

PESTICIDES, PARAKEETS, AND UNIONS IN THE COSTA RICAN BANANA INDUSTRY, 1938–1962*

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Abstract: This article explores one of the earliest large-scale uses of biocidal agrochemicals in Latin America, the United Fruit Company's hand-spraying of its banana plantations to control sigatoka disease from 1938 to 1962. After discussing the environmental context of sigatoka and the early development and implications of the spray technology, the essay focuses on the thousands of workers who applied the chemicals. Using Costa Rica as a case study, it explores workers' sense of the personal costs of their work as well as their ambiguous relationship to the larger banana workers' union movement. Because of differences in ethnicity, age, and masculine status, pesticide workers were not part of the labor movement's militant core, but their participation in strikes gave unions great power for a time. This power, along with workers' individual job actions, forced fundamental changes in the pesticide program, demonstrating the importance of integrating labor into the study of environmental change in agricultural capitalism.

In 1942 a group of “organized workers” on the Costa Rican banana plantations of the United Fruit Company wrote to the republic's physician-president, Rafael Angel Calderón Guardia. They asked for his intervention in the “anguished situation” borne by those “who work in the irrigation of poison, destined to cure or preserve the banana cultivations from the disease called Sigatoka. . . . We spray workers, based on the bitter experience of our work, tell you that headaches, night coughs, and bad eyes are all common among us, that is, we suffer in our vision, our brains, and our lungs; we are very prone to tuberculosis.”¹

The job of applying pesticide was quite new to Central American agriculture in 1942. United Fruit's spraying program had begun only four

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1. “Protección para los trabajadores del veneno solicitan al Presidente de la República,” *Trabajo* (published in San José), 23 May 1942. There is no evidence that President Calderón

years earlier as an emergency response to a fast-moving fungal epidemic, and it probably pioneered the use of biocidal chemicals on crops in the isthmus.² Yet by the time the workers made their plea, hand-spraying for sigatoka control had become routine throughout the Central American banana industry and continued for over two decades. As the petition makes clear, the program was dangerously labor-intensive.

Long after its replacement by newer technologies, United Fruit's manual program to control sigatoka remained, according to a leading tropical phytopathologist, "the biggest job of plant spraying ever done anywhere in the world."³ Considering its scale and early inception, the program has received surprisingly little attention in the growing body of environmental scholarship on the ecological price and "human costs" of pesticide overuse in Mesoamerica.⁴ The petition sent by organized pesticide workers to the president also exposes another lacuna in many pesticide studies. Most have ascribed agency only to farmers, agronomists, and agribusinesses, portraying wageworkers as inevitable, largely passive victims—not unlike the robins and brook trout in Rachel Carson's classic *Silent Spring*. This article draws on several rich sources from United Fruit's Pacific Costa Rican operations (with frequent references to other regions of the company's industrially standardized empire) to examine workers and unions as actors in the

Guardia ever responded. Although *Trabajo* and its successors *Adelante* and *Libertad* were organs of Vanguardia Popular, the Costa Rican Communist party, and were thus shaped by the party's line, much of the reportage on the banana industry consists of verbatim reprintings of complaints, memorials, and petitions from the plantation union movement (as in this case). In almost every instance in which articles are verifiable from another source, they have proved reasonably accurate (if understandably partisan). This and all subsequent translations are mine.

2. Here and throughout this article, I include within the definition of *pesticide* all biocidal chemicals used in agriculture: fungicides, insecticides, herbicides, and the like.

3. Frederick L. Wellman, *Tropical American Plant Disease (Neotropical Phytopathology Problems)* (Metuchen, N.J.: Scarecrow, 1972), 335.

4. Most studies of pesticide crises in Central America and Mexico trace their origins to post-war phenomena: the introduction of DDT, the demands of the 1950s "cotton boom," the dissemination of agricultural technologies of "the green revolution," and cold-war-inspired regional development programs. See Douglas L. Murray, *Cultivating Crisis: The Human Cost of Pesticides in Latin America* (Austin: University of Texas Press, 1994), 13–26; Robert Williams, *Export Agriculture and the Crisis in Central America* (Chapel Hill: University of North Carolina Press, 1986), 13–73; Susan C. Stonich, *"I Am Destroying the Land!" The Political Ecology of Poverty and Environmental Destruction in Honduras* (Boulder, Colo.: Westview, 1993), 63–88, 123–59; and Angus Wright, *The Death of Ramón González: The Modern Agricultural Dilemma* (Austin: University of Texas Press, 1990), 172–87; Daniel Faber, *Environment under Fire: Imperialism and Ecological Crisis in Central America* (New York: Monthly Review Press, 1993), 85–115. Laurie Ann Thrupp's excellent dissertation treats an aspect of United Fruit's sigatoka-control program, and my essay is in part indebted to her research on the effects of fungicide residues on soils. Thrupp's work is not, however, a historical study. See Thrupp, "The Political Ecology of Pesticide Use in Developing Countries: Dilemmas in the Banana Sector of Costa Rica," Ph.D. diss., University of Sussex, U.K., 1988.

company's sigatoka-control program who affected its evolution in important ways. In doing so, I hope to move the workplace struggles of agribusiness workers closer to the center of environmental questions and to explore workers' own sense of the chronic and cumulative costs of their work.

Examination of this program may also contribute significantly to Central American historiography, which remains largely unintegrated with the environmental literature. Historians of the region have long acknowledged the crucial political, social, and economic role of U.S.-owned multinational fruit exporters in Central America, especially the United Fruit Company (UFCo), a near-monopoly producer until the late 1950s.⁵ The company and its workforce have been central to the region's labor history in that United Fruit's workers led major popular struggles across the isthmus. In Costa Rica, organized banana workers staged in 1934 the most famous strike of the republic's history, provided crucial support for the populist governments of the 1940s, fought as militias in the 1948 civil war, presented regimes after 1948 with their main labor problem, and remained the most powerful supporters of the Left through the early 1980s.⁶ Although Costa Rican labor historiography has paid little attention to the ecological context of the banana industry, I argue here that the ambiguous relationship between sigatoka-control workers and the banana unions as well as the problems and opportunities created by the pesticide program were major factors in the character, capacities, and trajectory of this important labor movement. Thus United Fruit's labor history and its changing pesticide practices can be understood

5. The literature on United Fruit is too vast to cite here. Important studies published since the late 1980s include Mario R. Argueta, *Historia de los sin historia, 1900–1948* (Tegucigalpa: Guaymuras, 1992); *El silencio quedó atrás: Testimonios de la huelga bananera de 1954*, edited by Marvin Barahona (Tegucigalpa: Guaymuras, 1994); Philippe Bourgois, *Ethnicity at Work: Divided Labor on a Central American Banana Plantation* (Baltimore, Md.: Johns Hopkins University Press, 1989); Aviva Chomsky, *West Indian Workers and the United Fruit Company in Costa Rica, 1870–1940* (Baton Rouge: Louisiana State University Press, 1996); Paul J. Dosal, *Doing Business with the Dictators: A Political History of United Fruit in Guatemala, 1899–1944* (Wilmington, Del.: Scholarly Resources, 1993); Darío Euraque, *Reinterpreting the Banana Republic: Region and State in Honduras, 1870–1972* (Chapel Hill: University of North Carolina, 1996); and Mario Posas, "La plantación bananera en Centroamérica (1870–1929)," in *Historia general de Centroamérica: Tomo IV, Las repúblicas agroexportadoras*, edited by Víctor Hugo Acuña Ortega, 111–66 (Madrid: Comunidades Europeas, Sociedad Estatal Quinto Centenario, and FLACSO, 1993).

6. For Central America as a whole, see the country essays in *Historia del movimiento obrero en América Latina 2: Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panamá*, edited by Pablo González Casanova (Mexico City: Siglo Veintiuno, 1985). For studies of Costa Rican labor and political history emphasizing the role of banana workers, see also Víctor Hugo Acuña Ortega, *La huelga bananera de 1934* (San José: CENAP and CENPAS, 1984); John Patrick Bell, *Crisis in Costa Rica: The 1948 Revolution* (Austin: University of Texas Press, 1971); Carlos Abarca Vásquez, "El movimiento huelguístico en Costa Rica, 1950–1960," Tesis de Grado, Universidad de Costa Rica, 1978; and Marielos Aguilar H., *Clase trabajadora y organización sindical en Costa Rica, 1943–1971* (San José: ICES, Porvenir, and FLACSO, 1989).

only in reference to one another, and both depended on the choices made by pesticide workers.

UNITED FRUIT CONFRONTS SIGATOKA

“Sigatoka,” the airborne disease caused by the fungus *Mycosphaerella musicola* Leach,⁷ had long been confined to the banana cultivations of the South Pacific. It was first observed in the Western Hemisphere in 1934 in Trinidad. A year later, it appeared on a single Honduran UFCo plantation. Shortly thereafter, the epidemic exploded, spreading throughout Honduras and into Belize, Mexico, Jamaica, and the lesser Antilles by 1936 and engulfing most of the rest of the Caribbean and Central America by the end of the following year. United Fruit’s brand-new Pacific Costa Rican divisions of Golfito and Quepos were infected almost as soon as they were planted. The disease acted by destroying leaf surface, first reducing fruit yields, then halting them altogether. Most insidiously, from the company’s point of view, lightly infected plants often bore normal-looking fruit that ripened prematurely during shipment or acquired a noxious taste and odor by the time it reached consumers.

The epidemic’s catastrophic effects, combined with its astonishing pace, threatened United Fruit’s empire with what a contemporary phytopathologist termed “the greatest crisis of its history.”⁸ This assessment is all the more remarkable because it came midway in the company’s fifty-year struggle with Panama disease, a soil-borne fungus whose ravages had justified United Fruit’s relentless migration of operations, as in moving from the Atlantic to the Pacific coast of Costa Rica. The Panama epidemic had also inspired managers to rationalize cultivation practices, foster an elaborate division of labor, and involve a growing army of technicians and agrono-

7. The scientific nomenclature for the pathogen may be somewhat confusing because it was changed to reflect growing understanding of the organism’s life cycle. First described as *Cercospora musae* Zimm., when researchers believed the fungus was transmitted chiefly through asexually produced water-borne bodies called “conidia,” the pathogen was renamed *Mycosphaerella musicola* Leach when Leach discovered that it could also be transmitted aeri-ally through sexual fruition as ascospores. The original term is sometimes still used to refer to the conidial form. The most complete technical discussion of sigatoka disease can be found in D. S. Meredith, *Banana Leaf Spot Disease (Sigatoka) Caused by Mycosphaerella musicola Leach*, Phytopathological Papers no. 11 (Kew, U.K.: Commonwealth Mycological Institute, 1970).

