Decision Cases as a Teaching Component in the Classroom and Workplace

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This paper prefaces the accompanying decision case, "Agricultural Manager’s Dilemma," and discusses the guidelines by which decision cases are designed, written, and used. "Agricultural Manager’s Dilemma" was prepared for and has been used as one of 12 to 16 decision cases in ANPL 5860, "Management of Integrated Cropping Systems," a four-credit, senior-level capstone experience in the animal and plant systems major at the Univ. of Minnesota College of Agriculture.

The case method has long been featured in the educational programs of law schools, business schools, and medicine, but seldom has been adopted elsewhere. Cases in the legal profession are built around actual court decisions, while in medicine actual clinical situations with individual patients are the focus. The use of cases in business schools, begun in the early 1990s by Harvard Univ., used law school cases as models. Business case focus was on the numerous components of business, including authentic problems of management structure, finance, personnel, inventory control, and sales strategy, to name only a few. Shapiro (1984) points out that they were developed and used with the philosophy "that management is a skill rather than a collection of techniques or concepts," and that "the best way to learn a skill is to practice in a simulation-type process."

We were drawn to the case method in the College of Agriculture in the search for more effective ways to prepare students at the baccalaureate level to emerge as practitioners with greater confidence and skills in decision-making. Central to the case

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**Fig. 2. Dilution, water flow, and electrical conductivity of diluted solution for a Venturi-type proportioner operating with water pressure of 15 to 55 psi. Regressions of means are: Dilution = -0.57x + 8.46; Flow = -0.071x + 8.46; Flow = -0.071x + 8.46; Flow = -0.071x + 8.46; Flow = -0.071x + 8.46. For each regression, r² = 0.99 and n = 5.**

The dilution should increase from 10 at 15 psi to 15 at 55 psi (Fig. 2). This is a lower range than the 12 to 17 usually reported (Boodley, 1981). The water flow increases with pressure, from 2.3 gal/min (8.7 liters·min⁻¹) at 15 psi to 3.5 gal/min (13.2 liters·min⁻¹) at 55 psi. The maximum rate of 3.5 gal/min was 17% greater than the cited maximum of 3 gal/min (11.3 liters·min⁻¹) (Nelson, 1991). The EC at 77°F (25°C) of the diluted solution declined from 2.1 mmho/cm at 15 psi to 1.6 mmho/cm at 55 psi. The VP dilutions were slightly less than normally cited values (Boodley, 1981), while the maximum water flow was slightly greater (Nelson, 1991).

The experiments reported here would be a simple laboratory exercise for a lower-division horticulture course that would provide experience in calibration and use of VPs and EC meters, use of a balance to estimate solution volume, and preparation and interpretation of graphs and standard curves. The calibration procedures would be useful for VP users to perform to assure accurate fertigation, since water pressure has a major influence on the dilution ratio.

**Literature Cited**


method is the use of cases that focus on actual situations, not contrived simulations.

Horticulture and associated agricultural disciplines are integrative, applied sciences, normally drawing on several fields of knowledge in problem-solving. The grower, the crop consultant, and the professional manager, as well as other practitioners in horticulture, recognize the complexity of decision-making in the everyday conduct of their profession. The use of treatment levels, replications, and checks often is not a feasible approach for them to use. Decisions, either in the form of action or recommendation, frequently must be made in a timely fashion. There is seldom time to “accumulate more data.” Likewise, the decision-maker may never know if the course of action taken was the best one, because a “control” is seldom available. Over time, a form of “replication” may occur as the decision-maker faces similar situations. We call this “experience,” and there are few who deny its importance in the professional development of the practitioner.

As researchers, and sometimes as teachers, we tend to center on one or a few variables at a time. We strive for precision in design and procedure. Students, throughout their prolonged higher education experience, often seek single answers based more on technological information and less on multivariate analysis. At the practitioner level, technological problems often are very complex, involving personnel and ethical considerations that complicate decision-making.

**Purpose of the decision case**

The central purpose of decision cases, whether in academia or the workplace, is to engage the reader in the analytic process and decision-making. The underlying goal is one of providing experiences that help lead the student to greater wisdom and confidence (Gragg, 1940). Wisdom and the improvement in judgment that arises from the experience gained is virtually impossible to impart to the student with more traditional educational approaches, such as the lecture. Wisdom is acquired with experience and often is a requisite to successful job performance. Authentic decision cases, if skillfully written and taught, are a step in the direction of achieving such goals.

Much of our coursework in academia focuses on technical knowledge, but good decision-making in the workplace often requires the employee to go beyond this knowledge. The relative importance of technical knowledge from several fields, the ability and willingness to consider the viewpoints of others, the ethical issues inherent in arriving at a decision on the problem, and the impact on personnel are important factors that the successful employee must consider in decision-making. Interest in the technical aspects of horticulture may have led many students into the plant sciences, but employers expect much more from students emerging from an academic program than familiarity with technical knowledge.

Decision cases should not be regarded as a panacea. Where the educational objective is to acquire knowledge or develop a concept, the case method has been regarded as inferior to other methods, such as the lecture (Dooley and Skinner, 1977). Similarly, laboratories and problem sets play a strong role in understanding techniques and in acquiring skills in the use of techniques; although, with all of these methods, the case method might play a useful supporting role.

**Case writing: Creative yet authentic**

There are two principal parts to a decision case: 1) the text and 2) exhibits. Every decision case also is supplemented by an Interpretive Note, an important resource for the person instructing the case. Also, specific questions for the student may be presented in various ways. They may be listed at the end of the case or in the Interpretive Note as a guide to the instructor.

Cases should adhere to specific principles adapted from those used by *Case Research Journal*, published by the North American Case Research Association. These guidelines are summarized as follows:

1) Cases are expected to be decision-oriented and research-based, i.e., there should be acquisition of data and the clarification of issues necessary to put the case into context and establish the need for a decision. The case must be more than the mere description of a situation.

There also must be a clear identification of the decision-maker and the point in time at which the decision is to be made. The case writer usually is not identified with the case, i.e., as a personality within it, although the case principal could conceivably be the case writer.

2) Ideally, the case should not rely on materials not included as exhibits within it or as readily available references. The information included should have been available to the decision-maker at the time of the case and should be sufficiently complete to permit a decision to be made. Additional material that might provide useful background for the student also may be added as appendices. These need not be written in the style of the particular case.

3) Cases should be written in the past tense, as a way of emphasizing the historical authenticity of the case.

4) The case should be well-crafted as to organization, rhetoric, and grammar. Historically, figures and tables have been referred to as “exhibits.” These are grouped at the end of the text in the order cited in the text.

5) Clear identification of issues should help the student make the transition from the role of spectator to that of participant. There should be one or more issues strongly related to the decision needed.

6) The Interpretive Note should outline the intended use of the case, its objectives, and key issues. It also should provide questions for the student to consider, as well as presentation of rationale for these answers. An overview of the directions in using the case also may be provided.

7) Cases should be classroom-tested, and an assessment of their performance provided, followed by appropriate revision.