Chronology of a Dream
How one man worked to put the fluid concept on the world market.

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The year 1971 was the 18th year since the introduction of a fluid fertilizer into the United States. The National Fertilizer Solutions Association (NFSA) decided to celebrate this occasion. Although the period up to 1971 was exciting, the successive harvests in those 18 years had reduced the fertility of the once rich prairie soils. Since my dad was also president of the NFSA for that year, in addition to his duties as President of Nutra-Fl, he decided to use this occasion to produce a three-screen slide show. The show used three 8-foot by 8-foot screens standing side by side. Images filled the individual screens or sometimes a single image spanned all three screens. All were supported by stereophonic sound with narration and music. He wrote NFSA members and asked them to send in their old slides so he could show how our industry had advanced over this period. He was surprised at the number of slides sent in. When they were arranged in chronological order they represented how our development of original equipment was rapidly replaced by improved equipment. In effect, my dad would be entering a part of a free enterprise system that ultimately would fuel a revolution that tripled yields. Evolving stages In the early years my dad focused the slide presentations on how to increase soil fertility and other techniques to improve yields. Nutra-Fl produced over 500 programs between 1960 and 1967. Topics varied but all were designed to promote the advantages of fluid fertilizer and challenge the grower to improve his yields through better farming practices. Some of the topics, while at times revolutionary, are still relevant today. Explored were the physical and chemical aspects of nitrogen, phosphates, and potash. Should the next be dry, ways were explored on how to save rainwater via contour tillage and residue management that would collect snow. Efforts were made to solve problems that occurred the year before. For example, the next year’s slide program might present solutions to compaction problems that reduced yields. One of the most important problems was that of plant population per acre. This involved row width. Since the days of horses were gone and we no longer required 40-inch rows, why not plant 30- or 20-inch rows? In the slide program, titled “Maximizing Soil Productivity,” graphics were presented on how to build the soil structure deeply down to 18 inches to support more plants, with the ultimate goal to produce 300 bushels of corn per acre! Summing up What follows should give you a good idea where his slide programs promoting fluid fertilizer technology led, starting in the early stages where national corn grain yield averaged 35 bushels per acre and ending up pushing near 400 bushels per acre in yields from test trials. 1. Easier, Faster, Better (1967) Explained the different methods of applying liquid fertilizer: starter fertilizer, fertigation, unfertilized, deep placement, and banding. 2. The Better Way (1969) How to make the most of rainfall, new tillage methods, fertilizing wheat, soybeans, and pastures. 3. The Liquid Revolution (1971) A walk through the first two decades of the liquid fertilizer business 4. The Lesson of the Teotihuacans (1971), who grew continuous corn in Mexico, they exhausted their soil after several hundred years. Our civilization is the only one in history that learned the secret to replacing lost fertility after new crops are harvested. 5. Good Programs Raise Bigger Yields in Any Weather (1973) Water Use Efficiency (WUE) is a measure of the bushels of corn vs. inches of rain and one of the farmer’s biggest problems or greatest benefits. 6. The Promised Land (1974), a three-screen production relating the history of how pioneers conquered the land and developed their implements to improve farming efficiency. 7. The Kernel of Gold (1974), single-screen production telling non-farmers how local farmers used fertilizer and why it is necessary for food production. 8. Zinc the Miracle Worker (1975), a three-screen production that covered the zinc fertilizer program from beginning to end: how to test for deficiency, mixing directions, how zinc reacts in various soils, the equipment needed, and the costs of applying zinc. 9. A Generation of Progress (1975), a three-screen, 273-slide production presented at the Annual National Meeting of the NFSA with approximately 2,500 in attendance. It was also presented to farmers in Nebraska, Iowa, and South Dakota. Looking back at the time, we didn’t imagine that in another generation (by 2005) farmers would be putting 100 bushels per acre on a field (Figure 1), with some field tests approaching 400! 10. Selling the Advantages of Fluid Fertilizers (1977), a three-screen production presented at fertilizer dealers in Baltimore, Maryland, wanting to know how to handle and sell fluid fertilizers and who to use these fertilizers in Baltimore, Maryland, wanting to know how to handle and sell fluid fertilizers and who to use these fertilizers in the liquid fertilizer business 11. Water Management for High Yields (1977). This three-screen production followed the dry year of 1976. We explored climate, which has so much effect on yield. Given was the example of how one university determined that fertilized corn requires 5,600 gallons of water per bushel, whereas unfertilized corn requires 21,000 gallons of water per bushel. What music to the ear! 12. Starter Fertilizer (1977), 78 slides. This program discussed various formulations and equipment needed to apply starter fertilizer (now in wide use in the Corn Belt). Basically a stream of water-soluble fertilizer containing a mixture of N, P, K: Zn is applied below and to the sides of seed corn when it is planted. 13. New Concepts for Maximum Yields (1978). This three-hour long program showed interviews we’d taken of a large number of successful farmers and encouraged others to produce maximum yields. It is almost breathtaking when we look up and see now what we’d accumulated and passed on new ideas from farmers and university researchers, all developed in order to help other farmers increase yields and profits. 14. What High Yields Have to Tell Us (1979), a 45-minute slide presentation. For the first time Herman Warsaw was mentioned, describing how he produced 338 bushels of corn per acre on land the government had passed on a potential farmer. He did it by applying 14 bushels an acre! Also discussed was how he later produced 377 bushels per acre, a record for dry-farming. We also discussed how no other local farmers fertilized, tested their soil, changed their tillage, etc. 15. Six Ways to Increase Your Profits (1980), 80-minute slide program with six big new ideas: 1. Proper tillage is your warranty by tillage, narrow rows, and fertilizing properly 2. Testing your soil so you don’t waste precious fertilizer. You might find a zinc (Zn) deficiency and get an extra 25 bushels by adding it to your fertilizer 3. Increasing your yield--after all, we’ve broken yield records 8 out of the last 20 years. Average yield back then was 100 bushels of corn per acre. Today, we’re on the way to 180 to 200 bushels per acre 4. Balancing your plant population, fertilizer rate, hybrid, and weed control 5. Using a starter sidedressing weed and feed, and deep fertility to build healthy roots 6. Lowering energy costs. Reduced-till saves diesel fuel and leaves residue on the surface of the soil, which acts as a blanket to catch water and increase infiltration rate. a. Programs that save (1986), 84 slides, 50 minutes b. Herman Warsaw video (1986), 85 slides, 45 minutes. How Herman Warsaw produced 370 bushels per acre. c. Treasures for the Taking (1986), 3-screen, stereo. It was a story of two pirates, names Barnacle Barney and Sally Sam, who found a map and discovered big treasures at the Nutra-Fl fertilizer plant. They had to do a little farming to get the treasure. All of the new ideas for growing profitable crops were presented. The slide programs showed pictures of new, modern equipment. Big sprayers with giant booms could fertilize 80 acres in a single hour without compaction. New modern planter attachments using squeeze pumps could accurately inject fertilizer next to the planted corn at planting time. Liquid was delivered by stainless steel transport trucks. Big pumps could unload the fluid fertilizer in a matter of minutes. A farmer who had to lift was the end of a hose. Evolve ment The late ’80s brought about an evolvement that began to impact on the slide presentation meetings, signaled by a change that was taking place in farmers. Venn diagrams had originally started showing presentations at farmer meetings, they were able to...
Chemical mfg. Nor should we overlook nor underestimate the advancements of the chemical companies in producing products that control weeds and insects without harming crops and are environmentally friendly. Weeds and insects have always been the scourge of agriculture. Weeds and insects steal nutrients and water meant for crops. Increased yields from these compounds should not be underestimated.