8. Claude W. Wardlaw, “The Banana in Central America, II: The Control of *Cercospora* Leaf Disease,” *Nature* 147, no. 3,725 (22 Mar. 1941):344–48, 344. Wardlaw was not employed by United Fruit. On epidemic progress, see R. H. Stover and J. D. Dickson, “Banana Leaf Spot Caused by *Mycosphaerella musicola* and *M. fijienses* var *difformis*: A Comparison of the First Central American Epidemics,” *FAO Plant Protection Bulletin* 24, no. 2 (1976):36–42; and Meredith, *Banana Leaf Spot Disease*, 5. On the appearance of sigatoka in Golfito and Quepos, see Esquivel to Ministro de Fomento, 23 Nov. 1941, Archivos Nacionales de Costa Rica (hereafter ANCR), Serie Fomento, 2,871.

mists in day-to-day operations, a technical corps that would prove indispensable in combating the new disease.⁹

Like Panama disease, the sigatoka epidemic was less a natural disaster than a product of industrial-scale, globalized agriculture. *Mycosphaerella*'s route to the Americas remains a matter of conjecture and dispute, but the banana plantations of the isthmus were well suited by nature and by design to its rapid propagation. Airborne and soil-dwelling fungi had thrived in Central American lowland rain forests long before the coming of the banana industry, and the climatic conditions that fostered them remained the same after the trees were cut down and replaced by bananas. What changed were vast expanses of banana "clones," with identical vulnerabilities far more susceptible to damage by a single infectious agent than complex tropical forests.¹⁰ In the mid-1930s, United Fruit's isthmian banana cultivations offered the pathogen almost fifty thousand hectares of susceptible plants, growing in massive, uniform blocks of three hundred to six hundred hectares.¹¹

The company's seasoned mycologists rushed to address the new crisis. They quickly determined that copper sulfate, a widely used fungicide, could counteract sigatoka, but they grappled with the problem of how to apply it. After dusting the chemical from airplanes proved unsuccessful, they ultimately settled on spraying it dissolved with lime in water, in a blue-green soup known as "bordeaux mixture." To deliver the necessary enormous quantities—250 gallons per acre, twenty to thirty times per year—United Fruit created a fungicide infrastructure of pharaonic scale. Its essential features were uniform across the company's many divisions and changed little until it was superseded by an entirely new technology in 1962. On each plantation, powerful central pumping plants fed a forty-mile grid of galvanized iron pipe, studded with over twenty-five hundred couplings for the long hoses workers used to spray the solution. To maintain a year-round spray schedule for continuous production, more than a quarter of United Fruit's farm-labor force (ten to fifteen thousand in any given year), worked in sigatoka control. They applied the fungicide to nearly sixty thousand

9. For a discussion of Panama disease and its impact on the distribution and organization of production in the banana industry, see Steve Marquardt, "'Green I Iavoc': Panama Disease, Environmental Change, and Labor Process in the Central American Banana Industry," *American Historical Review* 106, no. 1 (Feb. 2001):49–80.

10. For theories on the fungus's route from the South Pacific, see R. H. Stover, "Intercontinental Spread of Banana Leaf Spot (*Mycosphaerella musicola* Leach)," *Tropical Agriculture* (Trinidad), 40 (1963):327–38, 335; and Meredith, *Banana Leaf Spot Disease*, 73–74. On the ubiquity of fungi in a Central American lowland rain-forest zone adjacent to the one studied in this essay, see G. F. Bills, "Abundance and Diversity of Microfungi in Leaf Litter of a Lowland Rain Forest in Costa Rica," *Mycologia* 86, no. 2 (1994):187–98. Warren Dean's classic work also emphasizes the vulnerability of monocultural tropical plantations to epidemic disease. See Dean, *Brazil and the Struggle for Rubber: A Study in Environmental History* (New York: Cambridge University Press, 1987).

11. Frank Ellis, *Las transnacionales del banano en Centroamérica* (San José: EDUCA, 1983), 58.

hectares at the peak of the program.¹² The company thus depended to an uncomfortable extent on these workers' labors to stave off the agro-ecological disaster represented by the epidemic.

The sigatoka program had immediate implications for the labor process of export banana production.¹³ Indirectly, it centralized managerial control by squeezing out most "independent" contract banana growers, whose potential unreliability in disease control could threaten United Fruit's operations. In any case, the enormous cost of spray systems was beyond most small producers' reach.¹⁴ More directly, the daily job of sigatoka suppression brought the work regime of the factory into the field. The company and its enthusiasts viewed this outcome as an unambiguously positive development for all concerned. United Fruit's corporate newsletter wrote glowingly of the transformation of thousands of "machete swingers" into "spray men."¹⁵ Another company publicist asserted that spray workers proudly referred to themselves as "chemists."¹⁶ In the *zona bananera*, however, spray workers were not called *químicos* (chemists) but *pericos* (parakeets), a reference to the indelible blue-green stain that the bordeaux mix left on clothes and skin. The humbler, mocking job title suggests that *bananeros* themselves viewed spray work not as a step up into the brave new world of industry and technology but rather as a humiliating task for those at the bottom of the plantation hierarchy. What one worker called the "hard and ugly" nature of the work goes far to explain this view.¹⁷

12. Wardlaw, "Banana in Central America," 347; Jorge Umaña Araya, "Un ensayo con el fin de mejorar el control de la sigatoka, realizado en la Zona Bananera del Pacífico de Costa Rica, durante el año 1949," Tesis de Grado, Universidad de Costa Rica, San José, 1949, 60–65, 90–93; and Richard La Barge, "A Study of United Fruit Company Operations in Isthmian America, 1946–1956," Ph.D. diss., Duke University, 1960, 64, 81–82. See also Clarence F. Jones and Paul C. Morrison, "Evolution of the Banana Industry in Costa Rica," *Economic Geography* 28, no. 1 (1952):1–19, 14; and Stacy May and Galo Plaza, *The United Fruit Company in Latin America* (Washington, D.C.: National Planning Association, 1958), 155. Regarding total workforce size and hectareage, estimates here and elsewhere are derived from the invaluable statistical tables in Ellis, *Transnacionales del banano*, 400–421.

13. As used here, the term *labor process* embraces the organization of production, work activities, and occupations as well as the social divisions that result from that organization.

14. All but a few Costa Rican contract growers lost their farms to sigatoka when United Fruit monopolized copper imports during World War II. After the war, the company discouraged new independent growers. See "A lo largo de la vía," *Correo del Sur* (published in Golfito), 5 June 1945. See also Umaña, "Un ensayo," 116; and Ellis, *Transnacionales del banano*, 116.

15. "Banana Division: What Makes It Tick?" *Unifruitco*, Aug. 1948, p. 7.

16. Charles Morrow Wilson, *Empire in Green and Gold* (New York: Henry Holt, 1947), 273. See also Wardlaw, "Banana in Central America," 348.

17. "Autobiografía de A.V.A.," *Autobiografías campesinas: Guanacaste*, vol. 3 (Heredia, Costa Rica: Escuela de Planificación y Promoción Social, Universidad Nacional, 1977). The terms *perico* and *periquera* are nearly universal in the *Autobiografías campesinas* (a compilation of hundreds of rural life-stories collected by Costa Rican university students in the mid-1970s)

A machine, the diesel "Hardie" pump in the main plant, determined the distribution of spray crews and the pace of labor. Fourteen to twenty-two spray teams, the *periquera*, worked simultaneously on a typical farm. To prevent pipe ruptures or sedimentation of the bordeaux ingredients caused by pressure imbalances, foremen had to make sure that workers were arrayed evenly on either side of the main pipe from the plant. In the event of any slowdown on one side, foremen hurriedly ordered teams to shift to maintain the balance, not infrequently firing workers who responded with insufficient haste.¹⁸ Once the pump began to run, it operated as inexorably as an assembly line and was not shut down until the end of the working day. For this reason, lunch stops or breaks of any kind were forbidden until the mid-1950s, when worker resistance seems to have forced at least some plantations to allow staggered rests by one team on each side of the main line.¹⁹

The effort to duplicate the precision and regularity of an industrial plant meshed poorly with the disorder of a growing banana plantation, and workers paid the price. On recently planted land, workers had to drag the long hundred-pound pressurized hoses over the undecayed and jackstrawed trunks of the original forest and across drainage ditches that were not yet bridged. In older cultivations, the banana plants themselves created difficulties, as irregular growths of new stalks succeeded the precise, measured rows in which the original rhizomes were planted. This tendency made it easy for sprayers to lose the grid they needed to follow for complete coverage. Most sprayers knotted ropes at precise distances along their hoses to serve as guides in the re-creation of an order that natural regeneration had erased.²⁰ Workers often complained that the difficulties imposed by these plantation variables (which could occur within a single farm) was not figured into the daily acreage expected of them.

Sigatoka control, unlike most other plantation jobs, was mainly paid by the day rather than by the task, probably to encourage thorough work in the crucial labor of disease control. But as United Fruit entered a period of declining profits in the 1950s, managers apparently sought to contain the huge wage costs of disease suppression by setting rigid production quotas

as well as in interviews with banana workers from the bordeaux era and contemporary accounts in the labor and local press. Outside of Wardlaw's article and UFCo promotional literature, I have yet to encounter worker usage of the term *químico*.

18. Umaña, "Un ensayo," 60; also Elías Alberto Rivas Lara and Ricardo Alberto Wilson to Juzgado de Trabajo, Golfito, 21 Dec. 1954, "Petición de prestaciones," Remesa 28, Archivo 2800, Archivos Judiciales de Costa Rica (hereafter cited as R28, A2800, AJCR).

19. Rivas Lara to Juzgado de Trabajo, Golfito, "Petición de prestaciones," 21 Dec. 1954, R28, A2800, AJCR; "Trabajadores de finca 18 . . . denuncian . . ." *Adelante*, 29 Nov. 1953; and "Bajo la dirección de la FOBA . . . nuevas victorias de los trabajadores de la Chirilanco," *Adelante*, 27 May 1956.

20. Wardlaw, "Banana in Central America," 348; and Umaña, "Un ensayo," 112.

for individual workers. Union activists repeatedly protested that pericos who failed to achieve a set *boquillaje* (number of hose connections and thus hectares covered) on a given day were docked pay or even fired. A heavy layer of supervisors (17 percent of spray employees) enforced rapid pace and perfect coverage, upbraiding workers “with arrogant voice and gestures” for any banana leaves lacking a blue-green stain.²¹ Sprayers complained that bosses continually changed their criteria for judging effective spray technique, whether because of research-driven changes in understanding of the sigatoka fungus’s life cycle or idiosyncratic interpretations of that research.²²

THE HUMAN COSTS OF SIGATOKA CONTROL

But it was the bordeaux spray itself that made sigatoka-control work “ugly.” Pericos spent all of each working day virtually immersed in copper fungicide. Until the last years of the bordeaux spray period, pericos worked in teams of two: the *manguerero* carried, connected, and kept unentangled the heavy hose, while the *regador* sprayed the banana plants with a meter-long wand and nozzle. The banana plants grew as high as forty feet, and the regador’s responsibility was to coat thoroughly both sides of each leaf, especially the upper side. In practice, this requirement meant that to direct his spray, the regador (shielded at most by a canvas hat) kept his face turned upward into the falling spray, constantly inhaling the acrid copper vapor and blinking it out of his eyes. Throughout the day, copper sulfate built up on both workers’ clothing and exposed body parts, until it formed a virulent blue-green crust. Soap and water would remove most of it, but the stain persisted on both skin and fabric. Wives and family members reported that even months after leaving the work, the mucous membranes of former pericos remained greenish, and they still expelled green-tinged sweat.²³

Worker repugnance toward the job was not just aesthetic. They feared the effect of the stinging vapors on their general health, their eyes,

21. The characterization of bosses comes from the poem “El Spray” by “Fan Fan” in *La Voz Popular* (published in San José), 30 Nov. 1952. On protests over quotas, see the following articles in *Adelante*: Cristóbal Solano Blanco, “Bananeros somos seres humanos y no bestias de carga,” 25 Nov. 1956; “Brutales atropellos a los trabajadores en Puerto González,” 23 Dec. 1956; “Crece la lucha por mejores condiciones de vida y trabajo,” 17 June 1956; “Miscelánea bananera,” 3 Mar. 1957; and “Obreros del Spray en Km 20 obligados a tareas inhumanos,” 8 Dec. 1957. The percentage of supervisors is derived from an average of Umaña’s yearly figures for spray teams and encargados, plus a foreman, on Finca 1 in Palmar Sur, Costa Rica. See Umaña, “Un ensayo,” 119.

22. Guido Sánchez et al., “Pliego de peticiones,” 26 July 1955, Conflicto Colectivo, Puerto González Víquez, Juzgado de Trabajo de Golfito, R1829, A884, AJCR; “Contra las llamadas ‘prevenciones’ en el trabajo de riesgo de caldo bordelés,” *Adelante*, 13 Jan. 1957; and “Los ‘cipayos’ provocan a los trabajadores,” *Adelante*, 5 Feb. 1961.

