The Contradictions in Horticulture as We Enter the Last Decade of the 20th Century

Presidential Address

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Once upon a time, in a far-off land, a member of the genus *Gallus* was walking through a forest populated with trees of the genus *Quercus*. Suddenly, something fell and struck this creature on the head. The creature was quite cowardly—you might even call it "chicken"—and it began to run and cry, "The sky is falling, the sky is falling, and I must tell the king". On the way to the palace, she encountered other feathered members, whose names are really inappropriate to use in a sophisticated presidential address—names such as Penny Loopy, Cocky Locky, Goosey Loosy, and Turkey Lurkey—and she told them the news and they joined her in her rush to see the king. They then met a rather devious character, who said he would show them a short-cut to the palace, but he really intended to have a sumptuous dinner of low-cholesterol, low-protein poultry products. Chicken Little forever remained a pessimist and never again went into the oak forest without an umbrella.

And, also once upon a time in a far-off land, there lived a boy named Jack. The family was in dire need of food, so the anxious, concerned mother told Jack to take their only cow to market and sell it so they would have money so they could eat. On the way to the market, the young lad met a devious oleiculturist who bought the cow from Jack for a bag full of red and yellow beans. Now, I don’t know what seed company employed this unscrupulous person, but I do know the anxious, concerned mother became a very angry one when Jack returned home with a bag full of beans instead of a pocketful of money. The mother, in her anger, flung the beans out the window, which unfortunately was open or this presidential address would end right now. She threw the beans out the window onto the soil, which unfortunately was open or this presidential address would end right now. She threw the beans out the window onto the soil, which undoubtedly was teeming with *Pythium*, *Rhizoctonia*, *Phytophthora*, bacteria, insect pests, and weed seeds. The pH of the soil probably was too high, and the oxygen supply was too low, but she was unaware of those things as she had never heard of the book on propagation by Hartmann and Kester or the introductory texts by such authors as Janick, Denisen, and several others. She threw the seed out the window and, by morning, all the seed had germinated. We now have people in the seed industry who provide us with high-technology seed with high germination rates, seeds that are scarified, stratified, pelletized, primed, de-tailed, and de-fuzzed. We have growers who use complicated vacuum seeders costing thousands of dollars. The seed are sown in a perfect medium, and are then put out in environments where factors are optimum, as determined by Ted Tibbits, Merle Jensen, Bob Langhans, and others. The germination area is as clean as a nursery in a hospital. And you could walk from Tulsa to Oklahoma City on papers Dave Koranski, Paul Karlovich, Allan Armitage, and others have written on plug culture and all its complexities, and this woman just throws the seed out the window. The seed not only germinate, but the seedlings grow so vigorously that Jack can climb up the beanstalk into the clouds, surpassing the achievements of Sylvan Wittwer, John Bukovac, and Larry Rapaport at Michigan State Univ. when they applied the miraculous gibberellic acid to horticultural crops. There was a castle at the top of the bean stalk, guarded by a gruff giant and a gruff wife. They were not only guarding the castle, they were also protecting a hen that laid golden eggs, a harp that played beautiful music, and a pot full of gold, all of which Jack eventually gained possession and gave to his mother. She forgave Jack for his foolish trade, and used some of the gold to subscribe to the *American Vegetable Grower* and *Seed Industry* magazines in her efforts to learn the identity of the beans and the seed company that sold them. Larry Baker, Dwayne De Yore, Wilbur Scott, if you know of a seed company with an unexplained cow on their inventory, please contact Skip McAfee so he can relay the information to her.

We have these contradictions, events that could prompt us to cry, “The sky is falling!”, and there are things happening that indicate that there is a hen laying golden eggs, a harp playing beautiful music, a pot filled with gold. We do have contradictions in horticulture as we enter the last decade of the 20th century. I would like to devote my presidential address to these contradictions. In some instances, you will be able to detect which side I advocate, while on some issues my neutrality will sparkle. I will seldom have solutions or judgments to offer—just contradictions.

