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Seeds and the technopolitics of environmental reconfiguration in wartime relief operations in Italy, 1945–1947

List of Abbreviations

ECA Economic Cooperation Administration
USDA United States Department of Agriculture
UNRRA United Nations Relief and Rehabilitation Administration

In August 1945, during a meeting in London, Herbert Lehman, Director General of the United Nations Relief and Rehabilitation Administration (hereafter UNRRA), emphasized the significance of seed transfers within the agency's agricultural rehabilitation program:

> Seed is the most compact form of potential food value. The yield of grains runs around twelve times that of its seed. For peas and beans, the ratio is less, but for most vegetable seeds it is much greater. One-fourth of a pound of cabbage seed will plant an acre of land to produce some 15,000 to 20,000 pounds of cabbage. Seeds offered to starving peoples in Europe and China by the uninvaded countries are producing and will continue to produce the food that will eventually conquer hunger as the armies of the United Nations have conquered the foe.[1]

Lehman highlighted the critical role of seeds in addressing global food insecurity and presented them as a symbol of hope and recovery. His assessment reflects a pervasive opinion among international officials concerned with development issues in the mid-1940s: a belief in the power of seeds as a form of agricultural technology to steer agricultural development and food production in countries badly affected by the Second World War. As this volume posits, development practices and narratives have been shaped throughout history and across different contexts by the notion that humans possess the ability to create and utilize technology to manage, enhance, or safeguard the natural environment.[2] Agriculture, i. e. the

1 Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries: Background Information on UNRRA's Agricultural Rehabilitation Program," 24 August 1945, United Nations Archives, New York (hereafter UNA), S-1208–0000–0003, 5.

2 See introduction to this volume.

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process of imposing order on plants and manipulating the behaviors and characteristics of organisms for human benefit, has historically been and continues to be a central focus of development initiatives. Farmers have always lived in a close – though not necessarily harmonious relationship with the environment, being both dependent on it and actively shaping soil quality, local flora and fauna, crop species, and seed varieties.[3] This chapter examines UNRRA's relief operations and its importation of new agricultural resources in postwar Europe from 1943 to 1947 and how it affected the relationship between agriculture, technology and development. In line with broader historical studies on technological reforms, agrarian change, and environmental developments, the chapter explores how these efforts aimed to rehabilitate and improve farming and how they were received by farmers.[4]

Historian Courtney Fullilove has persuasively argued that seeds are "powerful signifiers because they compress future potential and deep past into objects both minuscule and abundant."[5] Given their role in large-scale biological processes accompanying cultivation, migration, and colonial expansion, seeds often come with metaphors of invasion, war, and conquest (as is the case in Lehman's quote, where he refers to conquering hunger), and they are potent markers of technological, environmental, and capitalist expansion.[6] In recent years, historians have questioned the implied biological determinism of such language and produced more fine-grained analyses of how crop transfers in the twentieth century were embedded in political, scientific, and economic processes that were purposefully planned and intended to change landscapes and that would ultimately affect the local nat-

3 Courtney Fullilove, *The Profit of the Earth: The Global Seeds of American Agriculture* (Chicago: The University of Chicago Press, 2017), 5.

4 Mikael D. Wolfe, *Watering the Revolution: An Environmental and Technological History of Agrarian Reform in Mexico* (Durham, NC: Duke University Press, 2017); Gabriela Soto Laveaga, *Jungle Laboratories: Mexican Peasants, National Projects, and the Making of the Pill* (Durham, NC: Duke University Press, 2009); Stuart McCook, *States of Nature: Science, Agriculture, and Environment in the Spanish Caribbean, 1760–1940* (Austin: University of Texas Press, 2002); Tore Olsson, *Agrarian Crossings: Reformers and the Remaking of the US and Mexican Countryside* (Princeton, NJ: Princeton University Press, 2017).

5 Fullilove, *Profit of the Earth*, 219.

6 Nick Cullather, "Miracles of Modernization: The Green Revolution and the Apotheosis of Technology," *Diplomatic History* 28, no.2 (2004): 227–254; Deborah Fitzgerald, *The Business of Breeding: Hybrid Corn in Illinois, 1890–1940* (Ithaca: Cornell University Press 1990); Jack Ralph Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology, 1492–2000*, 2nd ed. (Madison: University of Wisconsin Press, 2004).

ural environment.[7] As Deborah Fitzgerald has pointed out, understanding the relationship between technology and agricultural change is not only about technology as a set of objects and agricultural resources (tractors, milking machines, hybrid seeds, etc.); it is also about the institutions, individuals, ideas and practices behind the objects.[8] This raises questions not only about the power dynamics between experts and farmers who adopted the technology, but also about the complex relationships between humans, technology, and the environment, whose natural characteristics were crucial to the technology's success.[9]

I will argue in this chapter that UNRRA's seed program, which was part of a larger agricultural rehabilitation program, offers a multi-faceted lens through which to examine how historical actors in a specific moment of upheaval and change set out to manage nature: the program was a key moment in the history and evolution of agricultural development. UNRRA's agricultural rehabilitation program was planned by international experts, dominated by American thinking and experience, and it promoted the use of imported technology and mechanization in farming both in Europe and the Far East. The UNRRA case study highlights not only the expectations of experts about shaping and improving local agricultural systems in both economic and cultural terms, but also the existing obstacles and limits faced by these experts with regard to agricultural transformation and environmental modifications.[10] It also shows that awareness of the environment and of the fragility of the ecosystems within which this technological development was occurring – an awareness that would begin to emerge internationally in the 1960s and early 1970s – was absent from humanitarian considerations in the 1940s.[11]

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7 The last two decades have seen several fascinating historical studies that zoom in on specific crops and commodities, such as sugar, rice, soy, or cotton against a backdrop of colonial and global governance, capitalist consumption patterns, and agricultural knowledge transfer. See for instance Francesca Bray et al., eds., *Rice: Global Networks and New Histories* (Cambridge: Cambrige University Press, 2017).

8 Deborah Fitzgerald et al., "Roundtable: Agricultural History and the History of Science," *Agricultural History* 92, no.4 (2018): 569 – 604.

9 Debashish Sen, Harro Maat, Dominic Glover, and C. Shambu Prasad, "Techno-Political Mythologies and Socio-Technical Flexibility: The Introduction of SRI in Uttarakhand, India," *Anthropologie et développement*, no.46 – 47 (2018): 100 – 126; Dominic Glover, Jean-Philippe Venot, and Harro Maat, "On the Movement of Agricultural Technologies: Packaging, Unpacking and Situated Reconfiguration," in *Agronomy for Development: The Politics of Knowledge in Agricultural Research*, ed. James Sumberg (London: Routledge, 2017), 14 – 30.