23. “Preocupa ‘AMC’ por la salud de regadores de veneno,” *Adelante*, 4 Sept. 1954.

and especially their lungs. One journalist in the banana zone captured the sense of doom attached to spray work by comparing workers to hunted birds, ironically evoking both the nickname and their own jargon for the spray nozzle, which they called the *escopeta* (shotgun): "You should see the pleasure of the overseers [when someone takes the job], like the pleasure of bird-hunters. One down. And you could telegraph the Antituberculosis League [hospital] with the same expression, so they can expect another tenant. [The perico] breathes the poison all hours of the day, and bit by bit but surely, his lungs begin to fail. One down, gentlemen of the league."²⁴

The elevated incidence of respiratory disease in the *zona bananera* had many causes that had nothing to do with chemical exposure, including continual dampness, overcrowded housing, poor nutrition, and the constant movement of potential disease-carriers from all parts of Central America to and throughout the zone.²⁵ Nonetheless, bananeros themselves considered a stint on the spray crew as the surest route to the TB ward.

No available source contains any evidence that the company took spray workers' fears of tuberculosis seriously. Before the late 1960s, no medical research had linked inhalation of copper to respiratory disease. In 1969, however, doctors in the wine country of Portugal (one of the last agricultural regions in the world to use bordeaux mixture rather than newer fungicides) at last gave serious consideration to the complaints of local vineyard sprayers. They discovered in autopsies that many workers diagnosed with tuberculosis were in fact free of bacilli. But the dead had lung tissues stained blue-green by copper and cavernous regions of cellular breakdown, much like those produced by coal miners' black-lung disease. What they called "vineyard sprayer's lung," a chronic, often fatal condition, was fairly widespread among these workers, even though their spray schedule lasted only three months.²⁶

24. "Los trabajadores del spray," *Correo del Sur*, 1 Aug. 1945.

25. Tuberculosis rates in Puntarenas (the province where the banana industry was located) were twice as high as those of the next-most-afflicted province. See Costa Rica, Ministerio de Salubridad Pública, "Morbilidad y mortalidad distribuida por provincias (en relación al domicilio): Quinquenio, 1941-1945," *Memoria del Ministerio de Salubridad Pública* (San José: Imprenta Nacional, 1950), 219; and Costa Rica, Ministerio de Salubridad Pública, "Morbilidad y mortalidad por enfermedades infecto-contagiosas, año 1959," *Memoria del Ministerio de Salubridad Pública* (San José: Imprenta Nacional, 1959), 86. The ministry's aggregation of figures by province almost certainly minimizes the real rate in the much smaller *zona bananera*. See also Aviva Chomsky's valuable discussion of respiratory disease among UFCo workers in Limón, Costa Rica, during the 1920s and early 1930s: "Plantation Society, Land, and Labor on Costa Rica's Atlantic Coast, 1870-1940," Ph.D. diss., University of California, Berkeley, 1990, 135-37, 150-200.

26. J. Cortez Pimentel and Fernando Marqués, "'Vineyard Sprayer's Lung': A New Occupational Disease," *Thorax* 24, no. 6 (1969):678-88; T. G. Villar, "Vineyard Sprayer's Lung: Clinical Aspects," *American Review of Respiratory Disease* 110, no. 5 (1974):545-55; and Paul J. Stark, "Vineyard Sprayer's Lung: A Rare Occupational Disease," *Journal of the Canadian Association of Radiologists* 52 (Sept. 1981):183-84.

The much greater exposure of the Central American pericos who sprayed year-round and applied the fungicide at much higher pressure suggests that their likelihood of developing “sprayer’s lung” was greatly increased. In any given year, ten to fifteen thousand men were employed in sigatoka control throughout Central America. Almost half of them were regadores, who were exposed to much more copper sulfate vapor than were hose-carriers or plant operators. Without data on the length of time that individual workers remained on the spraying crews, it is impossible to estimate the number who may have contracted the disease. But even allowing for steep turnover rates, the afflicted probably totaled many thousands. Technical distinctions between the symptomatically identical maladies of tuberculosis and “sprayer’s lung” would have mattered little to those afflicted.²⁷

Pervasive fear of the respiratory effects of bordeaux inhalation fostered an enduring trope in Central American anti-United Fruit literature and journalism: the skeletal, tubercular former perico, dying alone in an urban slum or on the fringes of the plantation zone, after the company had no more use for him. The image was part of a larger awareness—sharpened by the bordeaux era—of agricultural capitalism’s macabre exchange of the lives of men for the productivity of plants. This dark vision was expressed most powerfully in *Prisión verde*, a novel by Honduran novelist, labor activist, and former perico Ramón Amaya Amador. In one of the novel’s most moving scenes, don Braulio, an old regador “with the face of a tuberculosis victim, sunken chest and distended abdomen,” gives his new hose-man Martín an orientation:

All of these farms are plagued with sigatoka, but they still produce well. Look at that fruit! What stalks! . . . If we don’t resolve to live like worms, the Company doesn’t prosper. And you see how life is, as the company fattens, the less we are men. . . . When I see sick farms, I think of us [the bananeros]; it seems to me that there’s our full-body portrait, because here my friend, we’re all sick, some of sigatoka and others of *mata muerta* [Panama disease], malaria and TB. Some will be cured, if they get away in time, others—just a hole in the ground!²⁸

Amaya’s vision of an eerie inverted symmetry between the robustness of the crop and the emaciation of the men whose labor encouraged it to grow

27. The estimate of those potentially affected was extrapolated from Cuadro “C,” “Mano de obra en la producción de banano: 1947–1976,” in Ellis, *Transnacionales del banano*, 408. Weakening of respiratory systems by inhalation of bordeaux may well have predisposed workers to genuine infection by the tuberculosis bacilli endemic in the zona bananera.

28. Ramón Amaya Amador, *Prisión verde* (Comayagüela, Hon.: Editorial Ramón Amaya Amador, 1993; originally published in 1949), 71–72. For Costa Rican examples of the trope of the spectral worker, see Emilio Quintana, *Bananos: La vida de un peón en la Yunai* (San José: Farach, 1978), 26; and José Meléndez Ibarra, “Comentarios de ‘un viejo zonero,’” *Adelante*, 21 Mar. 1953. In both of these cases, the writer (a bananero who had not worked in spray) is hailed by a frightening, unfamiliar figure, only to realize that it is the same man he had known as a robust young perico.

was widely shared. Workers used the same language of “sickness” and “cure” to describe the state of both plantations and their own bodies and expressed the underlying sense that what healed one made the other ill. This and their characterization of bordeaux mixture as “poison” reveal a conception of industrial agriculture as a zero-sum game, in which both nature and technology were on the side of industry. Against these forces, unfortunately, the plantation union movement was an uncertain ally.

LABOR CONFLICT AND THE PERIQUERA

A superficial, or mechanistic approach to analyzing labor conflict might lead one to hypothesize that spray workers would be one of the most militant sectors of the union movement on United Fruit Company banana plantations, if only because of their immiseration. In fact, the great upwelling of labor struggle and unionism in the United Fruit plantations during the bordeaux era seems to provide evidence of the importance of pericos to the union movement. Massive strikes in the banana zones of Guatemala, Honduras, and Costa Rica throughout the 1940s and 1950s were followed by relative quiescence after manual spraying ended in the early 1960s. The pattern of conflict in Costa Rica is particularly suggestive. Spray workers there were involved in all six district- or division-wide strikes in the bordeaux spray period, and their grievances figured in union demands or in the events precipitating the strike in all the conflicts for which such information is available.²⁹

The relatively complete judicial and journalistic accounts surviving for three of the four major Costa Rican strikes of the 1950s seem to suggest that the periquera was important to the strike movement. Workers presented twenty-three demands in the 1953 general strike. While most were applicable to the company’s entire workforce, two concerned grievances limited to the spray crews. Similarly, of twenty-four grievances in the 1955 walkout by the bananeros in Puerto González Víquez, three reflected grievances of the periquera. Finally, the pivotal strike throughout the zona bananera in 1959–1960 had only one demand: extension to bananeros of the Christmas bonus owed to nonagricultural workers under Costa Rican labor law. Nonetheless, in the months leading up to the walkout, the company’s efforts to eliminate the hose-carrier position from spray teams heightened tensions on the plantations and helped precipitate the ultimate strike.³⁰

29. Formal labor demands (*pliegos de peticiones*) have not survived from the 1943 general strike of the Quepos division, and because of the clandestine nature of strike organization in the nationwide strike of 1949, only the central demand of lower commissary prices entered judicial records. Similarly, no formal demands were presented in the walkout led by anti-Communist organizers in the Puerto González Víquez district in 1954. Spray workers were involved in each strike, however.

30. On the 1953 strike, see Luis Fonseca Vindas and Luis and Manuel Venegas Castillo,

A closer reading of judicial strike records as well as interviews with union leaders, however, reveal that the spray crews were less than a militant vanguard of the Costa Rican banana labor movement. In the narratives contained in judicial records of two of the most spontaneous mass strikes (those of 1949 and 1953), officials reported that the walkouts began among “agricultural workers” and that spray workers joined the strikes only after others forcefully interceded with them to do so. In the 1949 strike, for example, the judicial inspector for the Juzgado de Trabajo de Golfito asked two spray workers why they were not on the job. They replied: “Last Tuesday the thirtieth of August around seven in the morning, we were doing our job, which consists of spraying the plantations with bordeaux mixture, and a group of workers in agriculture on this farm arrived and told us that we had to stop work. We told our boss what happened, and he said that’s all right, we should stop work, and that’s what we did.”³¹

Similarly, in 1953, the judicial inspector reported that on Farm 3 of Palmar Sur on the day the strike began, “the spray workers did their normal work until eight in the morning, when a group of striking workers impeded them from continuing their ordinary duties.”³² While such assertions might be explained by the reluctance of ordinary workers to admit to insubordinate behavior in front of authorities, interviewed workers who held other plantation jobs showed no such reluctance, describing the strike’s main objective and indicating their approval and some prior knowledge of the walkout.

Interviews with labor leaders from the bordeaux spray era yields a picture of even greater marginality to the union movement. One of the union’s most dynamic organizers remembered tremendous divisions and brawls between the workers of the periquera and those in the “agriculture department,” whom he recalled as the movement’s militant base.³³ A plantation-level militant who had worked a stint spraying bordeaux mixture was more dismissive in his assessment: “The pericos didn’t like to join the union.”³⁴ None of the banana unionists whom I interviewed placed the pericos among

“Pliego de peticiones,” *Conflicto Colectivo*, Juzgado de Trabajo de Golfito, 26 Aug. 1953, R28, A32, AJCR. On the 1955 strike, see “Pliego de peticiones,” *Conflicto Colectivo*, Juzgado de Trabajo de Golfito, n.d. (1955), R1829, A884, AJCR; and “Es justa la huelga bananera que se decretará en la Chirilanco,” *Adelante*, 7 Aug. 1955. On tensions in the periquera before the 1959–1960 strike, see “El Sindicato de Puerto Cortés denuncia,” *Adelante*, 22 Nov. 1959.

31. “Inspección ocular,” “Calificación de un movimiento de huelga,” Juzgado de Trabajo de Golfito, 6 Sept. 1949, R1829, A882, AJCR.

32. “Acta de inspección ocular,” “Calificar un movimiento huelguístico en las fincas bananeras de Palmar Sur de Osa,” Juzgado de Trabajo de Puerto Cortés, 2 June 1953, R197, A469, AJCR.

33. Interview with Anselmo Matarrita Fonseca, union organizer, 5 Nov. 1996, Río Claro, C.R..

34. Interview with Jorge Conejo Peñaranda, 4 Nov. 1996, Río Claro, C.R.

the stalwarts of plantation labor organization, and several lumped them by implication among the unreliable (*flojos*).

The uneasy relationship between the labor movement and the *periquera* had several roots. One was pragmatic: the union had relatively little to offer spray workers. Pay rates were already comparatively high for spray workers, especially considering that many lacked agricultural skills and could not keep pace when assigned to other cultivation tasks.³⁵ This combination of higher wages and modest agricultural proficiency had a dual effect: spray workers could not realistically expect other *bananeros* to support higher pay for the *periquera*, nor could they improve their lot by gaining increased access to other plantation jobs.