Equipment mfg. Then there are the farm equipment manufacturers that made it possible to change from using the muscles of horses and men to till the soil and harvest crops. Farmers once were required to grow 20 percent more crops just to feed their horses. Because of the breadth of their horses they had to plant corn in 40-inch rows. That meant farmers could only plant about 10 or 12 thousand plants. With the advent of improved tractors and equipment to turn over prairie soils, prepare the seed beds, and plant in 20- or 30-inch rows, farmers could plant from 25,000 to as much as 40,000 plants per acre. The result: they began harvesting 160 to 250 bushels of corn an acre, compared to about 40 bushels per acre in 1950 (Figure 1).

The biggest difference at harvest time, when corn used to be hand picked, was the arrival of the combines that can harvest as much as 5,000 bushels per hour, compared to 100 bushels per day per man back in the old days!

Conservation till

Today, the moldboard plow is destined for the grave. We found it oxidizes, decomposes, and rots even more important, exposes the soil to erosion from wind and rain. In its place is conservation tillage.

Today, conservation till has changed the way farmers prepare a seed bed. It uses residue to protect the soil from erosion.

The world of agriculture, truly, is an ever-evolving business. We know not what wonders await us tomorrow. For certain, my dad, with abundantly many associates (and friends) did much to bring the fluid revolution and its miracles into today’s agriculture.

Figure 1. The miracle impact fluids have played in five decades of corn yield increase.

got as many as 400 people to attend. They always asked farmers to fill out a small questionnaire telling, among other things, how many acres of corn they farmed. Most of them indicated about 100 acres. But by the late 1980s, the average acres grew rapidly. Most farmers had 500 to 1,000 acres. The reason? Farming equipment improved so that the farmer could cultivate more acres with less labor. The result was that meetings began to get smaller but total farmed acres represented at the meetings increased. Today, 16 farmers can produce five times more grain on the same acres as those 400 attending meetings in the early 50s.

Transitionalizing

In the late Spring 2012