10 Dolly Jørgensen, Finn Arne Jørgensen, and Sara B. Pritchard, eds., *New Natures: Joining Environmental History with Science and Technology Studies* (Pittsburgh: University of Pittsburgh Press, 2013).

11 See the opening of the introduction in this volume.

The chapter's main focus is on the planning and logistics of UNRRA's seed transfer mission in Italy. It examines the bureaucratic framework of the organization's planning efforts and, in particular, the data analysis and development of intervention programs. It focuses on a few key UNRRA figures, their ideas of agricultural progress, and their role in delivering seeds to Italy. Thus, through the eyes of seed expert Ely Pattison, the chapter highlights the environmental contingencies of UNRRA's seed operations, especially the attempts of relief workers to anticipate issues of transferability (ensuring the effective adaptation of transported seeds to local contexts), seed germination (ensuring that the seed provided in relief programs would sprout and grow successfully under local environmental conditions), and purity (guaranteeing the genetic and physical characteristics of seeds to avoid the introduction of diseases). In the final part, the chapter also looks at the power dynamics between UNRRA and local actors by examining the reception of the seeds and by tracing how local protagonists, agencies, and farmers accepted – and sometimes exploited – the arrival of seeds through the black-market. The chapter shows that the transformation of agriculture, and, through the latter, of the environment, was a multi-layered and complex process in which both humans and nature proved unpredictable.

Part I UNRRA's Agricultural Rehabilitation Program

Much has been written in recent years about European reconstruction after the Second World War and about the role of UNRRA, especially with regard to food and medical aid and the help offered to refugees and displaced persons. Despite its brief existence between late 1943 and 1947, historians have highlighted the organization's importance as an early experiment in international planning. They have shown how UNRRA established new frameworks and models for surveying and assessing local needs and for providing relief to European countries marked by destruction, food shortages, threats of epidemics, and streams of refugees.[12]

12 Ben Shephard, *The Long Road Home: The Aftermath of the Second World War* (New York: Alfred A. Knopf, 2011). See also Ben Shephard, "Becoming Planning Minded: The Theory and Practice of Relief, 1940–1945," *Journal of Contemporary History* 43 (2008): 405–419. On wartime planning, see Elisabeth Borgwardt, *A New Deal for the World: America's Vision for Human Rights* (Cambridge, Mass.: Harvard University Press, 2005). On UNRRA, see Jessica Reinisch, "Internationalism in Relief: The Birth (and Death) of UNRRA," *Past and Present* 210, suppl. 6 (2011): 258–289; Silvia Salvatici, "'Help the People to Help Themselves': UNRRA Relief Workers and European Displaced Persons," *Journal of Refugee Studies* 25 (2012): 452–473; Laure Humbert, "French Politics

Scholarly attention has focused on UNRRA's supply of food and health provisions, the repatriation of displaced persons, and the agency's efforts to ward off epidemics. But whereas food has been at the center of many historical accounts, no study so far has investigated the goals, organization and implementation of UNRRA's agricultural rehabilitation program, including the organization's role in supplying agricultural goods such as seeds, fertilizers, tractors, and pesticides, and its dispatch of technical expertise to various country missions.[13]

There is limited space here to detail the institutional history of UNRRA, which has already been extensively covered by observers of the time and more recent historians. The following paragraphs will succinctly sketch the birth of UNRRA and its agricultural rehabilitation division. As is well known, UNRRA was set up to manage the transition from war to peace. Ideas had started to circulate across diplomatic channels from the 1940s onwards about how to restore food production in countries damaged by war once they were liberated from German occupation. By 1943, based on various proposals by British, American and Soviet officials for an international organization that would carry out relief work and after extended diplomatic negotiations, a final plan was laid out for the creation of a centralized relief agency with a council of representatives of each member government and an executive, regional, and technical committee.[14] While UNRRA was conceived as a collective enterprise of the Allies, it very much identified as an American organization and most of its high-level staff were American nationals. The agency began work on 1 January 1944. From August 1944 onwards, the governments of the occupied countries submitted through the UNRRA office in London their respective requirements programs, known as the 2 A programs and largely based on the Inter-Allied Committees Report. These programs were used as a basis for planning operations. In Europe, these operations were scheduled to last only three years (until the end of 1946), but because of delayed shipments, they carried on into mid-1947.

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of Relief and International Aid: France, UNRRA, and the Rescue of European Displaced Persons in Postwar Germany, 1945–47," *Journal of Contemporary History* 51, no.3 (2016): 606–663; Andrew John Williams, "Reconstruction Before the Marshall Plan," *Review of International Studies* 31 (2005): 541–558.

13 For an exception, see Amanda McVety's work on UNRRA's Rinderpest campaign, McVety, *The Rinderpest Campaigns: A Virus, its Vaccines and Global Development in the Twentieth Century* (New York: Cambridge University Press, 2018), chapter 3.

14 Grace Fox, "The Origins of UNRRA," *Political Science Quarterly* 65, no.4 (December 1950): 561–584. See also George Woodbridge, *UNRRA. The History of the United Nations Relief and Rehabilitation Administration*, vol. 1 (New York: Columbia University Press, 1950), 3–20.

UNRRA was a multifaceted organization whose various divisions focused on a range of operational activities, from the supply of essential goods to caring for and resettling refugees, organizing vaccination and disease control programs, providing welfare services to vulnerable groups such as orphans and widows, rebuilding industries and local infrastructure, and, last but not least, restoring agricultural production. UNRRA's agricultural rehabilitation division, based in Washington, was established early in 1944 as part of UNRRA's Bureau of Supply. The Division was headed by Edwin R. Henson, an agricultural economist and former official of the United States Department of Agriculture (hereafter USDA), a leading hub of agricultural research. The function of Henson's division was generally to assess what supplies were required by analyzing reports and data, to negotiate and organize their purchase and delivery with national procurement agencies, and to coordinate with other UNRRA divisions.[15]

In its first year, the Division focused primarily on gathering economic and statistical data on agricultural production in Eastern and Southern European countries, including Czechoslovakia, Greece, Poland, Yugoslavia, Albania, and Austria (Italy would only be considered later and become a recipient of UNRRA aid in the summer of 1945). Its experts also assessed war-related damage to farm machinery, livestock, fisheries, and supplies of seed, fertilizers, and pesticides through surveys that were published as so-called monographs.[16] These studies painted a bleak picture of agriculture in Europe's war-ravaged countries. As reports outlined, farm machinery had been commandeered for military purposes, while animals had been either slaughtered or stolen, resulting in a severe loss of draft power and limiting the ability to plough and cultivate fields. Fertilizers were scarce, and seed availability had waned because of the disruption in the international seed trade, and gaps in cultivation.