Spray workers' central problem—the “ugly” and unhealthful nature of the work—also seemed increasingly beyond the power of labor struggle. Much early leftist and union agitation around spray work focused on the toxicity of *bordeaux* mixture and included demands for protective equipment. Such protests were valuable as propaganda in dramatizing the company's exploitation of its workers, but they also reflected both union militants' and *pericos*' judgments of the most important issue to the *periquera*. This was especially true during World War II, when many old-time *bananeros* from agricultural task-crews were forced by the suspension of fruit shipments to choose between spray work and unemployment.³⁶ As the *bordeaux* era wore on, however, claims of health damage and petitions for goggles and breathing masks gradually disappeared from public discourse and union demands. By the mid-1950s, grievances focused largely on the pace of work, the difficulty of handling hoses, and changing work rules.

The issue of exposure to *bordeaux* mixture surfaced for the last time in the Puerto González Viquez strike of 1955, in which company-supplied protective gear was last among four *periquera*-oriented demands. UFCO negotiators responded: “We are willing to provide masks to the *regadores* of spray; on a few occasions we have tried this, and after a few days the worker discards it. We'll try it again with some crews, and if it works out, we'll establish it in a general way for all spray *regadores*.”³⁷

35. Anselmo Matarrita Fonseca, “Protestan traslados en Puerto González Viquez,” *Adelante*, 2 Mar. 1958; and Cristóbal Solano Blanco, “Rebaja de salarios hace la Compañía Bananera,” *Adelante*, 20 Apr. 1958.

36. “Mantendrá la United Fruit Co. el personal indispensable para conservar y curar los bananales,” *La Hora* (published in San José), 3 June 1942. The presence of union leaders among the “spray workers” who signed the 1942 protest to Costa Rica's president, quoted at the beginning of this article, would have been unlikely after the lifting of wartime restrictions on production. See “Protección para los trabajadores del veneno solicitan al Presidente de la República,” *Trabajo*, 23 May 1942.

37. Maurice Bostick, Herbert Hamer, Arturo Sáenz Otarola, and Elías A. Rivas Lara, “Re: Pliego de Peticiones suscrito el 26 de julio,” *Conflicto Colectivo, Juzgado de Trabajo de Golfito*, 29 July 1955, R1829, A884, AJCR.

No evidence suggests that United Fruit provided masks to any significant number of workers. Although as Angus Wright has pointed out, grower claims that pesticide workers will not use safety equipment should be treated skeptically,³⁸ in this case, the company's claim has some credibility. Protective gear was apparently distributed in Honduras at some point during the 1940s but did not seem to remain in use for long. In the intense heat and humidity of the zona bananera, workers racing to meet their quota of hose connections would find a respirator profoundly uncomfortable, and goggles would quickly become opaque in a fog of condensation and bordeaux droplets. Neither item would alleviate the humiliation and discomfort of the worker's daily soaking by the staining blue-green mixture. In Golfito the only former perico interviewed who recalled receiving a mask also recalled throwing it away after a short time.³⁹ Such experiences must have suggested to many spray workers that the negative effects of bordeaux spray could not be mitigated without increasing the misery of their working lives in other ways that were unacceptable.

In reality, the miserable and humiliating nature of spray work, far from inspiring militance, ensured that the men (or boys) who took the job would not share backgrounds, ethnic and regional solidarities, or the pugna-cious masculine pride that underlay successful labor organizing among "agricultural workers" on the plantations. Anthropologist Philippe Bourgois noted in his study of United Fruit's operations in Panama that the worst plantation jobs were invariably relegated to the lowest-status ethnic groups in the work force. Consequently, in both the Atlantic and Pacific banana zones in Panama, Guaymí Indians made up most of the workers in sigatoka control. Ethnic hostility and mistrust proved a significant barrier to including these workers in the mestizo-led labor movement in Panama.⁴⁰ Indigenous workers never figured significantly in the plantations of Costa Rica's Pacific divisions, but there as well, a group at the bottom of the ethnic pecking order in the workforce predominated among the periquera.

In Costa Rica, spray crews seem to have been recruited, far more than other plantation laborers, from a thin stream of youthful job-seekers from

38. Wright, *Death of Ramón González*, 55–56.

39. Interview with Graciano "Garapito" Moreno, former perico, Ciudad Neily, C.R., 13 Apr. 1996. A substantial Honduran component of Costa Rica's banana workforce would have been aware of the practices of Honduran UFCo divisions. Two articles written during World War II refer to the provision of masks and goggles to workers in Honduras: "Protección para los trabajadores del veneno solicitan al Presidente de la República," *Trabajo*, 23 May 1942; and "Los trabajadores del spray," *Correo del Sur*, 1 Aug. 1945. Later company photos of pericos at work show no protective gear in use.

40. Bourgois, *Ethnicity at Work*, 128–29, 146. See also Plaza and May, who refer to the Guaymí as "docile Indians . . . used mainly for sigatoka spray work." Plaza and May, *United Fruit Company*, 206. It is not clear whether the social divisions between pericos and the rest of the plantation workforce in Honduras and Guatemala were as clear-cut as in Panama and Costa Rica.

the highland central valley (*la meseta central*), whose population prided itself on its European origins. Educated and well-connected migrants from the meseta could hope for clerical or lower management positions, but those from the valley's poor could not. Most sought temporary cash income that they could not earn in the working-class jobs in meseta cities or on the increasingly subdivided family parcels of the rural agricultural districts. The darker-skinned majority of plantation workers, most of them migrants from the impoverished lowland border province of Guanacaste, Nicaraguans, and some Hondurans, referred derisively to such highland Costa Ricans as "*cartagos*," after the colonial capital city. Although then as now, the meseta dominated Costa Rica's political and economic order, the work culture of the Pacífico Sur plantation inverted this national social hierarchy, a reversal in many ways characteristic of the banana zone's isolation from the main currents of national life in Costa Rica. The sobriquet "*cartago*" thus reflected both resentment for the insults that immigrants and Guanacastecans had long received from the dominant classes of the highlands (including Costa Rican UFCo managers) and condescension over the presumed lack of agricultural experience of workers from a relatively urban region.⁴¹ Although not all workers from the central valley went to such extremes, the ruse employed by one young spray worker from a meseta city indicated the embarrassment that attached to his origins: "Because the foreigner was more respected than the Costa Rican, I got the idea of saying I was a Honduran . . . , and so the Hondurans called me countryman."⁴²

Spray workers from the meseta were further marginalized by their reputation for working only short stints to earn quick cash and then returning to the cities of the interior. One former union militant asserted that they refused to bathe or change their clothes during their stay—an improbable claim that may reveal more about low regard in which *pericos* were held than about their hygienic practices.⁴³ Perceived as unsusceptible to the call of the union or the more pervasive blandishments of prostitutes and liquor, *pericos* got no points for masculine status from either. The lack of esteem for spray workers as men was further compounded by their age. By all accounts, most were either very young or, in the case of some *regadores*, too old to earn a living any longer at piecework agricultural jobs.⁴⁴ The

41. The city of Cartago was the capitol of Costa Rica under Spanish rule and in the early years of the republic. This use of the term is nearly universal in Guanacaste and Costa Rican banana zones. See Marc Edelman, *Logic of the Latifundio: The Large Estates of Northwestern Costa Rica since the Late Nineteenth Century* (Stanford, Calif.: Stanford University Press, 1992), 172; and Bourgois, *Ethnicity at Work*, 197–98.

42. V.S.S., "Autobiografía de V.S.S.," *Autobiografías campesinas: Puntarenas*, vol. 30, sec. d (Heredia, C.R.: Escuela de Planificación y Promoción Social, Universidad Nacional, 1977).

43. Interview with Conejo Peñaranda.

44. Of nine former spray workers who contributed life narratives to the *Autobiografías campesinas* project, six were hired for spray crews as very young men, taking their first jobs

respect given and claimed by spray workers—indeed their overall masculine status in the *machista* work culture of the zona bananera—was thus undermined by the constellation of attitudes and behaviors surrounding their origins and age.

The most serious barrier to manly self-assertion by pericos, however, was the nature of the work itself. Beyond the daily degradation of being soaked and stained by bordeaux mixture, the fact that pericos did not work with machetes counted against them. The agricultural worker's machete, "*la rula*," was for bananeros a symbol of militant assertion, used to settle scores after work and raised aloft during protest marches. A keen sense of the insult of lacking this tool emerges in the angry protests of spray workers who had been asked to use their hands to clear away grass and other growth around hose-couplings.⁴⁵ Along with their youth and ethnicity, the many humiliations of spray work sapped pericos' inclination to engage the company in collective struggle and also denied them much solidarity with other plantation workers. One union military recalled, "Then, because the poor pericos appeared completely soaked and blue, the workers in agriculture always made fun of them."⁴⁶ Another was more blunt: "It was work for fools."⁴⁷

If pericos rarely figured among the militants who sustained the labor movement on a daily basis (or even paid dues) and were often objects of such workers' scorn, some explanation is required for the considerable effort of labor leaders to at least appear to represent spray workers' interests. Throughout the 1950s, organizers met regularly with spray crews, listened to their daily problems on the job, and made efforts to address them through informal complaints, formal protests to government and company officials, short-term local walkouts, and legal initiatives. From 1942 to 1960, at least forty-six such small-scale union actions focused on the grievances of pericos.⁴⁸ More intense efforts preceded large-scale strikes, as organizers strove to secure spray workers' participation. One union leader recalled, "We always had to put something in the demands for them, to attract them, treat them well, and unite them with us, to give us strength."⁴⁹ Spray workers unmoved

in the zona bananera, while two of the others joined the periquera after the age of forty, the age by which men were considered no longer fit for machete work in the bananal or for carrying hose (older spray workers were generally regadores). Four of the younger men were migrants from the meseta central, as was one of the older workers. See also "Los trabajadores del spray," *Correo del Sur*, 1 Aug. 1945.

45. "Combativa actitud de trabajadores de finca 3," *Adelante*, 20 May 1956; and "Crece la lucha de los trabajadores bananeros . . ." *Adelante*, 17 June 1956. It was not coincidental that the union movement's occasional newsletter was entitled *La Rula*.

46. Interview with Matarrita Fonseca.

47. Interview with Conejo Peñaranda.

48. The figure is extracted from a review of actions and communiqués reported in *Trabajo* and its successor *Adelante*, added to legal protests and petitions that advanced far enough to reach the Tribunal Superior de Trabajo and survived in the Archivos Judiciales de Costa Rica.

49. Interview with Conejo Peñaranda.

by appeals to their interests were convinced instead by the remonstrations of flying squads of activists who sought out sigatoka-control crews in the earliest hours of each strike.

The strength that union leaders hoped to gain from spray workers had to do less with the virtues of solidarity than with the economic pain that any significant pause in fungicide application inflicted on United Fruit. Before the sigatoka epidemic, banana workers' greatest power over the company was their ability to cut profits from current production by withholding harvest labor for the perishable crop. Withdrawal of labor in sigatoka control, in contrast, disrupted future production as well, greatly enlarging workers' leverage in any strike. Regular application of bordeaux suppressed sigatoka infection but did not eliminate it from banana cultivations. Any deviation from the maximum three-week spray cycle, such as a strike, would allow the disease to reestablish itself. Resumption of control then became a lengthy process "as the entire crop becomes a locus of infection."⁵⁰ Harvests could suffer drastic reductions for many months thereafter.

The seriousness of this threat was well understood by labor leaders and managers alike. Plaza and May, cheerleaders in the business press for United Fruit in the 1950s, reported that the company that had once refused quarter to organized labor in the tropics now "maintains continually open lines of communication with union representatives" in all divisions. The reason was in part because of the ordinary damage that strikes could cause but primarily because "sigatoka control must be maintained constantly."⁵¹ In effect, the potential participation of the periquera in strikes changed the balance of industrial power by making agricultural disease a weapon of the workers' movement.

