fertilizers Savings [LE/acre]	Cost of Organic manure [LE/acre]	Cost of actosol [LE/acre]
Wheat & wheat hay	Valley *	0.39	14.4	1500	30	150	400	240
Rice	Valley *	0.75	18.5	1500	50	250	400	240
Sugarcane	Valley *	5.7	11.8	2300	25	300	800	400
Potatoes	Desert	2.5	17.8	2500	25	300	1500	480
Cucumber	Desert	2	20	2400	25	300	1500	480
Pears	Desert	1.8	12	2700	25	150	1000	400
Orange	Desert	2	11.1	2000	20	150	1000	400
Grapes	Desert	2	20	2500	20	150	1000	400
Apple	Desert	3.3	52	3000	20	100	1000	400
Mango	Desert	0.65	16.25	3200	25	150	1000	400

\* Fertile Land of Nile River Valley

US 1\$ = 7.14 LE (Egyptian Pound)

# KALO Surfactant Pellets plus actosol Equals Success

**ARCTECH, Inc.** has taken a new step with a product line that includes a surfactant and humic/fulvic acid along with select micronutrients. **ARCTECH** has partnered with **KALO**, makers of **Tournament-Ready®** to achieve the absolute best quality humic acid to be added to a product line that will be sold exclusively by **Underhill International Corporation**. **KALO** has recently manufactured a surfactant pellet for hose-end applicators that will include **actosol** which will aid the soil surfactant in improving stress tolerance, water retention, enhances chelating of plant nutrients and stimulates root mass and plant growth. **KALO** isn't stopping with the pellet; the company will be working on developing a liquid surfactant that will include **actosol**. This will be a sprayable formula, and possible injection formula.



## SynaTek Promotes actosol for Fertigation



*“We knew that **actosol** provided an excellent source of humic and fulvic acid for us, but with all the other standard sprays we had in program, we were always challenged with getting it added to the tank mix. Fertigating turned out to be the best option on several levels. First, we could easily have our liquid fertilizer supplier, **SynaTek**; add it to the 3-0-1 ratio mix we used. Secondly, the root absorption delivery that fertigation provides, is an ideal way of getting an even turf response. Primarily, we use **actosol** to stimulate microbial activity in the soil, increase the CEC of the soils and to help assist the plant in maximizing the other nutrients we are applying. It's an inexpensive way to make sure that everything we spend on fertility gets utilized in the most efficient way.”*

*- Matt Zarnstorff, Director of Golf / The Clubs at Creighton Farms, Aldie, VA*

## actosol Improves Soil Health & Generates Economic Value

Our modern agriculture built around inputs of synthetics nutrition has resulted in excessive mineralization of the organic matter in soils as well as through repeated turn over and erosion has been resulting in loss of the organic matter in the farm lands. Farmers are implementing conservation measures but the challenges continue to increase especially with the changing weather conditions. **actosol** use is contributing to soil structure stability, erosion resistance, nutrient storage and nutrition uptake, tolerance to salinity and water permeability and retention. Research on radiocarbon dating shows that organic matter comprises of two main components. A short lived, labile component is an energy source for soil microbes from plant residues. The second component ( $\geq 400$  year old) namely humic substances is protected from microbial degradation. The  $^{14}\text{C}$  data confirms that humic substances are long lived and represent the baseline of organic matter in soil. Humic matter is the primary indicator of soil health and the use of actosol products made up of humic and fulvic organic matter provides the cost effective approach for improving soil health, boost yields and profits. **actosol** products are produced with modern science that mimic nature's science, which has been sustaining cultivation for many millennia.

# **actosol**<sup>®</sup> Homeowner's Success Story



*"I used **actosol** on this section of my lawn back in 2012. The picture on the left shows my lawn on the side of my house. I didn't have any success in growing it in. The picture on the right is 3 weeks after applying **actosol**. I was amazed at how well the **actosol** responded to the application on my yard. I applied the **actosol** two days after overseeding in an area of my lawn that had problems growing. Within 3 weeks the results were great. I am a firm believer in **actosol** & have shared with my neighbors. I will purchase **actosol** again & use for regular maintenance on my yard."*

- Myron Dowell homeowner in Fort Washington MD



## **ARCTECH**

Offering Balanced Sustainable Solutions  
14100 Park Meadow Drive  
Chantilly, Virginia 20151-2217

# **actosol**<sup>®</sup>

**The Gold Standard of Humic Products**