UNRRA's agricultural surveys not only highlighted the devastation of the agricultural sector caused by the war but also established the authority of (mostly American) agricultural development experts and laid the groundwork for intervention. Since the 1920s, the United States had undergone a process of agricultural industrialization and rationalization, galvanized by the rise and application of economic and scientific expertise and resulting in a shift from traditional to

15 Gerard Mahler, "UNRRA's Agricultural Rehabilitation Activities," UNA, S-1021–008–006, 57.
16 For an account of this preparation work, see Standing Technical Committee on Agriculture, "Report on Status of the Agricultural Rehabilitation Program of UNRRA as of June 1945: Origins and Development of Plans of Agricultural Rehabilitation', 1, UNA, S-1208–0000–0027. See also P.L. Slagsvold, "Considerations in the Analysis of Agricultural Data and Program Development for Liberated Areas," 2, UNA S-1208–0000–0001. Reports on these various resources exist in the form of a series of unpublished monographs in the UNRRA archives.

large-scale, mechanized farms.[17] The growing influence of US scientific and technological expertise was strongly reflected in the production of economic knowledge on agricultural resources within UNRRA. Significantly, whilst entirely focused on economic and developmentalist aspects of agricultural production, these surveys did not take into account consumption patterns, food preferences, or cultural traditions.

UNRRA's agricultural rehabilitation division was officially set up to offer temporary relief and re-establish pre-war agricultural production rather than long-term inputs that would overhaul the agricultural sector of the countries visited. In the words of UNRRA officer P.L. Slagsvold, who oversaw the analysis of production needs, "it should be understood clearly that UNRRA is not writing agricultural production programs for any country, because this, obviously, must be the responsibility of the respective countries themselves."[18] On the other hand, it was quite clear to other UNRRA agricultural experts that some of the material supplied by the organization, especially farm equipment and agricultural technologies, had not previously been extensively used and could potentially serve as an initial step toward a complete restructuring of the pre-war industrial-agricultural balance in the receiving country. While UNRRA officials argued that restoring food production for human consumption was the primary goal, they also acknowledged the possibility that UNRRA might recommend "shifts in the acreage of crops to be produced" and the establishment of production goals, especially with regard to high-protein crops and livestock production to meet existing dietary deficiencies.[19]

This aspect of agricultural aid was fully embraced by the agency. Implicit in UNRRA's agricultural rehabilitation program was a developmentalist stance: one of the objectives was "to help countries take advantage of techniques that have been developed during the war in countries not occupied by the enemy." This also involved providing "recognized" expertise from the United States, which at the time was the uncontested leader in the mechanization and intensification in agriculture, the expanded use of agrochemicals such as synthetic fertilizers

17 On the US and its leading position in agriculture in the interwar years, see Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven, CT: Yale University Press, 2003). On the rise of US expertise during the Cold War, see Andra B. Chastain and Timothy W. Lorek, *Itineraries of Expertise: Science, Technology, and the Environment in Latin America's Long Cold War* (Pittsburgh: University of Pittsburgh Press, 2020).

18 Slagsvold, "Considerations," 2.

19 Slagsvold, "Considerations," 5–6.

and herbicides, and plant breeding techniques.[20] This resulted in a sense of superiority amongst American experts. Since the interwar years, the general feeling amongst those that had visited Eastern and Southern European countries was that local agriculture was "primitive," relying on manual labor, plagued by fractioned land ownership, and based on antiquated methods of cultivation.[21] The use of new technologies was seen as a way to accelerate change and to shape and restructure agrarian environments in order to respond efficiently to increased food needs. Seeds were a central technological artefact in this process, and seed distribution became one of the pillars of UNRRA's agricultural program. As we have seen in the initial quote, seeds, due to their small size, were ascribed huge potential for the circulation and multiplication of foodstuffs. However, as it turned out, this view was rather simplistic and failed to consider some of the concrete challenges and local dynamics.

UNRRA's Seed Program

From the very beginning, one of the top priorities of UNRRA's agricultural rehabilitation program was the supply of seeds, alongside the provision of tractors, draught animals, and fertilizers.[22] Starting in 1943, UNRRA gathered seed estimates to prepare surveys and projections for postwar food supplies.[23] According to UNRRA experts, before the war, Europe not only met its own seed needs but also produced an exportable seed surplus. This was true for cabbage, cauliflower, broccoli, red clover, and many other seeds. However, the devastation caused by the war had changed the situation, and estimates showed that many European countries were short of edible legumes, especially beans and peas, as well as

20 See report of the Director General of UNRRA as quoted in Mahler, "UNRRA's Agricultural Rehabilitation Activities," 69.

21 Amalia Ribi Forclaz, "Agriculture, American Expertise, and the Quest for Global Data: Leon Estabrook and the First World Agricultural Census of 1930," *Journal of Global History* 11, no.1 (2016), 44–65.

22 For a summary of seed shipments, see Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries," 24 August 1945, UNA, S-1208–0000–0003. See also Standing Technical Sub-Committee on Agriculture, "Priorities of Agricultural Requirements," UNA, S-1208–0000–0005.

23 Shortly after UNRRA was formed in 1943, these estimates were turned over to an expert committee, the Standing Technical Committee of Agriculture. The experts of the Committee, representing both the invaded and supplying countries, used them as their starting point for planning rehabilitation through the importation and management of seed supply.

wheat and other cereal and grass seeds.[24] The stated objective of UNRRA's seed program was "to reestablish a flow of seeds within Europe" from "surplus pockets to areas of need."[25]

To this end, in Autumn 1944, as part of its European Regional Office in London, UNRRA created the so-called seed unit, which focused on the procurement and shipment of seeds.[26] In contrast with other units such as those dedicated to tractors or to fertilizers, it was headed by a woman: Ethel Ely Pattison.[27] Pattison was an auto-didact, longtime seed analyst for the USDA, and the founder and director of an international seed business, the International Seed Incorporated (a post she relinquished to take up full time work at UNRRA). She also ran a farm in Connecticut. Qualified by others as a "damn capable woman," she threw herself wholeheartedly into her new job and remained as a full-time seed consultant until November 1946.[28] "From the mythical beginnings of mankind to the present day," she professed, "[seed] has been the first and most important single item in the history of man's struggle for the betterment of the species and it has played this same role in UNRRA's work."[29] Seeds were an "Act of God," their beginnings described in Genesis, yet despite their almost sacred, life-giving nature, in order to be successfully planted, they needed human intervention and careful planning.[30]

As Pattison knew all too well, given her background as a government official, expert, and international businesswoman, beyond its biblical and mythical dimensions and its endless potential for multiplication, seed also came with a range of problems. First and foremost, re-establishing the seed trade meant not only sourcing appropriate seed supplies but also re-establishing transportation, seed cleaning plants, and fuel and storage facilities, all of which were lacking in the countries that had experienced war.[31] Seasonal aspects also came into

24 Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries," 2.