Unfortunately, however, this weapon was double-edged. When seeking declarations of illegality against strikes from Costa Rican courts (an important legal step under the labor code that allowed firings and use of scab labor and cleared the way for forcible government intervention), managers and company lawyers rarely missed an opportunity to invoke the peril that unchecked disease represented for the republic's second-highest source of export earnings. In the walkout of 1949, for example, when the strike had been underway for less than a week, the superintendent of United Fruit's Esquinas district assured a labor court judge, "If spraying is not carried out within a few days, the plants will be infected and it is very probable that they'll be totally lost for a long time."⁵² Without such arguments, the season-

50. Umaña, "Un ensayo," 116; and Meredith, *Banana Leaf Spot*, 91.

51. Plaza and May, *United Fruit Company*, 202. On labor's recognition of the strategic importance of sigatoka control, see "Poderosas fuerzas exteriores presionan al Gobierno," *Adelante*, 2 Oct. 1955. See also Amaya, *Prisión verde*, 71.

52. "Inspección ocular: Declaración de Sutton Scotlock," "Calificación de un movimiento de huelga," Juzgado de Trabajo de Golfito, 6 Sept. 1949, R1829, A882, AJCR.

less and industrially organized banana sector was difficult to categorize within the Labor Code's distinction between industrial strikes, which could receive legal validation, and agricultural strikes, which could not. Given the long-term threat to production posed by sigatoka, judges found it easy to declare banana strikes illegal on the basis of that distinction, as they did in 1949.

Increasingly, potential damage from disease became the basis of United Fruit's political demands for forcible government intervention in strikes. When labor rights were acknowledged in the Costa Rican Labor Code of 1943, forcible repression of even illegal strikes was not automatic. It required a compelling rationale, like the possibility of violence or sabotage. In the 1953 strike, United Fruit's well-publicized claim that the entire "year's harvests are in danger" successfully equated suspension of disease control with sabotage and thus justified deploying of the Guardia Civil in the banana zone and arresting the strike's top leaders.⁵³ In the Puerto González Viquez strike of 1955, the company also based its return-to-work ultimatum on the imminent destruction of the plantations by uncontrolled disease and sought state protection for using strikebreakers from Panama to resume spraying operations. In this instance, the claims resulted in on-site mediation by the labor minister rather than armed backing for scabs, but the eventual negotiations took place in an atmosphere of state intimidation that included the brandishing of a pistol at strike leaders by the public security minister.⁵⁴

In addition to justifying strike suppression, the potential for catastrophic losses from interruption of sigatoka control could also serve as a pretext for preemptive repression of other union activities. This argument was central to United Fruit's harsh anti-union campaign following the four-week strike of 1959–1960. In mid-1960, for example, company lawyers pleaded for the maximum punishment of a pair of labor organizers who were apprehended speaking to spray workers: "The gravity of recent events in the Banana Zone fully justifies an adequate penalty for the possible damages. In this regard, the total loss of plantations in a short period after suspension of bordeaux spraying is notorious. In six weeks, the bananas are completely destroyed, and it is necessary to wait a year before harvesting fruit again. The damages estimated from the last strike, which lasted barely four weeks . . . , have been repeatedly publicized."⁵⁵

For a decade thereafter, United Fruit hounded the union movement to the point of near extinction, banning meetings, denying organizers ac-

53. "En peligro cosecha de un año," *La Nación* (published in San José), 4 June 1953.

54. "Poderosas fuerzas exteriores presionan al Gobierno," *Adelante*, 2 Oct. 1955.

55. Elías Alberto Rivas Lara and Mario Hernández Ureña, "Incitación a huelga ilegal y desorden, Domingo Rojas Villareal," Juzgado de Trabajo de Golfito, 11 June 1960, R197, A883, AJCR.

cess to buildings, roads, and work sites on its enormous properties, and enlisting police and national security forces to arrest militants. Long after the pericos had been replaced by a new aerial spray, United Fruit continued to remind authorities of the “budgetary disequilibrium” that followed loss of export-tax income when sigatoka stopped so much production after the 1959–1960 strike. The company also reminded its workers of the “disastrous results, ten years ago, of listening to false promises” made by “professional agitators.”⁵⁶ However disingenuous these arguments may have been in 1969, seven years after the end of bordeaux spraying, it was true that during the long period in 1960 when banana farms were out of production, the company drastically reduced its workforce. This move was exacerbated in the next two years by the end of manual spraying and the consequent unemployment of many more workers. Labor activists and known supporters were particularly likely to be laid off in 1960 and 1961. Subsequent blacklisting and heightened repression were accompanied by effective reorganization of labor processes and personnel policies to prevent unions from gaining any new foothold. Organized labor did not revive in the banana plantations of Costa Rica until 1970, and then only under a much friendlier national administration.⁵⁷ While the bordeaux era had given workers the ability to interrupt control of crop diseases and unprecedented power at the point of production, the consequences of exercising that power ultimately contributed to nearly a decade of eclipse for banana unionism in Costa Rica.

THE END OF THE PERIQUERA

The power of pericos to damage fruit production through strikes was unacceptable to United Fruit’s management, but the price of employing them during periods of labor peace was no less distressing. The company claimed that the costs of sigatoka control, of which wages were the largest part, accounted for nearly half of its plantation expenses. One reason that costs were so high was that only a substantial wage, comparable with the earnings of the fastest pieceworkers in “agricultural tasks,” could make spray work attractive to new recruits. For very young men with little experience, work in the periquera could bring in nearly twice the income of even a “good job” elsewhere in the zona bananera.⁵⁸

56. Elías Alberto Rivas Lara to Juzgado de Trabajo, 26 Feb. 1969; Ted A. Holcombe, “A nuestros trabajadores,” flier, 7 June 1969; both in Preaviso, Cesantia, etc., Juzgado de Trabajo de Golfito, R198, A51, AJCR. Although the backlash against the Costa Rican banana labor movement in this period has been frequently and accurately linked to anti-Communism following the Cuban Revolution, in this case, the organization being suppressed was Sitrasur, an anti-Communist union whose backers included the AFL-CIO.

57. Interview with Licenciado Alvaro Montero Vega, San José, C.R., 7 Dec. 1996.

58. “Autobiografía de L.Ch.A.,” *Autobiografías campesinas: Puntarenas*, XXIX.

Despite the relatively high pay, spray crews had turnover rates that managers found highly unsatisfactory. Although reluctant to organize, spray workers did not hesitate to address their workplace grievances by voting with their feet. Many, especially those from the highlands, never intended to stay long in the first place. Of the former *pericos* who contributed narratives to the Universidad Nacional's *Autobiografías campesinas* project, the longest that any individual indicated staying on the job was "L.Ch.A.": "After about a year and a half, I left that work because it made me sick in the head, and they didn't want to transfer me to agriculture, so I asked for my time."⁵⁹ Briefer stints were more common, lasting only months or even days, followed by a return home or for a few, a move to less ugly banana work. As early as the mid-1940s, with constant turnover on spray crews and experienced bananeros going to extremes to avoid assignment to the periquera, plantation foremen and overseers were always looking for new recruits, pressuring especially anyone who had experience as a regador. Crews filled with inexperienced workers were markedly unproductive, and vacancies could cause spray schedules to fall dangerously behind. By the mid-1950s, spray crews were "becoming more difficult to find" throughout the banana industry, a scarcity that put further pressure on wages and endangered disease control.⁶⁰

Dependence on unreliable and expensive "native workers" for the crucial work of disease control had made United Fruit's management and scientific corps uneasy from the first. In fungicide application trials at the outset of the epidemic, researchers clearly hoped that aerial crop dusting would prove the most effective. Despite mounting evidence that formulations light enough to be carried by airplanes were washed off by tropical rains, that necessary amounts were almost impossible to apply uniformly from the air, and frequent spectacular crashes, the company pursued crop dusting measures through at least late 1938. At that point, even company pilots admitted that it was too "impractical, wasteful, and expensive."⁶¹

When labor costs rose during the banana industry's expansion after World War II, United Fruit's researchers renewed the search for sigatoka-control technologies that avoided elevated wage costs and dependence on restive workers for plantation survival. Their first approaches characteristically envisioned workers as the entire problem and proposed as a solution simple automation of the *pericos*' labor. Hose-bearing workers would be

59. Ibid.

60. G. Wrigley, "Advances in the Use of Agricultural Chemicals in Tropical Agriculture," *Tropical Agriculture* (Trinidad) 38, no. 4 (21 July 1961):271-73; and "Autobiografía de R.A.E.C."

61. Joseph R. James, "Banana Savers," *Popular Aviation* (Dec. 1938):51-52; see also Patrick Butler, "Flying Machines and Blowdown Machines," in *Bananeros in Central America: True Stories of the Tropics*, edited by Clyde Stephens (Fort Meyers, Fla.: Press Printing, 1989), 9; and United Fruit Company Research Department, *Problems and Progress in Banana Disease Research* (Boston, Mass.: United Fruit Company Research Department, 1958), 11.

replaced by stationary towers, but the chemical and phytopathological bases of sigatoka control would remain unchanged. Jorge Umaña Araya, a graduate student in agronomy at the Universidad de Costa Rica, participated in trials of this system on Farm 1 near Palmar Sur in 1948 and 1949 and described them in rich detail. Umaña noted that the automation trials "show the preoccupation of the CBCR [United Fruit's Costa Rican subsidiary] for lowering the cost of spraying bordeaux mixture, and particularly to reduce the number of workers on the farms due to the shortage of labor, above all if the plan for expansion of production is taken into account . . . , and also because it is very difficult to manage and house the large groups of laborers in the current work sites."⁶²

Bordeaux application from towers succeeded in cutting the number of workers in sigatoka control by half and reduced the daily expense of the program by nearly as much. It failed to keep the disease under control, however. Changes in wind speed or direction left many plants uncovered by fungicide. More seriously, spray falling from towers coated only the tops of leaves, with undersides remaining actively infectious. After less than three months, researchers halted the experiment as a quarter of the farm fell into serious or severe infection.⁶³

As United Fruit's postwar expansion came to a close in the early 1950s and profits began to decline over the next decade, company executives repeatedly assured stockholders that they would develop "a more satisfactory method of spraying fruit for disease control."⁶⁴ Scientists tinkered with the chemistry of the fungicide, slightly improving its coverage and persistence. Research on the fungus's life cycle allowed slightly fewer applications per year for lightly infected plantations. Nonetheless, after bitter labor conflicts in Guatemala and massive strikes in Honduras (1954) and Costa Rica (1953, 1955), the most intensive efforts continued to try to replace workers with machines. After years of tinkering, overhead-spray towers reappeared in 1956 and became the main means of sigatoka control in the newly reopened (and still lightly infected) plantations of Almirante, Panama. In that same year, two new farms opened in the Coto district of the Golfito, Costa Rica division with tower spray rigs. But the problems reported by Umaña in 1949 persisted, and sigatoka control remained overwhelmingly in the hands of spray crews.⁶⁵

62. Umaña, "Un ensayo," 135.

63. *Ibid.*, 127–28, 131–32.

64. "Agriculture and Research," *United Fruit Company Annual Report, 1951*, no. 52 (18 Feb. 1952), 20. A later report was more specific about the unsatisfactory elements of the sigatoka-control program: "Constant research is being carried on to develop means of reducing the amount of labor and material employed for spraying this compound [bordeaux mixture]." See "Agriculture and Research," *United Fruit Company Annual Report, 1954*, no. 55 (15 Feb. 1955), 14.

65. "Agriculture and Research," *United Fruit Company Annual Report, 1956*, no. 57 (15 Feb.

As with Panama disease, where relatively tiny Standard Fruit pioneered the shift to a new, more successful disease-fighting paradigm (the switch to resistant varieties), the first steps toward an entirely new technology of sigatoka control were taken on the fringes of the banana industry, outside of United Fruit's domain. In 1953 and 1954, French researchers on the island of Guadeloupe, where small farmers often could not haul enough water to mix with copper sulfate, experimented with oil as a potentially more efficient mixing agent. The efficaciousness of the oil sprays far exceeded their expectations, and they soon discovered that this success did not depend on copper sulfate. Oil alone checked sigatoka. Moreover, very low volumes sufficed—less than ten gallons per acre, compared to over 250 gallons for bordeaux.⁶⁶ United Fruit's agronomists perceived in the new spray an ideal solution to their problem with sigatoka labor. While aircraft could not carry enough bordeaux mixture for effective fumigation, they could easily carry and apply low-volume oil sprays. A single aircraft could cover 150 to 250 hectares in a morning, coverage that would require two to three hundred person-days of labor with bordeaux.⁶⁷ By the middle of 1957, the company began replacing bordeaux sprayed by pericos with oil mist delivered from helicopters and airplanes.

