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RAIN FOLLOWS THE PLOW: AN INTRODUCTION TO THE ISSUE

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In the United States in general and the American West in particular, the pursuit of agriculture was initially bound up with notions of religious destiny. To convert wild terrain to row-crops and orchards was to "redeem" the soil, and government-funded irrigation projects were grounded on calls to reclaim "god-forsaken" lands.[1] As Jared Farmer notes in his 1999 book, *Glen Canyon Dammed*:

> Starting in 1891, William Smythe, the self-ordained prophet of irrigation, organized annual 'Irrigation Congresses' to promote national reclamation. For him and other believers, nothing less than the greening of the desert would fulfill the meaning of the verb *to reclaim*. Man proved his divinity by transforming arid 'waste,' thus completing the good work of God.[2]

These religious sensibilities led Smythe to publish *The Conquest of Arid America* and also helped sustain the somewhat metaphysical nineteenth-century notion that the very acts of tilling and planting might increase precipitation that would in turn sustain more farming.[3] James Lawrence Powell, Executive Director of the University of Southern California's National Physical Science Consortium, explains:

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[1] JAMES LAWRENCE POWELL, DEAD POOL: LAKE POWELL, GLOBAL WARMING AND THE FUTURE OF WATER IN THE WEST 37 (2008); JARED FARMER, GLEN CANYON DAMMED: INVENTING LAKE POWELL AND THE CANYON COUNTRY 130 (1999).

[2] FARMER, *supra* note 1, at 130.

[3] *See* WILLIAM SMYTHE, THE CONQUEST OF ARID AMERICA (MACMILLAN 1905) (1899).

> The appearance of wet weather in the Great Plains just as the sodbusters arrived led to a rival theory, 'rain follows the plow.' Others thought that planting trees would bring rain . . . . Disproving these loony notions had a great cost in broken dreams and human misery.[4]

In twentieth-century North America, the religious impetus for farming was supplemented by faith in the ability of industrial chemicals to increase and continually maintain agricultural productivity. Yet, as with the reliance on rain to follow the plow, reliance on chemically-dependent farming has yielded its own disappointments, resulting in soil erosion, soil sterility, and water contamination. Wes Jackson, President of the Land Institute, observes:

> [M]any see the chemical industry as a panacea for our agricultural woes. But the terrible consequences of this fix become more evident every day . . . . Soils that are naturally most productive are alive with everything from earthworms to micro-organisms—creatures that build, till and nourish the soil. Herbicides and insecticides applied to crops kill huge quantities of this life that would contribute to soil health.[5]

Against this historical background, in recent years we have seen a re-evaluation of the ways in which we grow our food, from the crops we harvest to the livestock we raise. There is a search for new ways to farm that are more compatible with ecological processes and with our moral sense of how animals should be treated. In this Symposium Edition of the Golden Gate University Environmental Law Journal, titled *Farming and Food: How We Grow What We Eat*, we examine legal and policy issues involved in this re-evaluation.

In our lead article, Lloyd Carter, President of the California Save Our Streams Council, examines the long history of water subsidies for corporate agricultural interests in the Westlands Water District of California's San Joaquin Valley. Carter explains how subsidized irrigation has contributed to environmental degradation and dire economic conditions in and around local agricultural communities.

Next, Paul Ringgold, Director of Land Stewardship with Peninsula Open Space Trust, considers the potential benefits and ills associated with cattle grazing on the San Francisco Bay Area's urban-rural fringe. Free-range cattle enjoy healthier conditions than their penned

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[4] POWELL, *supra* note 1, at 195.

[5] WES JACKSON, *Farming in Nature's Image: Natural Systems Agriculture*, *in* FATAL HARVEST: THE TRAGEDY OF INDUSTRIAL AGRICULTURE 43 (Andrew Kimbrell ed., 2002).

counterparts, and their grazing can play an important role in controlling wildfire risk and in maintaining grassland biodiversity. However, the presence of cattle in ecologically sensitive areas, such as streams and creeks, presents difficult conservation and management challenges. Ringgold details how local open space agencies and non-governmental organizations are striving to balance these considerations.

In our third article, Jeff Welty, Assistant Professor at the University of North Carolina School of Government, analyzes the legal requirements for the slaughter of animals for food, contrasting such requirements with end-of-life standards for human penal execution, companion-animal euthanasia, and unregulated animal killing. Welty's assessment of slaughter techniques and regulations raises complex questions about the values and assumptions that underlie the way we determine how different animals die.

Keith Aoki, Professor of Law at the University of California at Davis School of Law, follows with an in-depth look at how the rise of agricultural biotechnology and the expansion of intellectual property rights in plant materials have impacted the global biodiversity of food plant resources. Aoki traces the long history of international exchanges in plant materials (primarily seeds) and the development of national laws and transnational treaties that govern how farmers grow—or are forbidden to grow—certain crops. His article deconstructs Monsanto's controversial court victory against Canadian farmer Percy Schmeiser,[6] and places this litigation in the broader context of the evolving law on the commodification of genetic materials.

In our final article, Professor Armin Rosencranz (recently with the University of Maryland School of Law) and his colleagues Nicole Balloffet and Stephen Roblin, recount the success of Nicaraguan banana plantation workers, in a North American court, against their employer, Dole Food Company, and a chemical manufacturer, Dow, for damages resulting from pesticide exposure. The authors explain how the case of *Tellez v. Dole* raised the possibility that foreign agricultural workers can receive damages in a U.S. jurisdiction for decades-old overseas pesticide exposure. The article confirms, however, that such verdicts can remain elusive due to the willingness of judges to set aside punitive jury awards. The article also reports on the revelation of certain post-trial information suggesting that some of the *Tellez* plaintiffs' claims may have been fabricated, and how this revelation may affect future litigation against North American agricultural companies for farmworkers injured abroad.

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[6] Monsanto Canada, Inc. v. Schmeiser, [2004] 1 S.C.R. 902.

The articles in this *Symposium Edition* suggest a farming sector in flux—coming to terms with the consequences of a flawed industrial agricultural model and trying to find an alternative path forward. There is a redemptive quality to this effort, but unlike William Smythe's Irrigation Congresses, the redemption sought here is from the ravages wrought by agriculture itself. Instead of a faith that the rain will follow the plow, there is a fast-growing recognition that we may be better served by allying ourselves with nature—by having the plow follow the rain; that is, by using natural hydrology, soil conditions, and ecosystems as the template for where, what, and how we farm.