25 Standing Technical Committee on Agriculture "Seeds for the Liberated Countries," 2.

26 The UNRRA Seed unit worked closely with both the Fertilizer and Machinery units (the latter procured seed-cleaning equipment to nine countries). Moreover, the Seed unit always took part in the meetings of the Combined Food Board and the Emergency Economic Council for Europe, and entertained contact with the Research Centers at the University of Cambridge, the USDA, and the Canadian Department of Agriculture, as well as with other organizations such as the Seed Import Board of the United Kingdom and the British and American Seed Trade Associations.

27 Ethel Ely Pattison, "Report on Seeds for the Agricultural Rehabilitation Division," 30 June 1947, UNA, S-1021 – 0010 – 12.

28 Letter Calkins to Ed Henson with letter from Gaumnitz, 22 March 1945, UNA, S-1208 – 0000 – 0237

29 Pattison, "Report on Seeds," 1.

30 Pattison, "Report on Seeds," 1.

31 Standing Technical Committee- Agriculture "Seeds for the Liberated Countries."

play: planting and harvesting seasons needed to be respected, creating logistical headaches and the high risk of delays in the aid process. All agricultural goods supplied by UNRRA, including tractors, pesticides, and draught animals, were subject to seasonal requirements, and reports show that it was not always possible to respect them: in some instances, for example, tractors arrived too late to secure the 1946 planting season. Seeds, however, were by far the most time-sensitive supply. As Pattison noted, in stark contrast to Lehman's optimistic views, seed was a "non-cumulative commodity," which meant that its value could be realized only within a specific time frame, aligned with the particular requirements of each crop and with the local planting seasons, which varied from Greece to Norway.[32]

Moreover, the quality of seeds was far from guaranteed and needed to be carefully assessed. There were lengthy discussions within UNRRA's seed unit about the seeds' germination potential and purity – both essential requirements for the disease-free and successful growth of plants in the receiving regions.[33] Despite their small size and ease of transport (compared to other UNRRA supplies such as tractors or living animals), seeds came with their own problems of transportation, due to their variable perishability and the need for proper packaging and storage to avoid spoilage, mold growth, pest infestations, or mechanical damage.[34] Seeds also posed a major challenge in terms of adaptability, and Pattison had to take into account the growing conditions in their new environments and find ways to control some of the natural variables such as temperature, length of day, or rainfall. When procuring seeds, she also tried, where possible, to consider the local geological and climatic features, making sure that they corresponded to the seeds' original climate and soil. Finally, the transfer of seeds from one country to another also required advanced technical knowledge and seeds supplied by UNRRA had to be analyzed by agricultural experts on arrival, which not only demanded highly skilled staff but also could potentially delay their use.[35]

32 "Bases for Distribution of Agricultural Commodities among Countries," 21 July 1945, UNA, S-1208 – 0000 – 0002, 8.

33 Minutes of the meeting between the Italian government and UNRRA on procurement of seed wheat, August 1946, UNA, S-1465 – 0000 – 0098.

34 On the problems of seed transportation, see also Glover, Venot, and Maat, "Movement of Agricultural Technologies."

35 For a general discussion on seeds and the required knowledge about their features and ecological context, see Annalisa Managlia, Umberto Mossetti, and Ariane Dröscher, "Seeds of Knowledge: Unveiling Hidden Information Through Letters and Gardens in Bologna, Turin and Uppsala," *HoST, Journal for History of Science and Technology* 5 (Spring 2012): 17–29.

What is more, the success of such transfers also depended on the knowledge of cultivation methods, preparation techniques, and consumption practices.[36] Last but not least, seed came with what Pattison called "a high psychological factor," by which she meant that farmers were often reluctant to adopt new seed varieties and had to be convinced either by demonstration of higher yields or by financial incentives and rewards.[37]

As soon became clear, UNRRA would face all the hurdles that Pattison had anticipated. In the spring of 1945, after Hitler's defeat in May, the UNRRA's seed unit shifted from preparation to active operations: Every four to five days, shipments began departing from American and Canadian ports (including Baltimore, Montreal, New Brunswick, Houston, and New York). Their volume varied greatly depending on the availability and importance of specific varieties: for example, 70,000 bags of rye seeds were shipped on board the *Constanza* from Baltimore to Czechoslovakia on 2 July, but only 934 bags of alfalfa left from Montreal to Yugoslavia. By the end of September 1945, an estimated total of 38,000 metric tons of seeds had been shipped to Greece, Yugoslavia, Albania, Poland, and Czechoslovakia, the recipients of full-scale UNRRA aid.[38] In selecting seeds, UNRRA's seed experts focused mainly on human consumption and priority was given to vegetable seeds and cereals. In a second stage, shipments would also include seeds for forage crops that would help the receiving countries restore their livestock count, a goal that was considered urgent by UNRRA.[39]

One of the main challenges for UNRRA's seed unit in this initial phase was the so-called procurement of seeds – in other words, the process of sourcing and acquiring seeds from suppliers located around the world to match demands and needs in the receiving countries in Europe.[40] Seeds were purchased from countries with an exportable surplus; the main supplier was the USA, together with Canada and the United Kingdom.[41] In addition to the Allied Powers, the seed unit also explored imperial sources of procurement, collecting information on possible surpluses in New Zealand, South Africa, Malta, Cyprus, and Tanganyika.

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36 Marie-Noëlle Bourguet, "Measurable Difference: Botany, Climate and the Gardener's Thermometer in Eighteenth-Century France," in *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*, ed. Londa Schiebinger and Claudia Swan (Philadelphia: University of Pennsylvania Press, 2005), 270–286.

37 Pattison, "Report on Seeds."

38 Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries," 1–2.

39 Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries," 3.

40 L. K. Macy and Alton M. Porter, Informal Notes taken at the Conference on the European Seed Situation, 25 April 1945, UNA, S-1209–0000–0253.