In Costa Rica, leaders of the banana workers' union vehemently protested the announced elimination of the eighteen hundred spray jobs in the Golfito division. Sweeping aside earlier complaints about the toxicity of bordeaux mixture, José Meléndez Ibarra, president of the Unión de Trabajadores de Golfito (UTG), urgently requested the labor minister's intervention to preserve the spray crews. Meléndez did not explicitly acknowledge any reversal, but his argument was freighted with rationalization. The union, he wrote, did not oppose labor-saving sigatoka-control technologies in principle but believed that the national economy could not absorb the sudden rise in unemployment.⁶⁸ Although it is unlikely that union leaders believed the national economy to be endangered by the loss of spray jobs, the local economy and labor market of the banana zone certainly were. Perhaps more important, without the periquera, labor lost its most potent weapon against the company, the power to withdraw sigatoka control. The petition

1957), 14. On continuing problems with tower spraying, see La Barge, "Study of United Fruit Company Operations," 66–67; and UFCo Research Dept., *Problems and Progress*, 12. On use in Coto, see "La FOBA denuncia ofensiva de la United Fruit contra los regadores de veneno," *Adelante*, 2 Sept. 1956.

66. United Fruit Company, Research Dept., *Problems and Progress*, 12; and Meredith, *Banana Leaf Spot*, 92–93.

67. Coverage figures were derived from R. H. Stover and N. W. Simmonds, *Bananas*, 3d. ed. (Essex, U.K.: Longman Scientific and Technical, 1987), 296; and Umaña, "Un ensayo," 115.

68. José Meléndez Ibarra, "1800 trabajadores despidirá la United Fruit Company," *Adelante*, 27 Oct. 1957.

went unanswered, however, and bordeaux spraying ceased in Costa Rica (and elsewhere) by 1958.

Even so, uncertainties inherent in the sudden implementation of any relatively untested technology accomplished what the union and the state did not, restoring the periquera for a time. During the first year of aerial spray, it became increasingly clear to plantation managers that the oil mist had a phytotoxic effect on the crop. Fruit weights dropped, and yields declined by more than 10 percent. By the middle of 1959, the company suspended aerial spraying, and spray workers again dragged hoses through the plantations. Stem weights rose by 7 percent the following year. Managers were determined nonetheless to “retain the economies of aerial application.”⁶⁹

In Costa Rica (and probably elsewhere), United Fruit extracted these “economies” directly from the labor process of the pericos. Throughout the 1950s, spray workers increasingly had been required to meet production quotas to earn their day rates. As hose-spraying resumed, overseers on a number of plantations finally dispensed with the fiction of the daily wage and began to pay strictly by the number of *boquillas* covered by individual workers. Union spokesmen claimed that the new pay system resulted in a sharp drop in income and that managers refused to reconsider the price per connection.⁷⁰ Another cost-saving innovation provoked sharper protest. The company eliminated the job of hose carrier, asserting that newly acquired plastic hoses were so light that one man could now do the work of two: spraying the plants, coupling and uncoupling the hose, and dragging it to and through the plantation. Managers insisted that they had made time-motion studies in the field to calculate fair new rates of pay. But spray workers bitterly resented the change. The new hoses may have been lighter (the union denied it), but there is no reason to suppose that they were quicker to connect or less likely to tangle in the litter-covered broken terrain of banana farms. Many workers recruited family members or paid unemployed friends (*arrimados*) from their own pockets in order to meet their production quotas. Union organizers now found spray workers far more receptive to their calls to action, and from 1959 through 1961, the periquera finally became the focal point of plantation protest.⁷¹

Although aerial oil sprays had been suspended in 1959, neither

69. *United Fruit Company Annual Report, 1960*, no. 61 (14 Feb. 1961), 5; and *United Fruit Company Annual Report, 1959*, no. 60 (n.d.), 6.

70. “Bajos salarios, injusticias e intrigas,” *Adelante*, 26 July 1959. The use of task rates for spray work was implicitly acknowledged by United Fruit’s lawyers in a 1960 deposition. See Elías Alberto Rivas Lara and Mario Hernández Ureña, “Incitación a huelga ilegal y desorden, Domingo Rojas Villareal,” *Juzgado de Trabajo de Golfito*, 11 June 1960, R197, A883, AJCR.

71. “El sindicato de Puerto Cortés denuncia,” *Adelante*, 22 Nov. 1959; José Meléndez Ibarra, “Denuncia a la United Fruit Company,” *Adelante*, 29 Nov. 1959; “La bananera exige trabajo inhumano,” *Adelante*, 6 Dec. 1959; Elías Alberto Rivas Lara and Mario Hernández Ureña, “Incitación a huelga ilegal y desorden, Domingo Rojas Villareal,” *Juzgado de Trabajo de*

managers nor researchers were prepared to abandon this promising approach, especially amid heightened labor conflict. Researchers ran exhaustive trials, seeking an oil spray that would suppress the fungus with minimal scorching of productive leaf surface. By the end of 1960, all three methods of sigatoka control (hose, tower, and aerial oil spray) were being used simultaneously on some plantations, with managers required to monitor comparative infection status and crop yields. After three years of trial and error, researchers settled on highly refined petroleum oils, with a narrow range of viscosity and carefully controlled geographic origin. Applied in a fine mist from aircraft, the new spray controlled the disease without affecting the crop. At the end of 1962, the periquera was replaced decisively by airplanes and helicopters.⁷² Over the next two decades, agronomists added various systemic fungicides for even greater effectiveness. But aerially applied oil remained the basis of sigatoka control until the Central American outbreak in the mid-1970s of the disease's more virulent cousin, "black sigatoka" (*Mycosphaerella fijenses* var. *difformis*).

The movement from manually sprayed bordeaux mixture to aerial control of sigatoka illustrates the complex and contingent nature of the relationship between labor and the environment in agricultural capitalism. It cannot be described strictly in terms of workplace struggle over labor process, as analyzed by theorists of industrial change like David Noble and Harry Braverman.⁷³ Yet neither was it a straightforward series of scientific advances. The sigatoka-suppressive character of oil sprays, discovered accidentally by French researchers, and the unexpected phytotoxicity of those sprays were responsible for the adoption of a whole new system of disease control and its suspension a year later. At the same time, the high wages needed to attract workers to the periquera, their high turnover rates, and the success of organized labor at using sigatoka as a weapon against the company all made United Fruit more than a little desperate to find a less labor-intensive means of controlling the epidemic.

But it should also be recalled that the leap to non-bordeaux-based sigatoka control was made far outside United Fruit's own research department, whose agenda single-mindedly ascribed crop disease problems to an undisciplined workforce and sought unsuccessfully a solution in automation. Once discovered, the new aerial method of combating sigatoka would

Golfito, 11 June 1960, R197, A883, AJCR; and interview with Alvaro Ruiz, Ciudad Neily, 11 Nov. 1996.

72. *United Fruit Company Annual Report, 1962*, no. 63 (18 Feb. 1963), 6; Meredith, *Banana Leaf Spot*, 97-100; and "Inspección ocular," *Conflicto Colectivo*, Coto 44, Juzgado de Trabajo de Golfito, 13 Sept. 1960, R1829, A885, AJCR.

73. David Noble, "Social Choice in Machine Design: The Case of Automatically Controlled Machine Tools," in *Case Studies on the Labor Process*, edited by Andrew Zimbalist (New York: Monthly Review Press, 1979), 18-50; and Harry Braverman, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (New York: Monthly Review Press, 1974).

almost certainly have been adopted eventually, but it is equally certain that the company's problematic relationship with its spray crews fueled the urgency with which it sought to replace them. The postwar evolution of United Fruit's sigatoka-control strategy was driven by biological contingency and labor-management struggle in nearly equal measures.

LEGACIES OF THE BORDEAUX SPRAY ERA

Environmental change has no fixed pace. It may be gradual and cumulative, but it can also be sudden and spectacular, as with the spread of the sigatoka epidemic in the Caribbean Basin in 1935. Yet even explosive change may have hidden origins in earlier, seemingly innocuous human interventions. The outbreak of a new and more virulent strain of the *mycosphaerella* fungus in 1973 happened almost as rapidly as the original epidemic and has had nearly as dramatic an impact on the banana industry. From the outset, this "black sigatoka" has been strongly resistant to oil sprays alone, and it developed resistance to systemic fungicides far faster than the previous strain (now redubbed "yellow sigatoka"). Growers responded to the new epidemic with a rotating assortment of "fungicide cocktails" and ever-more-frequent spraying schedules (over forty applications per year in many areas), saturating plantation zones with artificial organic compounds whose ecological effects are still not well understood. Control of black sigatoka now costs about a quarter of the gross revenues of the isthian banana trade.⁷⁴ Unlike the original disease, it also afflicts subsistence and domestic-market production of plantains.

The new epidemic is generally discussed as a distinct event from the first, except for the role played by monocultural vulnerability in each. But one researcher has postulated that the outbreak of black sigatoka may have been an unforeseen consequence of replacing bordeaux mixture with oil sprays for control of the original disease. In this scenario, a less-virulent variant of the "black" *M. fijienses* fungus may have been long present at very low levels but unable to dislodge the "yellow" *M. musicola* variant from their shared ecological niche as long as bordeaux mixture suppressed both. Oil, however, inhibits only the reproductive mechanism favored by the yellow fungus, allowing the unsuppressed *fijienses* to develop a more explosive virulence and replace the original pathogen throughout its domain.⁷⁵ If this hypothesis is correct, the mid-1970s rampage of black sigatoka across

74. Thrupp, "Political Ecology," 221–33; and Randy Ploetz, "The Most Important Disease of a Most Important Fruit," *APSnet: Plant Pathology On-line* (American Phytopathological Society, 1999), at <<http://www.scisoc.org/feature/banana/Top.html>>.

75. I. D. Firman, "Possible Side Effects of Fungicides on Banana and Coffee Diseases," *Nature* 225 (21 Mar. 1970):1161. No subsequent research seems to have been done to test Firman's theory, but it is consistent with published literature on the epidemic's history. See Stover and

Central America and the increasing use of toxic chemical combinations to combat it are delayed consequences of the struggle between United Fruit and the workers of the periquera during the 1940s and 1950s.

Although the role of changing pesticide technology in the black sigatoka epidemic remains speculative, the cumulative and permanent effect of the pericos' labors on soils in the Golfito division is well established. Central American banana workers sprayed more bordeaux mixture than has ever been applied to any crop: fifty to seventy thousand liters, including 100 to 150 kilos of copper per hectare annually. By the late 1950s, banana plants began to uproot spontaneously in widely scattered areas throughout the Palmar Sur district. When United Fruit sold a thousand of the most blighted hectares to small and medium rice farmers whose crops then failed, government agronomists confirmed what the company had suspected but did not tell the purchasers: extreme copper contamination of the soil had effectively sterilized for most agricultural purposes five to seven thousand hectares planted in bananas between 1940 and 1962.