In Mar. 1989, an event occurred in Philadelphia that might have had an everlasting impact on horticulture. Two grapes with 3 milligrams of 1 g of cyanide were detected in a shipment from Chile, and the sky was suddenly falling—the Chilean grape industry, U.S. grocers, and U.S. consumers (Dow Jones and Co., 1989). Exporting fruit had become a major industry in Chile, and had given the country a prosperity not experienced by most of its neighbors. Exported fruit had brought in $40,000,000 ten years ago, and had sky-rocketed to $550,000,000 last year. Now their fruit was banished from the U.S. market, economic disaster threatened, and more than 18,000 employees were laid off (Cohen, 1989). More than 45,000 Americans were killed in highway accidents in 1988 (Carlson, 1989). Press and broadcast journalists have been quiet about that, but the tainting of 2 grapes out of billions had prompted the removal of the fruit from U.S. menus. “The sky is falling!”

The grape episode occurred just as the
American public was being informed by television news and talk shows about the danger of eating apples treated with Alar. An award-winning actress received more publicity for her views about Alar and apples than she did for her acting ability. The activities of the Natural Resources Defense Council eventually caused school superintendents in many large cities to ban apples and apple juice from the school lunch programs. In New York City, more than 13,000,000 apples had been given to school children each year, and suddenly that practice ceased. “The sky is falling.”

Some “do-gooders” got the press and broadcast journalists to react to the question-able charges against Alar, but few people told the news media that many plants have 10,000 times more natural pesticides in them than synthetic ones (Beck et al., 1989). It has been reported that if one ate food with the maximum allowable levels of all pesticides cleared for crops—110 pesticides on apples, 100 on tomatoes (for examples)—only three people out of 1000 would face a cancer risk in a 70-year lifetime. Salmonellosis has doubled in the last 15 years, and there are 2 million intestinal illnesses caused each year by Salmonella and campylobacter, but only 6% of the people surveyed worried about harmful bacteria, while 80% were worried about possible chemical contaminants (pesticides) and food additives (preservatives, colorants) (Kinsella, 1987). It has been reported that food has more microbiological problems now than it had 40 years ago.

The Alar fiasco continues, as this month South Koreans boycotted grapefruit and cherries from the United States because some Korean agency detected daminozide in the fruit (Time Inc. Magazine, 1989). As far as I know, Alar has not been used on grapefruit, and the instrument used to detect daminozide was questionable. I have heard that John Gerber has assumed responsibility in this area at the Univ. of Illinois, and Working Groups in ASHS are giving organic gardening a much harder look. We have been slow to re-evaluate our watering practices, and now state and federal legislation on ground water quality is forcing us to do something about the problem (Hallberg, 1987). Watering practices have been given a high priority by our Science Priorities Committee, and by CAST.

We have another contradiction—some communities are populated with people who do not want yards to be landscaped or to have gardens, so the environment can be pesticide-free. Or they want watering of plant material in home or industrial landscaping stopped, to preserve the diminishing water supply. After 1 year of irrigation, the plants are on their own. “The sky is falling.”

Wouldn’t it be unfortunate if the trend went away from organized landscaping, just when we are getting some firm readings on the benefits of gardening, landscaping, floral arrangements, and pot plants? Ulrich (1984) conducted a survey that showed that the citizenry was more concerned when the vegetation in the area was diminished than when buildings began to deteriorate. He also studied patients in a hospital—half of them had rooms that gave them a view ofsetting. The other half in the study looked out at trees and grass. Those who could see nature recovered faster from surgery, required fewer drugs, and had less postoperative complications than those who only had bricks to count. Maybe those trees in your front yard will not only enable you to be healthier but they might also help you get richer, as Ulrich has estimated that trees in the front yard can increase the value of your house and land by 7%. Others have reported on the value of landscaping. Real estate agents think that landscaping adds 7.3% to the value of homes, while homeowners give an estimate of 14.7% (Weyerhaeuser Nursery Products Div., 1986).

If you put a swimming pool in your yard you can expect a return on your investment of 20% to 50%. A new deck or patio can realize a 40% to 70% return. An overhauled kitchen can give you an investment return of 75% to 125%, and landscaping had a recovery return of 100% to 200%.

Lewis (1988) also addressed the therapeutic value of landscaping. He chastised horticulturists for leaving it to geographers and psychologists to determine why plants reduce stress, while we “only look at roots, stems, and leaves”. As a floriculturist I would add “flowers”.