41 D.R. Sabin "General Outlook of the Agricultural Supply Situation: Seeds," 5 January 1945, UNA, S-1208–0000–0004, 1.

Seeds were selected based on both their variety and adaptability. Growing conditions such as temperature, length of day, rainfall, etc., were compared and matched between exporting and receiving country. For example, UNRRA seed experts decided that cereal seed for Czechoslovakia should be selected from areas in the USA and Canada, where growing conditions were similar to those in Eastern European countries. "Similarity of conditions," the Committee stated, "plays an important part in obtaining the goal of highest productivity of the seed."[42] Throughout the process of selection, the USDA and its experts played a key role, and their approval was crucial.[43]

Managing the supply chain globally during an ongoing conflict and keeping track of the complex agricultural calendar was a complicated operation, as internal notes reveal. Reflecting on the supply of winter barley for the year 1945/1946, UNRRA officials noted:

> Barley should be planted from November [1945] on for fall [1946] planting in Greece and Albania. They will need 10,000 metric tons of Barley seeds of the California type. It will be hard to get till after harvest and it was suggested that the contracts be ready so it could be shipped right out of the field. Liberia (North Africa) might have some seed barley but it is somewhat doubtful. A cable of enquiry will be sent to North Africa.[44]

A host of further challenges contributed to the complexity of the operations, including price negotiations, transport problems, unpredictable weather conditions, bureaucratic formalities (such as getting official approval for sailing and liaising with port authorities), and the labelling and storage of the shipped seeds.[45]

As shown by the statistics compiled by the seed unit, by June 1947, UNRRA had shipped a total of almost 300,000 metric tons of seeds, of which a small amount (4,500 tons) went to China, the bulk of it to Austria (89,000 tons), Poland (83,000 tons), Greece (42,000 tons), Italy (27,000 tons), Ukraine, and Yugoslavia (both around 15,000 tons), and smaller amounts to Albania and Byelorussia.[46] In the following paragraph, I will focus on UNRRA seed shipments to Italy.

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42 Standing Technical Committee on Agriculture, "Seeds for the Liberated Countries," 4.

43 Letter Edwin Henson (Chief of Agricultural Rehabilitation) to R. Herbert (Acting Deputy Director General of the Department of Supply, UNRRA London, 16 May 1945, UNA, S-1209–0000.

44 Macy and Alton M. Porter, Informal Notes, 2.

45 S. Frohlich and E.O'Mahony, diary notes, 6 December 1945 to 31 December 1945, UNA, S-1209–0000–0253.

46 Pattison, "Report on Seeds," 1.

The Case of Italy

UNRRA's intervention faced an especially thorny situation in Italy, and UNRRA assistance became just one of several complex factors in Italy's postwar relationship with the United States and American-led aid initiatives.[47] The Allies had begun planning for postwar aid to Italy as early as 1943. In July 1944, an UNRRA observer mission identified an urgent need for imported food supplies, particularly for children and nursing mothers, along with medical provisions.[48] Additionally, support was needed for the resettlement and housing of internally displaced individuals. The political situation, however, was complex and the country was still divided: Allied armies held the South and the islands, while the German military and Mussolini ruled the North.[49] Because of Italy's role in the Axis and the political divisions, helping Italy was a controversial choice: in line with public opinion, some members of the UNRRA Council were initially against providing aid to a former enemy.[50] Following the swift political and military changes of early 1945 – marked by Mussolini's death in April and Germany's surrender in May – sentiments toward Italy became more favorable. At the Potsdam Conference in July and August 1945, Italy officially aligned with the Allies in their ongoing war effort against Japan.

In the summer of 1945, UNRRA resolved to treat Italy as it would any other liberated nation. Swift intervention was also prompted by the fear of a potential communist expansion in the country, fueled by economic hardship, social unrest,

47 On UNRRA's Italian mission, see Silvia Salvatici,"'Not Enough Food to Feed the People': L'Unrra in Italia (1944–1945)," *Contemporanea* 14, no.1 (2011): 83–99; Luigi Rossi, "L'UNRRA strumento di politica estera agli albori del bipolarismo," in *L'amministrazione per gli Aiuti Internazionali: La ricostruzione dell'Italia tra dinamiche internazionali e attività assistenziali*, ed. Andrea Ciampani (Milan: Franco Angeli, 2002), 47–82; Federico Romero, "Gli Stati Uniti in Italia: il Piano Marshall e il Patto Atlantico," *Storia dell'Italia repubblicana: La costruzione della democrazia. Dalla caduta del fascismo agli anni cinquanta*, ed. Federico Barbagallo, (Turin: Einaudi, 1994), 231–289; Victoria Belco, *War, Massacre and Recovery in Central Italy, 1943–1948* (Toronto: University of Toronto Press, 2010).

48 On the observer mission see Salvatici,"'Not Enough Food to Feed the People," 83–99. More generally on UNRRA and American-Italian relations, see John Lamberton Harper, *America and the Reconstruction of Italy, 1945–1948* (Cambridge: Cambridge University Press, 1986); Rossi, "UNRRA."

49 Woodbridge, *History of UNRRA*, vol. 2, 257

50 Woodbridge, *History of UNRRA*, vol. 2, 259.

and political instability.[51] The worsening of already precarious conditions in rural areas further drove the push for an agricultural reconstruction policy. Especially in the South of Italy, growing tensions between landlords with large estates and landless peasants who occupied the land had been escalating since 1944. The Northern regions of Emilia and Tuscany were hit by a wave of strikes and demonstrations organized by the Italian Communist Party, demanding the renegotiation of share-cropping contracts and higher wages.[52]

The Italian program would ultimately become UNRRA's largest in terms of tonnage delivered to any single country: 10 million tons of goods valued at $418 million, supported by a workforce of around 4,000 staff members.[53] Of this extensive aid program, only a modest $13 million was destined to agricultural rehabilitation supplies, the largest share of which – $5 million – was allocated to importing fertilizers and machinery. The remaining $8 million covered shipments of pesticides, breeding equipment, veterinary and fisheries supplies, and seeds. As noted by UNRRA's official historian George Woodbridge, these resources, along with the deployment of agricultural experts, were intended "to bring to Italy the latest developments in agricultural and veterinary knowledge and practice from the outside world from which it had been cut off throughout the years of war."[54]

When UNRRA began its agricultural rehabilitation efforts in Italy, it entered a country where agriculture was central to the economy and had experienced decades of government intervention, scientific advancements, and socioeconomic reforms.[55] In 1945, about half of Italy's population was still engaged in agriculture, contributing roughly one-third of the nation's income. Italian agriculture was mainly focused on food production, especially wheat, alongside small grains, pulses, corn, potatoes, vegetables, citrus, wine, and olives. Significant regional differences in land and labor availability led to notable variations in production, farm sizes, and tenancy structures. These ranged from large estates, or *latifundia*,

51 Dimitri A. Sotiropoulos, "International Aid to Southern Europe in the Early Postwar Period: the Cases of Greece and Italy," *The Annals of the American Academy of Political and Social Sciences* 656 (November 2014): 22–40, 25.

