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# Ralph W. F. Hardy and the North American Agricultural Biotechnology Council

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At long last the world is preparing to reap serious benefits from agricultural biotechnology. Growers are looking forward to reduced costs to control weeds and insect pests, and they are anticipating the availability of new genetically engineered varieties that will produce more environmentally resilient crops. Consumers also stand to gain as foods containing healthier oils, more nutritionally complete proteins, and other functional attributes enter the market. These advances have nevertheless stirred up controversy. The technology is sophisticated and difficult for people to understand. Some are rejecting food products from agricultural biotechnology as threats to human health. Others are appalled at the thought of releasing genetically engineered organisms into the environment. Regulatory processes are in flux, and trade disruption appears on the horizon.

Ralph W. F. Hardy

If you think of this as a description of today's environment for agricultural biotechnology, you are correct. But it also describes what was happening more than 30 years ago. The first genetically engineered plant, a tobacco, had been brought to the world's attention in 1983. With it came intense interest in now hoary scientific concepts like restriction mapping (gene sequencing would become familiar much later), *Agrobacterium*-mediated transformation, and regeneration of recombinant plants from tissue culture. And then in 1987, a recombinant organism was, for the very first time and amid serious public debate, deliberately released into the environment. This was the now nearly forgotten ice-minus bacterium, *Pseudomonas syringae*, which had been genetically engineered so that it would not nucleate ice crystal formation. The field test was designed to determine if spraying suspensions of this bacterium onto strawberry leaves would protect the plants from damaging frost formation during cool nights. The bacteria did their job, but public outcry following approval of

the experiment in 1983 was intense—one person going so far as to state that the tests "can cause more death and destruction than all the wars we have ever fought."

In the midst of all this "death and destruction", two forward thinking individuals conceived of an organization that could moderate the potentially explosive dialogue swirling around agricultural biotechnology. It would bring science to the forefront, foster meaningful discussion involving both proponents and opponents of the technology, help guide rule making, and inform policy decisions. The organization, which sprang to life as the National Agricultural Biotechnology Council (NABC), operated in this spirit over a period of nearly three decades before disbanding in late 2016. It was a great run, but to begin, we must return to February of 1987, when Ralph F. W. Hardy, President of the Boyce Thompson Institute for Plant Research, met with Robert B. Nicholas of the law firm McDermott, Will and Emery to sketch out the framework for a neutral forum on agricultural biotechnology.

These discussions led to the establishment of NABC in 1988. The initial membership was small, by 1989 including just Hardy, Nicholas, and administrative representatives of four geographically representative land grant universities: Cornell University, Iowa State University, the University of California-Davis, and Texas A & M University. Initial funding was soon obtained from the Joyce Foundation and the USDA Cooperative States Research Service, forerunner of today's USDA-CSREES. This funding—with, we suspect, unrecorded in-kind contributions from the member institutions—allowed the small band of NABC's founders to organize two workshops, one in 1987 on "Regulatory Considerations: Genetically Engineered Plants" and another two years later on "Genetically-Engineered Plants: Scientific Issues in their Regulation for Animal Feed and Human Food Issues."

With the experience of these early workshops under its belt, NABC took a more audacious step and negotiated with Iowa State University to host the first of what became NABC's signature annual meetings. The initial 1989 gathering had as its focus "Biotechnology and Sustainable Agriculture: Policy Alternatives" and attracted 198 participants: 95 from academia, 45 from a variety of non-business organizations, 35 from firms, and 14 from government. They were joined by seven media representatives and two elected officials. A novel format for the annual meeting was established at this time, apparently as a deliberate, and ultimately successful attempt to ensure active participation.

Then as later, sessions at NABC annual meetings were organized around three or four timely topics that form a natural grouping under a unified meeting theme. The annual meeting, which normally extended for 2.5 to 3 days and was hosted by a member institution, typically convened with one or two thematic plenary

James Woolsey Ralph Hardy Ralph Nader

talks given by prominent invited experts (Ralph Nader, James Woolsey, M. S. Swaminathan, and George McGovern participated in this way over the years). The agenda then immediately tran-

sitioned to more in-depth consideration of each subject area as a series of modules. Several speakers representing divergent viewpoints focused and guided the thinking of the audience, which participated in a lively panel discussion at the close of each module. This process was normally complete by mid-afternoon on the second day, when participants broke into small facilitated discussion groups to consider and propose responses to key thematic questions. These then were summarized for presentation to and further comment by the assembled participants on day three.

Variations on this theme, most having to do with timing and organization of the panels, have been introduced over the years, but the general, idea sharing format has endured—as has the follow up process.