Martha Stuart, well known for her books on entertaining and cooking, is now preparing one on gardening (Seal, 1989). She sold more than 600,000 copies of her book on entertaining, at $35 per book, and she is optimistic about the response of readers to her gardening book. She leaves the word “work” out of her book—“I’m going to garden today” makes it all seem like fun, in the estimation of the author. We cannot discount the impact such publicity brings to horticulture. One garden society reportedly went from 5000 members to 250,000 members in 6 years because the “yuppies” thought gardening was the thing to do.

Horticultural therapy has not been confined to the out-of-doors. Langer and Rodin (1976) conducted a study in a nursing home in which they divided patients into two groups. On one floor, 47 elderly patients were given a choice as to whether or not they wanted a plant (they all did), but they were told they would have to take care of it. On another floor, 44 patients were told they would receive a plant (no choice), and the staff would take care of it. After 3 weeks, 93% of the patients on the floor with responsibility showed improvement, while 71% of the comparison group showed increased debilitation. One group had responsibility, the other group had hopelessness. One group saw a pot of gold, for the other group the sky was falling.

Talbot et al. (1976) found similar results with floral arrangements in the dining room at a mental hospital. Patients who dined at tables decorated with flowers were talkative, sociable, and lingered in the dining room, while those at barren tables were silent, ate quickly—often with eyes averted from each other, and immediately left the dining hall. Less medicine was also required for the patients who sat at the table with the floral arrangements. Wouldn’t those people grow ers of beautiful flowers be like a harp playing beautiful music?

Such news can’t help but make a floriculturist feel happy, except in a county in North Carolina we have a health officer who will not allow poinsettias in the nursing homes because years ago he received notice from the Duke Poison Control Center that poinsettias were poisonous. Administrators at the Poison Control Center have rescinded their warning, but he hasn’t changed his mind. Since he is the one who issues licenses to nursing homes they dare not disobey his edict, so many elderly patients must be deprived of the positive power of a very festive plant—their sky isn’t exactly falling, but the sunshine is being concealed by a government official who won’t return phone calls from an obviously unbiased poinsettia researcher.

“The sky is falling, the sky is falling” could be the chant when we consider certain aspects of horticultural education. We still are not reaching all the young people who
are seeking careers. This is not news—agriculture has faced problems in education ever since land-grant institutions were founded (Marcus, 1986; Kirkendall, 1986). Farmers were critical of low student numbers more than 100 years ago, and they complained about the relevancy of many courses and strongly objected to some faculty members. Richards (1988) reported similar concerns in England, as agricultural scientists tried to satisfy their academic peers but still convince farmers they were interested in agriculture. A survey team at the Univ. of California at Davis (UCD) polled 11th and 12th graders, and "agriculture" was synonymous with "hard work, outdoors, male, boring, insecure." Adults expressed esteem for agriculture, but they wouldn't care to be in agriculture or have their children in it. I remember the message I read on a fellow's T-shirt outside a restaurant in Honolulu. It stated, "Please don't tell my mother I'm an agricultural scientist, she thinks I'm a piano player in Harry's Bar and Grill." The adults considered agriculture to be hard work, risky, with little economic reward. Black students at UCD stated they didn't know much about agriculture and what they did know made them think it was risky work. "The sky is falling." However, the report from the National Junior Horticultural Asn. to the Board of Directors of ASHS indicated that 12,500 young people were doing projects. Is that a harp playing beautiful music?

Lewis (1988) stated that horticulture was very democratic, as it did not distinguish between races, religions, or sex. I am certain that people at the 1890 universities would have some disagreement with that statement. It seems that churches and universities both think it is more noble to help a minority group in some region thousands of miles away, while the plight of an institution just 50 miles away is ignored. Faculty in the horticultural departments at the land-grant universities surely could give some consideration to spending sabbatical leaves at the 1890 schools, with the same feeling of achievement as if they went to a country on another continent. I studied the tables in the article by Williams and Williamson (1988), and compared the roster of the 1890 schools with the 1988–89 ASHS Membership Directory. Going by the membership lists for the cities where 1890 institutions are located, I counted only 22 ASHS Members from 16 of those schools, and the seven were from Fort Valley, Ga. There are more ASHS Members from New Zealand (23) than there are from the black institutions in the United States. The sky isn't falling at the 1890 schools, but the hen isn't laying any golden eggs, either.