52 Alessandro Bonanno, "Theories of the State: the Case of Land Reform in Italy, 1944–1961," *The Sociological Quarterly* 29, no.1 (1988): 131–147.

53 Woodbridge, *History of UNRRA*, vol. 2, 266 and 272.

54 As quoted in Woodbridge, *History of UNRRA*, vol. 2, 288.

55 Federico D'Onofrio, *Observing Agriculture in Early Twentieth-Century Italy: Agricultural Economists and Statistics* (Abingdon: Routledge, 2016); Lea D'Antone, "La Modernizzazione dell'agricoltura Italiana negli anni Trenta," *Studi Storici* 22, no.3 (1981): 603–629; Cesare Longobardi, *Land-Reclamation in Italy* (London: King, 1936); Federico Caprotti, *Mussolini's Cities: Internal Colonialism in Italy, 1930–1939* (Youngstown: Cambria Press, 2007).

in Lombardy and the South – a region heavily impacted by emigration – to the predominance of sharecroppers and small tenant farmers in areas like Tuscany and Veneto.

Since the beginning of the twentieth century, agricultural education and research in Italy had been institutionalized and professionalized, resulting in a well-established educational and scientific apparatus.[56] In the 1920s and 1930s, agriculture became a key component of the fascist modernization agenda. To address issues such as unproductive, marginal, and malaria-prone land, the fascist regime launched extensive land reclamation projects that significantly increased agricultural activity, particularly in the Pontine Marshes of Central Italy.[57] These modernization efforts were further supported by an internal colonization program, which planned the relocation of sharecroppers from Central Italy to the South, aiming to improve agricultural practices and boost production.[58] Attempts at making Italy independent of foreign wheat imports led to a series of economic policies: launched in 1925, the so-called *battaglia del grano* ('battle for wheat'), became a symbol of the regime's drive for greater food self-sufficiency. Wheat production increased at the expense of other foods that had been traditionally exported, resulting in increasing prices and food costs for the average Italian family and worsening their living conditions. This extensive and politicized propaganda campaign was accompanied by the creation of agricultural science laboratories that conducted extensive experimentation in crop breeding, including the development of high-yielding seeds.[59]

Agriculture and food production in Italy had suffered massively during the war. From June 1940 onwards, food was rationed, and by 1941, under-nourishment had become a national issue.[60] In addition to wartime destruction and dislocation of farming activity due to fighting on Italian soil, unfavorable weather had reduced Italian agricultural production.[61] In its survey report on the state of Italian

56 For an account of the system of agricultural extension and itinerant lectureship to disseminate practical techniques of modern farm management, see D'Onofrio, *Observing Agriculture.*
57 D'Antone, "Modernizzazione."
58 Longobardi, *Land Reclamation*; Caprotti, *Mussolini's Cities.*
59 Tiago Saraiva and Matthew Norton Wise, "Autarky/Autarchy: Genetics, Food Production, and the Building of Fascism," *Historical Studies in the Natural Sciences* 40 (2010): 419–428. See also Tiago Saraiva, *Fascist Pigs: Technoscientific Organisms and the History of Fascism* (Cambridge, Mass: MIT Press, 2016), 27–40; Carol Helstosky, "Fascist Food Politics: Mussolini's Policy of Alimentary Sovereignty," *Journal of Modern Italian Studies* 9, no.1 (2004): 5.
60 Patrizia Sambuco and Lisa Pine, "Food Discourses and Alimentary Policies in Fascist Italy and Nazi Germany: A Comparative Analysis," *European History Quarterly* 53, no.1 (2023): 135–155.
61 G. Welk to Menshikov, 27 November 1944, Notes on Italian Agriculture, UNA, S-1210–0000–0107.

agriculture, UNRRA noted that "serious food shortage" was the most immediate challenge faced by Italy after liberation. A shortage of bread, pasta, and olive oil was leading to hunger and food riots, especially in urban areas. One of the most pressing problems, Allied authorities observed, was the lack of wheat, for which production had fallen by a third, forcing people to resort to the black market.[62]

UNRRA experts believed that persistent food shortages could be mitigated by importing agricultural resources such as fertilizers – whose domestic production had fallen during the war – and seeds, which were in short supply due to disruptions in trade and scientific collaboration.[63] While UNRRA's primary objective was to restore agricultural production as quickly as possible, experts also believed that there were long-standing issues from the prewar period that required long-term solutions. UNRRA officials, especially those from the United States, saw Italian agriculture as grappling with structural challenges, including a large amount of mountainous, semi-arid land, small farm sizes, poor livestock management, and a heavy reliance on manual labor, with little emphasis on labor-saving tools or machinery.[64]

Thus, UNRRA's agricultural rehabilitation program in Italy also intended to bring about a shift in the production of grains, from direct consumption to a grain-livestock economy that would boost meat production. This would entail a number of environmental consequences: the substitution of traditional and locally adapted seeds with new, imported ones, the introduction of new crop varieties and, as a result, a shift in the production and consumption patterns of specific crops. In practice, however, the organization soon ran into difficulties: While UNRRA officials considered the geological and climatic characteristics of the recipient regions to ensure that each seed type was suited to its native climate and soil, they appeared to be less attuned to the social factors – regional consumption values, patterns, and food traditions – liable to impact the acceptance of the seed

62 UNRRA Italian mission, "Economic Survey, Agriculture and Food," 26 July 1946, UNA, S-1465 – 0000 – 0086.

63 UNRRA Italian mission, "Economic Survey, Agriculture and Food"; Welk to Menshikov, "Notes on Italian Agriculture."

64 UNRRA Italian mission, Sub-Bureau of Relief Supply, Analysis Division, "Italian Livestock Population in Peace and War," 10 May 1946, UNA, S-1210 – 0000 – 0097; Charles W. Smith, "Livestock and Meat Products in Italy," 14 June 1946, UNA, S-1208 – 0000 – 0095; Hugh G. Calkins and Col. J R.G. Sutherland, "Report of F. G. Renner on Improvement of Grazing Lands of Central Italy," 25 May 1946, UNA, S-1210 – 0000 – 0096; Peter C. Borre to Mission Executive Officer, "Farm Machinery," 2 September 1946, UNA, S-1465 – 0000 – 0086.

supplies within farming communities. UNRRA also lacked the authority to control seed allocations or enforce the use of the provided seeds.

