The costs and benefits of the Green Revolution have been under debate since that phrase was first applied to a vision of “modern” agricultural development in the late 1960s. Heads of state, policymakers, agricultural ministers, and crop scientists, among others, celebrated the apparent triumphs of science and technology on farms in places then still designated as the “Third World.” Many envisioned an ever-increasing pile of cheap grain subduing restless, hungry peasants while also sustaining capitalist industrialization. The rosy assessment of the Green Revolution and its widespread adoption and imposition as a model for development were never without critics and questioners—academic and activist, peasant and professional—in the five decades since. In that time, the scholarship that sustains these critiques has become increasingly rich, robust, and incontrovertible, and yet, as the historian Thomas D. Rogers’s detailed assessment of ethanol production in Brazil attests, opportunities to expand and deepen this avenue of research remain.

In *Agriculture’s Energy*, Rogers examines the history of Brazil’s National Alcohol Program, known as Proálcool. This federal initiative, begun in 1975 and officially concluded in 1990, promoted the production of sugarcane ethanol and its use as a fuel alternative through a variety of measures. According to Rogers, it was “the single largest oil-substitution and renewable energy program in the world” and it successfully drove the Brazilian ethanol industry to a world-leading status (p. 3). In 2020, Brazil ranked second in ethanol production, trailing only the United States and its mass production of corn ethanol. Proálcool warrants attention not just because it transformed sugarcane production, processing, and consumption in Brazil—with consequences for the country’s cane workers and their families, farmers and agro-industrialists, car owners and other fuel users—but also because Brazil’s successes in large-scale ethanol production drew and continue to draw global attention as a route out of fossil fuel dependency.

If Proálcool is typically understood and assessed as an energy program, Rogers wants read-
ers to instead appreciate its significance as an agricultural initiative. He situates Proálcool as a component of Brazil’s Green Revolution and the broader imagination of a modernizing agricultural sector as the driver of industrial development and economic growth. The expansion of ethanol production was rooted in the escalation of monocultures, consolidation of farm ownership, adoption of chemical inputs, and dogged pursuit of technical interventions to enhance efficiency. It required agribusiness investment and government subsidies and controls. It was also thoroughly dependent on the labor of rural workers whose quality of life eroded as they were further stripped of access to land and steady employment; experienced increasingly polluted air and waterways; and—without sufficient income to purchase food or resources to grow their own—often suffered from malnutrition, hunger, disease, and premature death. Like other instances of Green Revolution–style agricultural development, Proálcool chiefly benefited agribusinesses and politicians and did so at a cost to marginalized rural workers and the landscapes they inhabited.

In this deeply researched and carefully structured account, Rogers first locates Proálcool within the history of the Brazilian sugar industry and the nation’s broader ambitions for economic development and agricultural modernization. This discussion highlights the continuity of Proálcool with earlier efforts to transform agriculture and contain political volatility in the countryside. Rogers then traces the arc of the Proálcool program itself, with a focus on the agendas of political leaders and technocrats, before turning to its consequences in three thematic chapters that successively examine labor conditions, environmental pollution, and chronic hunger in the sugarcane regions.

To tell the history of Proálcool, Rogers relies on the records of government agencies and aid organizations and the paper trails produced by political leaders, economic planners, and other influential individuals. Yet he also supplements this top-down perspective with newspaper accounts and documentation from labor organizations and court cases, sources that bring other actors, workers especially, into view. A key strength of the resulting account is its detail. Where historians often report on state-led programs as the products of some bloodless government agency, Rogers consistently pinpoints individuals to whom influence and decision-making can be attributed. He also makes clear that political, technical, and business leaders had knowledge of the ill effects of scaling up sugarcane ethanol production and forged ahead regardless.

*Agriculture’s Energy* invites reflection on one of the starkest contradictions of the Green Revolution. Although rhetorically celebrated as a campaign to feed the world, investments in agricultural modernization and the pursuit of ever-larger harvests did not—and will not—resolve hunger. The case of Proálcool offers a vivid illustration of how in some cases “aggressively modernizing agriculture contributed to food shortages” (p. 170). In 1975, the year Proálcool was launched, experts estimated that half of Brazilian children were malnourished (p. 182). Brazil’s impressive economic growth in the preceding decade had produced stark inequalities. In the country’s sugarcane regions, families who toiled according to the whims of landowners and were denied land and time to grow crops for their own subsistence struggled to earn enough cash to buy food. Rather than redress these circumstances, Proálcool entrenched them. It further concentrated land, constraining subsistence production, and (along with other commodity crops) diverted attention from the cultivation of less profitable staples like beans. Agricultural knowledge and labor sustained the production of calories for cars and not for people. As Rogers observes, “it introduced a key irony into Brazil’s agricultural sector” in which sugarcane growers “benefitted from the techniques being hailed for feed-
In order to mass produce an industrial input (p. 170).

Rogers reminds readers that the deepening inequality resulting from Proálcool was not a result of flawed design but an intentional feature. This observation extends to the Green Revolution more broadly. The initial Green Revolution programs sought to increase production in targeted regions, usually places where farmers already benefited from better growing conditions and had greater access to resources.[1] Once those growers produced more abundantly, other farmers were expected to give up subsistence cultivation and buy from the market, freeing their labor for industrial work. In short, the original Green Revolution vision was one in which wealth concentrated among a smaller number of better-off farmers and the commercial firms that supplied their inputs, while a much larger number of farmers were induced to abandon cultivation and accept whatever alternative work was available, wherever it was available. As Rogers emphasizes, “Our increasingly global agricultural system is working as it was designed to work, which means that it doesn’t work for everyone” (p. 199).

In the case of Proálcool, that lesson is urgent because today sugarcane ethanol is trumpeted as a climate-friendly fuel. Sugarcane growers and distillers are positioned to benefit from new national and transnational investments. As these ventures move forward, history should not be forgotten. As Rogers’s impressive analysis so clearly shows, that history involves not only the impressive scaling up of ethanol production through state support and technical improvements, as ethanol promoters are quick to observe, but also rural families’ experiences of economic precarity, malnutrition and hunger, and environmental degradation.

Note

[1]. Jonathan Harwood, “Was the Green Revolution Intended to Maximise Food Production?”

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