Making Science Applicable - The Need for a Modern Agricultural Education Curriculum

By Brian Myers and James E. Dyer

The philosophy that guides agricultural education instruction appears to have finally completed a full circle. Beginning as an academic subject matter area, agricultural education was vocationalized by the Smith-Hughes Act as a program that was intended to focus on preparing students for careers in farming. Subject matter focused on "how" to do, rather than "why" it should be done. While a vocational approach may have been needed at the time, the academic side of agriculture was virtually abandoned in favor of this vocational mission. However, that approach was contrary to the manner by which agricultural education was envisioned at the time – as a science.

With the issuance of the 1988 report, Understanding Agriculture: New Directions for Education, the National Research Council suggested that agricultural education needed to re-evaluate what it had become, and to refocus on its roots (pun intended). The Council suggested that agricultural education address the fact that agriculture IS a science, not merely a set of skills to be developed. The Council vocalized what many had been unprepared to acknowledge: If formal education in agriculture were to survive, it would do so only by developing an understanding of the scientific principles that are the foundation of the subject matter. No longer could agricultural educators teach students the "how" without also teaching the "why."

In response to the agricultural recession of the late 1970s and early 1980s, agricultural educators reassessed the role of agricultural education in the high school classroom. In many states agricultural education curricula moved away from a focus on production agriculture to a more scientific approach. The term "agriscience" became synonymous with agricultural education. New courses were created that integrated science and agriculture subject matter into a hybrid curriculum that focused on science, but did so as an application of scientific principles in an agricultural context.

With this renewed interest in science, comes the inherent possibility that agriculture courses become little more than science courses – that students could enroll in either subject and learn the same informa-

Applying agriscience principles often means that we just need to think in different contexts. Many agriculturalists think of the use of a global positioning system (GPS) to be primarily for production agriculture. However, it has many uses in other areas, such as identifying exact locations of trees, trails, and other landscape features. (Photo by Eric Zamora, courtesy of the University of Florida, Institute of Food and Agricultural Sciences.)
tion. “If this is true,” it is asked, “why do we need agricultural education?” Although agriculture is clearly a science, it is an applied science. Not only is it applied, but that application must take place in the context of an agricultural setting. As such, agriculture teachers should not duplicate information learned in other classes, but teach both agriculture and science in a more meaningful context. The incorporation of science into the agricultural education curriculum must be done carefully, yet thoroughly. Again, agriculture should be taught as an applied science.

Lab activities must be chosen carefully. They should be selected to supplement instruction—not to be the instruction. In order to help students make the connection between the basic science concepts and practical application, instructors need to make learning active with the inclusion of laboratory activities. These activities should be carefully selected by the instructor to ensure that each activity performed clearly illustrates the practical application of the science concept studied in class. It is very easy for agriculture teachers to fall into the trap of completing exciting laboratory exercises that do not clearly provide an application component to what is being studied in the regular classroom setting. When this happens, students generally fail to make the connection between the scientific principle and the activity being performed.

There are some outstanding resources for agriculture teachers to use in finding activities to incorporate into the classroom. However, the integration of science is not accomplished by just inserting a few science laboratory activities into the course. A deliberate and intensive effort must be made by the instructor to show students why it is important for them to understand a particular concept in an agriculture class. In many states there is a push to allow students to earn science credits toward high school graduation and in some cases admission to college through agriculture courses. They must be sure to have the course reflect the applied nature of agriculture, while still meeting the science requirements.

Agricultural education curricula should be grounded in developing problem solving, critical thinking, and higher order thinking skills. For nearly a century agricultural educators have promoted the concept that the curriculum for agricultural education should be built upon the scientific method—a blueprint for problem solution and critical thinking. Agricultural education that focuses on the science of agriculture provides an excellent opportunity for developing these skills. By its very nature agriculture is filled with opportunities for educators to use the scientific method to teach agriculture concepts. Virtually every subject area of agriculture can be outlined so that it fits this model of problem solution.

Agricultural education must change from a production-oriented curriculum to a consumer-oriented curriculum. Less than 2% of the population is involved in production agriculture. One hundred percent of the population is involved in consumption agriculture. One of the keystones of motivation theory is that we are interested in those things that affect us. Most high school students could care less about what is going on in agriculture, so long as they are able to get their “Big Mac” when and how they want it. Few are able to make the connection between food, fiber, natural resources, environmental education, leadership, etc.—all those things that make up agriculture—and their own lives. Curriculum focused on consumption agriculture rather than production agriculture has a chance to bridge this gap—if the curriculum is interesting. A scientific approach to agriculture should accomplish this. It affords the opportunity to make agriculture relevant and active.

The reasons for incorporating science into the agricultural education curriculum are clear. We as educators must continue to change and adapt the curriculum to meet the needs of the agricultural industry in our communities. That industry is continually becoming more science based. We must change what we do and/or the way we do it in order to recruit and retain the highest quality students and to prepare them to fill the growing number of career opportunities in the industry. In doing so, we must continue to include the “why,” as well as the “how.” We must make agricultural education science-applicable. Finally, we must continue to change the curriculum to meet the growing accountability demands of our clients. When we examine all of these items, it is clear that we must continue to incorporate science into the agricultural education curriculum for one major reason: It is the educationally sound thing to do. It is what we must do to continue to teach and to serve some of the best and brightest minds in the world.

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