Successful seed distribution depended on the involvement of a variety of local authorities and actors that had been deeply shaped by fascist political and economic policies and that continued to exist and function after the demise of the regime. One such instance were the Consorzi Agrari, a centralized federation of local cooperatives set up during fascism. The Consorzi Agrari (which were put in charge of distributing UNRRA supplies) oversaw a grain collection system established by the fascist government that required local producers to sell their entire surplus of wheat and barley to a government stockpiling agency. The latter, the so-called Ammassi, then took care of the distribution of foodstuffs and was supposed, at least in theory, to prevent shortage and famine.[65] Fearing inflation, however, farmers were allegedly reluctant to sell their surplus, and were tempted to hoard their grains and sell them at much higher prices on the black market.[66]

Aware of these issues, UNRRA had anticipated problems with distribution: In Italy, the distribution of goods was managed by a local UNRRA mission, which transferred them to the Italian government only after the allocations had been determined. This approach, aimed at giving UNRRA greater control, ended up increasing the logistical burden for the mission without preventing misuse or misdistribution.[67] In theory, farmers who had applied for UNRRA seeds were supposed to pick them up with a receipt in their local rural cooperative. In many cases, however, the seeds never reached the intended recipients but were collected by black market dealers who signed the receipts using the farmers' names and resold the seeds to other traders. Some Italian distribution agents also sold the seeds at higher prices for profit.[68] As UNRRA noted, "irregular distribution was effected with the connivance of the Consorzio Agrario" and corrupt agents.[69] Yet, the fact that, according to UNRRA records, farmers resorted to the black market to buy UNRRA seeds to feed livestock also shows that UNRRA had misread and miscalculated local needs.

Even when picked up by the right person, the seeds were not necessarily used for planting as intended, but either resold on the black market or used to feed animals. Farmers frequently disregarded UNNRA instructions, particularly with

65 Welk to Menshikov, Notes on Italian Agriculture.

66 Welk to Menshikov, Notes on Italian Agriculture.

67 Woodbridge, *History of UNRRA*, vol. 2, 263.

68 C. B. Foglietti (Regional Director Emilia and Toscana), to chief of UNRRA Italian Mission, 11 December 1946, UNA, S-1465 – 0000 – 0098.

69 C. B. Foglietti (Regional Director Emilia and Toscana), to chief of UNRRA Italian Mission, 21 September 1946, UNA, S-1465 – 0000 – 0098.

crops that could be consumed directly (such as pea seeds). To address these issues – also present in other UNRRA missions such as the one in Austria – UNRRA set up a system of control and inspections with designated investigators, referred to as a "Protective Service," in early 1946. This service collaborated closely with civil and military police to combat black market activity and to detect any criminal misuse of UNRRA-provided goods.[70] The reports of these inspections paint a sobering picture of the failures and successes of seed distribution. Following intelligence that had led UNRRA to suspect that seeds were not used as planned, two special investigators were sent out to investigate potential "irregularities." In the farms that they visited, they found little evidence that the seeds had been planted. Farmers claimed to have stored the seeds but could not show where. Others told the inspectors they had redistributed the seeds to other farmers. One farmer admitted having used the seeds as fodder to feed his courier pigeons. Another had fed his sixty pigs with the seeds because he owned no land for planting. Others, who were thought to have retrieved the seeds, had never heard of the scheme. According to the investigators who interviewed the farmers, many farmers contradicted themselves or purposefully confused the interviewers, pretending not to be the person they sought. Farmers who were caught feeding seeds to pigs claimed they did not know that they should be used for sowing, although UNRRA argued firmly that instructions had been clear. Others yet could not be found. UNRRA inspectors concluded that in certain places, such as Tuscany, virtually none of the seeds provided by UNRRA had been planted.[71] In Ravenna, the sale of seeds had to be stopped to avoid their use for unintended purposes.[72]

Overall, in the Emilia region, UNRRA investigation proved "without any doubt" that there were groups of illegal traders, "who instead of distributing the seeds in small quantities sold them to unknown persons who were not farmers." Out of the ten investigated cases, "not one was carried out correctly" in compliance with UNRRA policy and procedures. 90 % of the 1,600 quintals of vetch seed ended up "on the black market or in the mouth of livestock."[73] Where distribution was more successful, such as in the case of bintje seed potatoes, other issues emerged: for instance, 90 % of the seeds did not germinate because they had

70 Woodbridge, *History of UNRRA*, vol. 2, 47.

71 C. B. Foglietti (Regional Director Emilia and Toscana), to chief of UNRRA Italian Mission, 13 September 1946, UNA, S-1465 – 0000 – 0098.

72 C. B. Foglietti (Regional Director Emilia and Toscana), on Forage Pea Seed Distribution in Emilia, 21 September 1946, UNA, 1465 – 0000 – 0098.

73 From Regional Director Emilia and Toscana to chief of UNRRA Italian Mission 11 December 1946, UNA, S-1465 – 0000 – 0098, 39 – 40.

been overheated during transport and started to rot.[74] Pests such as the Colorado beetle dorifera also proved important hazards, jeopardizing the successful harvest of the potato crop.[75] Thus not only did the UNRRA program suffer from structural flaws and logistical mismanagement, but external environmental factors such as pests and heat also negatively affected the already fragile recovery mission, highlighting the multi-faceted vulnerabilities of agricultural development programs.

Yet, the complexity of the local situation and the seeming lack of control did not deter UNRRA officials from experimenting with long-term seed activities. Towards the end of UNRRA's mandate, steps were taken to overhaul agricultural production by introducing hybrid corn strains, a variety of maize created by cross-breeding two genetically distinct parent plants to produce higher yields and increase disease resistance and uniformity. This set the stage for a hybrid corn program for Europe that would fully develop under the Marshall Plan after 1947.[76] In the summer of 1946, UNRRA expert Dr. P.S. Hudson, director of the Imperial Bureau of Plant Breeding and Genetics at the University of Cambridge, visited some Italian agricultural experimental stations. Upon his return, he wrote to UNRRA chief of Agricultural Supplies, emphatically requesting that UNRRA take provisions for hybrid corn strains to be imported from the United States in order to help revive an Italian maize breeding program that had existed before the war.[77] In particular, Hudson noted that the Italian maize research stations (*Stazione sperimentale di maiscoltura* in Bergamo) required "small samples of [...] seed of as large a range now as possible of the hybrid corn strain" from agricultural experiment stations in the United States. The object, according to Hudson, was to compare the behavior of these hybrids with that of the local Italian varieties.[78]

Subsequently, UNRRA helped the implantation of hybrid-corn seeds in various ways: It imported 500 tons of US hybrid seeds for planting for forage purposes; and the Italian scientists who were in charge of the experimental station in Bergamo were sent to the United States to study the techniques and methods of hybrid corn production. UNRRA also provided 35 million lire ($60,000 at the time) to help

74 Report on seed potato cultivation by G. Sutty, 9 July 1946, UNA, S-1465 – 0000 – 0089.

75 Report on seed potato cultivation by Sutty.

76 Emanuele Bernardi, *Il mais miracoloso. Storia di un'innovazione tra politica, economia e religione* (Rome: Carocci, 2014).