The effect has not been not uniform: leaks in piping and areas in which workers took unauthorized rests while continuing to discharge fungicide probably account for some patches of particularly intense contamination. On the whole, however, the most fertile alluvial lands—especially those on which the Río Terraba deposited silt in the floods of 1954 and 1955—were the most contaminated due to copper's tendency to bond with organic matter in soils. The effect is permanent. No soil amendment has proved capable of neutralizing the bordeaux residues. The copper problem played a role in United Fruit's 1985 closure of the entire Golfito banana operation, although a bitter strike, black sigatoka, and market considerations also played parts. Most former plantations are now planted with trees cultivated for wood pulp or with African oil palms, one of the few tropical crops relatively undamaged by copper toxicity.⁷⁶ The "sickness" of former banana lands recalls the vision of the sickened pericos powerfully evoked in the journalism and memoirs of the bordeaux era. The often-articulated linkage between the ruined bodies of the spray workers and the flourishing crops of the zona bananera is revealed in this light not as an inverse relationship in

Dickson, "Banana Leaf Spot"; and R. H. Stover, "Distribution and Probable Origin of *Mycosphaerella fijiensis* in Southeast Asia," *Tropical Agriculture* (Trinidad) 55, no. 1 (Jan. 1978): 65–68.

76. Alvaro Cordero and Gerardo F. Ramírez, "Acumulamiento de cobre en los suelos del Pacífico Sur de Costa Rica y sus efectos detrimentales en la agricultura," *Agronomía Costarricense* 3, no. 1 (1979):63–78. French orchards of wine grapes, by comparison, received 15 to 50 percent of the bordeaux mixture per hectare annually applied to bananas. See Thrupp, "Political Ecology," 257–74. It is possible that the timing and nature of these floods (which ordinarily would have greatly enriched the soil) made the copper problem worse in the Golfito division than in other banana zones, which have not reported the same degree of copper toxicity.

which the health of one is sacrificed for the health of the other but as a mutual vulnerability to agrochemical abuse. As human beings with agency, however, spray workers had choices in responding to the degradations and dangers of their labors. They could accept their relatively high wages and remain on the job, leave spray work, or try to defend themselves through the banana workers' union movement.

At least in Costa Rica, relatively few spray workers seem to have chosen the union.⁷⁷ Ethnic and regional resentments, generational status, and scorn for the "unmanly nature" of their work stood between the pericos and any genuine sense of solidarity with the machete workers at the core of the union movement. Labor leaders, after early critiques that were more fundamental, ultimately came to treat the sigatoka-control program almost entirely as a tactical asset in their conflict with the company. Nothing better illustrates this point than the union's switch from condemning bordeaux spray as destructive of worker health to its tactical embrace than the UTG's desperate plea for government intervention to stop United Fruit's conversion to aerial sigatoka control in 1958.

It would be anachronistic to condemn the banana workers' labor movement for failing to confront the problem of worker exposure to pesticides more directly. As one militant of the bordeaux era reflected almost four decades later, "In those days, we didn't really understand these kinds of problems."⁷⁸ Moreover, during this period, union leaders moved from crisis to crisis, suffering constant persecution by the company and the state. They won neither formal recognition nor a contract, which might have provided a respite for developing a more visionary approach to the problems of the workers they led or a base on which to build it. Yet it may be worthwhile to wonder what might have been accomplished if mitigating the health effects of bordeaux mixture had been more central to the labor movement's agenda.

In its early protests over the health damage suffered by pericos, the labor movement was raising an issue with enormous potential resonance in the Costa Rican political landscape. As historian Steven Palmer noted, by the 1920s, public health had become a potent element of Costa Rican nationalism. In succeeding decades, the cachet of public health would turn physician-politician Ricardo Moreno Cañas into a kind of popular secular saint, and it helped elevate Dr. Rafael Angel Calderón Guardia to the national presidency, where he founded the institutions of Central America's

77. There are no studies of banana plantation labor that analyze the role of occupational divisions in worker resistance and accommodation, with the partial exception of Bourgois's study of the Bocas del Toro division in Panama, where banana production largely ceased before the sigatoka epidemic and did not resume until after the inauguration of aerial sigatoka control. Comparative study of this aspect of strike movements throughout United Fruit's Central American operations would help confirm the conclusions reached here.

78. Interview with Matarrita Fonseca.

first welfare state. The linking of working-class concerns to this nationalist elevation of public health resulted in the creation of a workers' compensation system in the 1920s and the inclusion of occupational health regulations in the Labor Code of 1943.⁷⁹ Far more than any other country where United Fruit operated, the Costa Rican state legitimized its rule through a paternalistic hygienicist stance.

The state's actual interventions in occupational health between 1938 and 1962 proved to be flawed, uneven, and largely confined to the urban areas of the Central Valley. But they did open space for labor struggle in the zona bananera. The outcome of the 1953 Palmar Sur strike (like the tentative concession of spray masks in 1955) suggests that greater achievement was possible in this realm than in more traditional arenas of labor struggle like wages and union recognition. The 1953 strike resulted in only modest wage gains, but in state-mediated bargaining sessions, the company conceded free medical treatment in its hospitals for families of low-wage workers, subsidized referrals to the national hospital for workers with tuberculosis, and included its plantation workforce in the Costa Rican workers' compensation system. With the legislature's ratification of this measure (dubbed "la Ley Juárez" in honor of a striker shot by the national guard), bananeros became the first agricultural workers in Costa Rica to be insured against job-related accidents.⁸⁰

It may not be too great a leap, then, to suggest that the political context of United Fruit's Costa Rican operations in the 1940s and 1950s—including a militant plantation-labor movement and a state aggressively extending its reach in public health—offered a unique early opportunity to assert the priority of worker safety in agricultural disease and pest control. The labor movement might have pressured United Fruit for specific steps, such as better and more comfortable respirators than those briefly tried, shorter hours for workers in unhealthy jobs like spray work, rotation of crews to avoid prolonged exposure, and mandatory chest x-rays for spray workers. Several of these measures appeared from time to time in union petitions but generally were dropped early in negotiations in favor of de-

79. Steven Palmer, "The Social Clinic: Moral Policing, Popular Medicine, and Heroin Panic in Costa Rica, 1900–1940," 1996 manuscript, 244–45. See also Lynn M. Morgan, *Community Participation in Health: The Politics of Primary Care in Costa Rica* (New York: Cambridge University Press, 1993), 86–87; and Eugene D. Miller, *A Holy Alliance? The Church and the Left in Costa Rica, 1932–1948* (Armonk, N.Y.: M. E. Sharpe, 1996), 68–72.

80. Pablo Chávez Picado and Alfonso Chávez Chávez, "Pliego de los Trabajadores," *Conflicto Colectivo, Juzgado de Trabajo de Golfito*, 14 May 1953, R1829, A831, AJCR; Alfonso Chávez Chávez to Ministro de Trabajo, *Conflicto Colectivo, Juzgado de Trabajo de Golfito*, 1953, R1829, A832, AJCR; W. M. Hamer to Ministro de Trabajo, *Conflicto Colectivo, Juzgado de Trabajo de Golfito*, 1953, R1829, A832, AJCR; and Abarca Vásquez, "El movimiento huelguístico," 164–65.

mands for wages and union recognition.⁸¹ Costa Rica's nascent welfare state might well have supported such a program, especially if framed within the state's paternalistic hygienicist discourse. Whether successful or not, a more concerted effort to protect the health of workers in one of the earliest large-scale pesticide programs in the hemisphere would have left a major legacy for all rural workers, especially for the next generation of bananeros who would be exposed to new pesticides that were much more toxic.⁸²

Labor leaders who never effectively confronted the human cost of pesticide exposure in the 1950s remained slow to respond to the pesticide health crises of the 1970s and 1980s. The top echelons of the Costa Rican banana union movement and the Communist party with which it was allied remained in place through the movement's revival in the 1970s.⁸³ Ruthless company repression followed the strike of 1960, which United Fruit justified by citing its sigatoka losses. Labor leaders, whose bonds to the workers of the periquera were shallow and somewhat opportunistic, may well have concluded that pesticide programs were too explosive to tamper with. Despite the much greater power of the union in the 1970s, when it succeeded at last in securing true collective bargaining rights, the labor movement did little to contest workers' exposure to an increasing array of toxic agrochemicals in that decade. The union's response to the acute poisonings and chronic damage to health suffered by the thousands of workers

81. For a petition for regular medical exams, see "Protección para los trabajadores del veneno solicitan al Presidente de la República," *Trabajo*, 23 May 1942. A demand was made for shorter workdays for "heavy and unhealthy jobs," which may have been intended to benefit agricultural workers rather than spray crews but was nonetheless dropped early in negotiations. See "Pliego de peticiones," *Conflicto Colectivo, Juzgado de Trabajo de Golfito*, 14 May 1953, R1829, A831, AJCR. Any demand for rotation of crews from agricultural to spray work would have horrified the labor movement's core constituency. In fact, the demands issued throughout the Quepos district in 1951 insisted on the opposite: cessation of transfers between these two departments. See Leonso Hernández Hernández and Agustín Potoy González, "Pliego de Peticiones," *Conflicto Económico Social, Juzgado de Trabajo de Puerto Cortés*, R197, A360, 27 Oct. 1951, AJCR.

82. Rates of acute pesticide poisonings among Costa Rican banana workers in the 1980s and 1990s far outstripped all other agricultural sectors. See Jorge N. Jiménez Céspedes, *Plaguicidas y salud en las bananeras de Costa Rica* (San José: ASEPROLA, 1995), 81, 91; and Alfredo E. Vergara, "Agrochemical Injuries in Banana Plantations in Costa Rica: A Study of Neurobehavior and Other Health Effects," Ph.D. diss., University of Iowa, 1993.

83. Isaias Marchena Moraga headed the Golfito banana workers' union, first named the Federación Obrera Bananera (FOBA), then renamed the Unión de Trabajadores de Golfito (UTG). He led the union from the early 1950s until 1983, with two gaps (1955–1961 and 1979–1981). The movement's chief legal advisor, Alvaro Montero Vega, served continuously from 1951 through the early 1980s. Manuel Mora Valverde headed the Communist party Vanguardia Popular from 1931 through its catastrophic split in 1983–1984. Other Communist figures identified with the banana labor movement, such as Arnaldo Ferreto, remained more or less continuously in the party leadership during the same period.

who used nematicides containing DBCP was late and ineffectual.⁸⁴ The case went on to provoke an international scandal. Overwhelmingly, labor leaders continued to guide the movement in the directions they had established in the earlier era, struggling over piece rates and worker housing but evidencing little concern for the pesticide issues that they raised and then abandoned in the bordeaux era.⁸⁵

The real story of the pericos, the union movement, and the United Fruit Company is not a simple narrative of corporate capital imposing its will on workers and the environment. If Costa Rican bananeros were not heroic instinctive environmentalists, neither were they inevitably passive victims. The unions that spoke in their name could not address the environmental and health impact of the bordeaux spray program effectively, but they did raise an early cry of alarm over pesticide issues and were able for a time to turn the sigatoka-control program to the advantage of the labor movement. In addition to union pressure, individual spray workers also helped force the transformation of United Fruit's pest control technologies by raising the cost of their labor and refusing to stay long on the job. For the most part, however, both unions and individual workers met the problem of pesticide abuse obliquely rather than directly and left no legacy on which more conscious struggles by pesticide workers could be constructed. The decisions of wage workers as well as their individual and collective capacities, divisions, and constraints shaped this major episode in the history of pesticide use. Similarly, the fortunes of the Costa Rican banana union movement were intimately linked to the environmental history of crop disease and pesticide technology.

Environmental historians are often criticized for presenting a vision of capitalism without a working class in focusing on the changes that capitalism wreaks on the landscape while paying little attention to the wage-

84. Although nematicides containing DBCP (dibromochloropropane) had been used since the early 1960s and workers had experienced acute reactions to them, the first reference to the problem in the labor press occurred in 1979, and described the union's concern over the issue as one of "many months." See "Bananeros utilizan productos quimicos que producen estirilidad," *Libertad*, 11 Jan. 1979. For a survey of the use of DBCP in the banana industry, see Thrupp, "Political Ecology." On the international scandal, see Diana Jean Schemo, "U.S. Pesticide Kills Farm Worker's Hopes," *The New York Times*, 6 Dec. 1995, p. A12. See also the affected workers' class-action suit, filed in U.S. courts against the manufacturer and the banana companies: Dow Chemical Company and Shell Oil Company v. Domingo Castro Alfaro, Supreme Court of Texas, 326, 1990. The Texas Supreme Court's landmark ruling in this case, affirming its jurisdiction, led to a substantial settlement for many of the affected workers.