I have just mentioned the membership of people at the 1890 institutions in ASHS. We have some other contradictions about membership. You might think that horticulturists in foreign countries with economies similar to ours, with standards of living similar to ours, and in many instances with crops and problems similar to ours, would have better representation in ASHS than countries with greater differences. However, we only have nine members from the Scandinavian countries, but 10 members from Indonesia. We have only 15 members from the British Isles, but 48 members from South Korea. We have a total of 57 members from most of western Europe, but 222 members from Japan. Perhaps our very active membership committee, chaired by Mary Halbrooks, can make sense out of this. I can't. The Advisory Council, chaired by Charles Hall, has set a goal of 6000 Members by the year 2000. We should reach that number long before the end of the century.

I am certain that ISHS Secretary-General H.H. van der Borg is pleased that Europe does have a very good representation in the international society. You might be interested in knowing, however, that there are 64 columns of members in the May 1988 ISHS roster, and 13 of those columns are composed of U.S. members. It is easy for people in a country such as ours to think we are the beginning and end of things, and as President of ASHS I am pleased that such provincialism does not exist. Almost every problem we have is also a problem in other countries, and we need all the exchanges of ideas we can possibly get.

We also have strong contradictions in research. Competitive grant allocations, which once were restricted to scientists at state experiment stations, are now given in increasingly large numbers and sums to scientists in other fields. The money for the new competitive grants program was supposed to be "in addition to" what was being distributed to agricultural scientists, but budget cuts made it "instead of" (Marcus, 1988). In 1987, horticulture received 6% of the total money that was granted, and the percentage was even less in 1988. Dan Tompkins is preparing a ASHS Newsletter article on this matter. The 1972 Pound Report had characterized some of the land-grant university research as "outmoded, pedestrian, inefficient," though the work was being done by "well-trained, highly motivated scientists" (Huang, 1988). Such a judgement could cause a portion of the sky to fall. We get criticized because research often causes yield to go up and prices to go down because everyone starts to follow that practice (Buttel and Busch, 1988). J.A. Everett, in 1903, probably expressed the views of many people engaged in agricultural enterprise when he stated, "Those who taught farmers to make their farms as productive as possible stopped too soon. They did not show them how to market at a profit" (Erdman, 1928).

Participants in the 1987 activities celebrating the Centennial of the Hatch Act were optimistic about the future of agricultural research (USDA, 1987). They did use statistics, such as half of the U.S. orange juice concentrate comes from Brazil, and grapes from Chile account for 22% of the market. Imports are causing such annoyance among commodity groups that some state legislation could affect our international efforts. Jordan (1987) anticipated a reduction in the number of foreign students, particularly in graduate schools, because growers feel we are "giving away" our knowledge, our last competitive edge. Is the sky falling on research programs in horticulture?

Graham (1987), in his address to the Hatch Act celebrants, stated, "The greatest challenge is to grow plants and raise animals that will be in demand in foreign markets, not only because they are of high quality but also because they cost less to produce and sell at a lower cost to the consumer." I'm not certain if we can meet that challenge, and we might not want to. Lower costs often get translated into low wages and we already have that stigma in our industry. Lower cost to the consumer often gets translated into no profit for the producer, and we often have that situation in commercial horticulture.

Perhaps the ability to grow plants and crops of high quality that are in demand is our hero with the golden eggs. Perhaps the improved quality of our surroundings and lives, provided by horticulturists, will be that beautiful music coming from that harp. Perhaps that audience of people of all ages, races, sex, and religion that we are trying to reach as horticulturists is the pot of gold. Use that umbrella of pessimism if you think the sky is falling on you as a horticulturist, but I think you will be happier and more successful if you throw out those red and yellow bean seeds, which are filled with hope and optimism.

Literature Cited


Erdman, H.E. 1929. Who gets the benefit of improvement in agriculture? J. Farm Econ. 11:24–43.