77 Note P. S. Hudson of the Imperial Bureau of Plant Breeding and Genetics attached to Letter Darke (Chief Agricultural Supplies Officer) to Weintraub Deputy Director General UNRRA Bureau of Supply, Washington 18 June 1946, UNA, S-1209 – 0000 – 0251. For Hudson's original report see P.S.Hudson, 30 May 1946, 'Agricultural Research in North Italy' S-1210 – 0000 – 0109.

78 Note Hudson to Darke.

with experiments, and procured 58 varieties of American hybrids for testing.[79] From 1947 onwards, as UNRRA was phasing out its operations, these American varieties were planted alongside local ones for comparison. UNRRA experts continued to play crucial roles in subsequent seed activities.[80] Between 1948 and 1949, the import of new seed varieties from the US to Italy grew from 50 to 2,000 tons.[81] From 1948, new programs such as the Economic Cooperation Administration (ECA) and the Marshall Plan embraced the hybrid corn plan as a way to "revolutionize farming," against a backdrop of resistance by farmers and communists. UNRRA's seed program opened the door for these later activities which, as noted by one historian, "created new dynamics in seed production and marketing."[82] It also laid the foundation for widespread transformation not only of agriculture but also of the environment as a whole. The long-term impact of these changes would become evident over time: the focus on high-yield hybrids reduced genetic diversity and made farmers dependent on seed companies to obtain new seeds each year.[83]

Conclusion

UNRRA's seed program provides a valuable case study of how historical actors, during a period of significant upheaval and change, attempted to control and manage not only the transition from war to peace in countries ravaged by military conflict, but also the rebuilding of agricultural production and the development of food and crop systems. The organization's stated primary aim of bringing seeds to Italy was to help restore the agricultural sector and secure food production. Experts and seed technicians like Patterson were not primarily focused on long-term technological development; instead, they viewed their program as a response to the "deficiencies" caused by war. However, they recognized that seeds were not simply another agricultural "commodity" (like fertilizers, pesticides, machinery, or breeding equipment that UNRRA also supplied) but the starting point

79 Hybrids that were thought most likely to succeed were those from Wyoming, Montana, and Dakota. Andrew J. Nichols, *The Introduction and Spread of Hybrid Corn in Italy* (Washington DC: US Department of Agriculture, 1954), 3–4.

80 Nichols, *Introduction and Spread of Hybrid Corn*, 3–4.

81 On hybrid corn production under the Marshall Plan, see Bernardi, *Mais miracoloso.*

82 Helen Anne Curry, "Breeding Confusion: Hybrid Seeds and Histories of Agriculture," *The Journal of Peasant Studies* 50, no.3 (2023): 1037–1055.

83 Helen Anne Curry, *Endangered Maize: Industrial Agriculture and the Crisis of Extinction* (Oakland, CA: University of California Press, 2022).

of any crop and food production: once planted, they could have long-term impacts on the natural environment. They also understood that, compared to other forms of aid, seeds were a particularly complex commodity. Their natural characteristics – such as seasonality, availability, quality, germination, and susceptibility to deterioration – made them highly vulnerable to transport challenges and atmospheric conditions.[84]

As demonstrated by the Italian mission, UNRRA experts held high expectations for rebuilding and reshaping local agricultural production. However, they were less attuned to the local economic, political, cultural, and practical realities, as well as to the challenges and constraints that these would pose to UNRRA's plans. In particular, the organization's officials soon discovered that in addition to the logistical challenges of seed transfer, there was also the issue of human agency, over which they had far less control. Despite UNRRA's efforts to curb black market activities, the misappropriation of supplies by corrupt agents and the diversion of goods to the pre-existing black-market venues were especially pronounced in Italy.[85] Moreover, UNRRA had not anticipated the unpredictable ways in which local farmers would use the seeds, often disregarding the organization's guidelines and adapting them to their own needs. In this regard, UNRRA's seed program in Italy serves as an early lesson in the challenges of planning aid initiatives without adequate consultation with local communities.

In view of these difficulties, it may not come as a surprise that UNRRA's impact and legacy remained controversial for a long time: even contemporaries often ridiculed some of its efforts. Historians have frequently highlighted the frustrations and disappointments of UNRRA personnel, who faced numerous administrative obstacles and delays and believed that operations were ended too prematurely to allow the organization to achieve its full potential. Some of this frustration is also reflected in the activities of the seed unit. Yet, ironically, as historians continue to uncover the complex history of post-WWII international development programs and explore the work of international organizations, they also reveal UNRRA's pioneering role in shaping an emerging system of global humanitarian aid and development practices. In terms of organization and planning, UNRRA was instrumental in professionalizing and organizing systematic interna-

84 Woodbridge, *History of UNRRA,* vol. 1, 1, 494.

85 Woodbridge mentions Italy and Austria as cases where UNRRA needed to institute a protective service to fight corruption and black-market activities. It is not clear whether this problem also existed in other countries.

tional aid.[86] The organization also provided a testing ground for technical assistance operations that would go on to play a central role in development programs during the Cold War. Last but not least, UNRRA was the first international aid program that was not based on colonial control to test and evaluate whether it was technically and environmentally feasible to distribute agricultural supplies on a large scale. In the end, despite its challenges and initial shortcomings, UNRRA's seed transfer program laid the groundwork for agricultural development practices, influencing both the structure of future aid programs and the principles guiding global development in the second half of the twentieth century.

86 Jessica Reinisch, "Internationalism in Relief," 258–289; Silvia Salvatici, "Professionals of Humanitarianism: UNRRA Relief Officers in Post-War Europe," in *Dilemmas of Humanitarian Aid in the Twentieth Century*, ed. Johannes Paulmann (Oxford: Oxford University Press, 2016), 235–259.