85. Since the Costa Rican banana union's decisive defeat and disappearance in 1984, the movement's main lawyer from the 1950s through the 1980s, Alvaro Montero Vega, and the Pacific banana workers' last union president, Antonio González, have helped organize litigants in the class-action suit against pesticide companies on the behalf of banana workers. Interview with Montero Vega; interview with Antonio González, Ciudad Neily, C.R., 13 Dec. 1996.

workers whose labors effect change that often affects them in turn.⁸⁶ Labor historians, in contrast, even those who deal with workers in agriculture and resource extraction, rarely incorporate ecological change into their analyses of class struggle or focus on the interactions between workers and the environment in which they work. The lack of attention to pesticide workers in the labor historiography of the banana industry is a germane example of such neglect. I have argued elsewhere that in the banana industry and agricultural capitalism generally, environmental change and change in labor process are inextricably entangled with one another at the point of production.⁸⁷ The evolution of United Fruit's sigatoka-control program amply supports that proposition. But the experience of the pericos also shows that the entanglement of nature and labor can make a difference at the macro-political level of labor movements and even states. Any analysis that integrates the insights of environmental and labor history may thus have much to contribute to the study of societies like those of Central America, which depend highly on agricultural export production.

86. For a critique of environmental studies literature along these lines, see Richard White, "Are You an Environmentalist or Do You Work For a Living?" in *Uncommon Ground: Rethinking the Human Place in Nature*, edited by William Cronon (New York: W. W. Norton, 1995), 171–85. See also the critiques in a special issue of *Antipode* devoted to William Cronon's environmental history classic *Nature's Metropolis*, especially the remarks of Phillip Sanders and Sallie Marston. They note that Cronon's landscape is "disturbingly empty of the people who performed the labor that enabled the transformation that occurred." See "William Cronon's *Nature's Metropolis*: A Symposium," *Antipode*, 26, no. 2 (Apr. 1994):127 .

87. Marquardt, "Green Havoc."

BIBLIOGRAPHY

ABARCA VASQUEZ, CARLOS

1978 "El movimiento huelguístico en Costa Rica, 1950–1960." Tesis de Grado, Universidad de Costa Rica.

ACUÑA ORTEGA, VICTOR HUGO

1984 *La huelga bananera de 1934*. San José: CENAP and CENPAS.

AGUILAR H., MARIELOS

1989 *Clase trabajadora y organización sindical en Costa Rica, 1943–1971*. San José: ICES, Porvenir, and FLACSO.

ANTIPODE

1994 "William Cronon's *Nature's Metropolis*: A Symposium." Special Issue. *Antipode* 26, no. 2 (April).

ARGUETA, MARIO R.

1992 *Historia de los sin historia, 1900–1948*. Tegucigalpa: Guaymuras.

BARAHONA, MARVIN, ED.

1994 *El silencio quedó atrás: Testimonios de la huelga bananera de 1954*. Tegucigalpa: Guaymuras.

BELL, JOHN PATRICK

1971 *Crisis in Costa Rica: The 1948 Revolution*. Austin: University of Texas Press.

BILLS, G. F.

1994 "Abundance and Diversity of Microfungi in Leaf Litter of a Lowland Rain Forest in Costa Rica." *Mycologia* 86, no. 2 (1994):187–98.

BOURGOIS, PHILIPPE

1989 *Ethnicity at Work: Divided Labor on a Central American Banana Plantation*. Baltimore, Md.: Johns Hopkins University Press.

BRAVERMAN, HARRY

1974 *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. New York: Monthly Review Press.

BUTLER, PATRICK

1989 "Flying Machines and Blowdown Machines." In *Bananeros in Central America: True Stories of the Tropics*, edited by Clyde Stephens. Ft. Meyers, Fla.: Clyde Stephens.

CHOMSKY, AVIVA

1990 "Plantation Society, Land, and Labor on Costa Rica's Atlantic Coast, 1870–1940." Ph.D. diss., University of California, Berkeley.

1996 *West Indian Workers and the United Fruit Company in Costa Rica, 1870–1940*. Baton Rouge: Louisiana State University Press.

CORDERO, ALVARO, AND GERARDO F. RAMIREZ

1979 "Acumulamiento de cobre en los suelos del Pacífico Sur de Costa Rica y sus efectos detrimientales en la agricultura." *Agronomía Costarricense* 3, no. 1:63–78.

DEAN, WARREN

1987 *Brazil and the Struggle for Rubber: A Study in Environmental History*. New York: Cambridge University Press.

DOSAL, PAUL J.

1993 *Doing Business with the Dictators: A Political History of United Fruit in Guatemala, 1899–1944*. Wilmington, Del.: Scholarly Resources.

EDELMAN, MARC

1992 *Logic of the Latifundio: The Large Estates of Northwestern Costa Rica since the Late Nineteenth Century*. Stanford, Calif.: Stanford University Press.

ELLIS, FRANK

1983 *Las transnacionales del banano en Centroamérica*. San José: EDUCA.

ESCUELA DE PLANIFICACION Y PROMOCION SOCIAL

1977 *Autobiografías campesinas: Guanacaste*, vol. 3. Heredia, C.R.: Escuela de Planificación y Promoción Social, Universidad Nacional.

EURAQUE, DARIO

1996 *Reinterpreting the Banana Republic: Region and State in Honduras, 1870–1972*. Chapel Hill: University of North Carolina.

- FABER, DANIEL**
 1993 *Environment under Fire: Imperialism and Ecological Crisis in Central America*. New York: Monthly Review Press.
- FIRMAN, I. D.**
 1970 "Possible Side Effects of Fungicides on Banana and Coffee Diseases." *Nature* 225 (21 Mar.):1161.
- GONZALEZ CASANOVA, PABLO, ED.**
 1985 *Historia del movimiento obrero en América Latina 2: Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panamá*. Mexico City: Siglo Veintiuno.
- JAMES, JOSEPH R.**
 1938 "Banana Savers." *Popular Aviation* (Dec.):51–52.
- JIMENEZ CESPEDES, JORGE N.**
 1995 *Plaguicidas y salud en las bananeras de Costa Rica*. San José: ASEPROLA.
- JONES, CLARENCE F., AND PAUL C. MORRISON**
 1952 "Evolution of the Banana Industry in Costa Rica." *Economic Geography* 28, no. 1:1–19.
- LA BARGE, RICHARD**
 1960 "A Study of United Fruit Company Operations in Isthmian America, 1946–1956." Ph.D. diss., Duke University.
- MARQUARDT, STEVE**
 2001 "'Green Havoc': Panama Disease, Environmental Change, and Labor Process in the Central American Banana Industry." *American Historical Review* 106, no. 1 (Feb. 2001):49–80.
- MAY, STACY, AND GALO PLAZA**
 1958 *The United Fruit Company in Latin America*. Washington, D.C.: National Planning Association.
- MEREDITH, D. S.**
 1970 *Banana Leaf Spot Disease (Sigatoka) Caused by Mycosphaerella musicola Leach*. Phytopathological Papers no. 11. Kew, U.K.: Commonwealth Mycological Institute.
- MILLER, EUGENE D.**
 1996 *A Holy Alliance? The Church and the Left in Costa Rica, 1932–1948*. Armonk, N.Y.: M. E. Sharpe.
- MORGAN, LYNN M.**
 1993 *Community Participation in Health: The Politics of Primary Care in Costa Rica*. New York: Cambridge University Press.
- MURRAY, DOUGLAS L.**
 1994 *Cultivating Crisis: The Human Cost of Pesticides in Latin America*. Austin: University of Texas.
- NOBLE, DAVID**
 1979 "Social Choice in Machine Design: The Case of Automatically Controlled Machine Tools." In *Case Studies on the Labor Process*, edited by Andrew Zimbalist, 18–50. New York: Monthly Review Press.
- PALMER, STEVEN**
 1996 "The Social Clinic: Moral Policing, Popular Medicine, and Heroin Panic in Costa Rica, 1900–1940." Manuscript.
- PIMENTEL, J. CORTEZ, AND FERNANDO MARQUES**
 1969 "'Vineyard Sprayer's Lung': A New Occupational Disease." *Thorax* 24, no. 6: 678–88.
- POSAS, MARIO**
 1993 "La plantación bananera en Centroamérica (1870–1929)." In *Historia general de Centroamérica: Tomo IV, Las repúblicas agroexportadoras*, edited by Víctor Hugo Acuña Ortega, 111–66. Madrid: Comunidades Europeas, Sociedad Estatal Quinto Centenario, and FLACSO.
- STARK, PAUL J.**
 1981 "Vineyard Sprayer's Lung: A Rare Occupational Disease." *Journal of the Canadian Association of Radiologists* 52 (Sept.):183–84.
- STONICH, SUSAN C.**
 1993 "I Am Destroying the Land!" *The Political Ecology of Poverty and Environmental Destruction in Honduras*. Boulder, Colo.: Westview.

- STOVER, R. H.**
1963 "Intercontinental Spread of Banana Leaf Spot (*Mycosphaerella musicola* Leach)." *Tropical Agriculture* (Trinidad) 40:327-38.
1978 "Distribution and Probable Origin of *Mycosphaerella fijienses* in Southeast Asia." *Tropical Agriculture* (Trinidad) 55, no. 1 (Jan.):65-68.
- STOVER, R. H., AND J. D. DICKSON**
1976 "Banana Leaf Spot Caused by *Mycosphaerella musicola* and *M. fijienses* var *difformis*: A Comparison of the First Central American Epidemics." *FAO Plant Protection Bulletin* 24, no. 2 (1976):36-42.
- STOVER, R. H., AND N. W. SIMMONDS**
1987 *Bananas*. Third edition. Essex, U.K.: Longman Scientific and Technical.
- THRUPP, LAURIE ANN**
1988 "The Political Ecology of Pesticide Use in Developing Countries: Dilemmas in the Banana Sector of Costa Rica." Ph.D. diss., University of Sussex.
- UMAÑA ARAYA, JORGE**
1949 "Un ensayo con el fin de mejorar el control de la sigatoka, realizado en la Zona Bananera del Pacífico de Costa Rica, durante el año 1949." Tesis de Grado, Universidad de Costa Rica, San José.
- UNITED FRUIT COMPANY**
1952- *United Fruit Company Annual Reports*. Various years.
1962
1958 *Problems and Progress in Banana Disease Research*. Boston, Mass.: United Fruit Company Research Department, 1958.
- VERGARA, ALFREDO E.**
1993 "Agrochemical Injuries in Banana Plantations in Costa Rica: A Study of Neurobehavior and Other Health Effects." Ph.D. diss., University of Iowa.
- VILLAR, T. G.**
1974 "Vineyard Sprayer's Lung: Clinical Aspects." *American Review of Respiratory Disease* 110, no. 5:545-55.
- WARDLAW, CLAUDE W.**
1941 "The Banana in Central America." *Nature* 147, no. 3,725 (22 Mar. 1941):344-48.
- WELLMAN, FREDERICK L.**
1972 *Tropical American Plant Disease (Neotropical Phytopathology Problems)*. Metuchen, N.J.: Scarecrow.
- WHITE, RICHARD**
1995 "Are You an Environmentalist, or Do You Work For a Living?" In *Uncommon Ground: Rethinking the Human Place in Nature*, edited by William Cronon, 171-85. New York: W. W. Norton.
- WILLIAMS, ROBERT**
1986 *Export Agriculture and the Crisis in Central America*. Chapel Hill: University of North Carolina.
- WILSON, CHARLES MORROW**
1947 *Empire in Green and Gold*. New York: Henry Holt.
- WRIGHT, ANGUS**
1990 *The Death of Ramón González: The Modern Agricultural Dilemma*. Austin: University of Texas Press.
- WRIGLEY, G.**
1961 "Advances in the Use of Agricultural Chemicals in Tropical Agriculture." *Tropical Agriculture* (Trinidad) 38, no. 4 (21 July 1961):271-72.