Soon after each meeting, NABC staff, often with the assistance of a local organizer, would assemble all of the presentations, as well as summaries of the recommendations of discussion groups, into an edited volume (some more than 300 pages in length!). These NABC Annual Reports, as they came to be called, have received comprehensive distribution over the years, not just to meeting participants but also to a wider audience.

Early on, it was recognized that sustaining an organization like NABC would require a leadership base much broader than that represented by the small founding group. This took the form of a paid membership model that by 1999 had attracted a total of 30 institutions and extended NABC's reach into Canada. NABC also began to adopt a more formalized operating structure. By 1991, Ralph Hardy was President of NABC, and June Fessenden MacDonald, a Cornell professor who had been involved since the very early days, held the title of Deputy Director. Boyce Thompson Institute agreed to house the operations of the growing organization and did so for the duration of NABC's existence. The membership, which increased to 35 institutions by 2007, was represented by a Council, which convened two or three times a year to conduct the business of the organization. An NABC Chair, elected annually from among the membership, presided at Council meetings.

A strong desire to make a difference and "get something done" became an early recurring theme of Council, which looked beyond the learning experience of the annual meeting and the impact of each NABC Annual Report and agitated for action. Beginning in the early 1990s, NABC experimented with a variety of approaches to this challenge. In keeping with NABC's core raison d'etre, a series of ad hoc committees began to grapple with biotechnology education and outreach. Beginning in the late 1990s and over a period of almost 10 years, NABC funded a successful Bioethics Institute that was led by Iowa State University. Later, Council funded ABC, the Agricultural Biotechnology Communicators, as they sought

**NABC'S PRINCIPAL OBJECTIVES :**

- *provide an open forum for persons with different interests and concerns to come together to speak, to listen, to learn, and to participate in meaningful dialogue and evaluation of the potential impacts of agricultural biotechnology*
- *define issues and public policy options related to biotechnology in the food, agricultural, biobased industrial product, and environmental areas*
- *promote increased understanding of the scientific, economic, legislative, and social issues associated with agricultural biotechnology by compiling and disseminating information to interested people*
- *facilitate active communication among researchers, administrators, policymakers, practitioners, and other concerned people to ensure that all viewpoints contribute to the safe, efficacious and equitable development of biotechnology for the benefit of society*
- *sponsor meetings and workshops and publish and distribute reports that provide a foundation for addressing issues.*

to provide unbiased information about agricultural biotechnology to non-specialist audiences. NABC also underwrote the Student Voice, which provided stipends to students, so that they could attend and participate in NABC annual meetings.

In seeking to guide policy, NABC has always paid careful attention to Washington. President Hardy, Council Chairs, and other NABC leaders made annual visits, not just to Capitol Hill, but to influential organizations that included the National Research Council, the White House Office of Science Technology and Policy, and the National Science Foundation. Every request for input and information was promptly answered. Understanding that the lengthy NABC Annual Reports would likely not be read by policy makers, Hardy and Council commissioned a series of printed statements, each addressing a specific and timely challenge to agricultural biotechnology. These quickly found their way onto desks all across the nation's capital and were widely disseminated elsewhere. At first these statements were rather general, with titles like 1998's "Vision for Agricultural Research and Development in the 21st Century." But with time, they became more hard hitting and specific, taking on issues such as management practices for field trials with bioengineered plants (2006), bioenergy (2007), agricultural water security (2010), and climate change (2011).

Strategy and the future emerged as recurring themes for NABC once it became clear that the initial controversies surrounding agricultural biotechnology were not going to quickly subside. The organization briefly flirted with the possibility of expansion to Europe and South America but did not do so. Membership was enlarged to include Canadian institutions, and the name was updated to the North American Agricultural Biotechnology Council in 2012 (the acronym NABC was retained). NABC also became affiliated for a time with the World Congress on Industrial Biotechnology and Bioprocessing. But in the end, most of the organization's energies were devoted to the annual meeting, the resulting Annual NABC Report, and their impact on the debate over agricultural biotechnology.

Over the years NABC was served by a dedicated staff that among others included Jane Baker Segelken, Susanne Lipari, and Allan Eaglesham. They did much of the hard work associated with annual meetings, provided vital assistance to each of the Council Chairs, and kept NABC's finances in order. They were also responsible for the editing and layout of the NABC Annual Report and other publications—by no means an insignificant task. Ultimate credit for the impact of NABC nevertheless goes to Ralph F. W. Hardy (1934-2016), who with Robert B. Nicholas first envisioned the organization, and who served as NABC President throughout its entire period of existence. Unprepossessing and often appearing at NABC events wearing a sweater and tennis shoes, Ralph had by 1987 already earned his stripes as a scientist and science administrator. For almost three decades thereafter, he devoted his energies and considerable political heft, not just on behalf of the organization he had helped found, but for the ultimate benefit of agriculture and the technologies that undergird it.