



Food Sovereignty and Rights-Based Approaches Strengthen Food Security and Nutrition Across the Globe: A Systematic Review

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This systematic review assembles evidence for rights-based approaches—the right to food and food sovereignty—for achieving food security and adequate nutrition (FSN). We evaluated peer-reviewed and gray literature produced between 1992 and 2018 that documents empirical relationships between the right to food or food sovereignty and FSN. We classified studies by literature type, study region, policy approach (food sovereignty or right to food) and impact (positive, negative, neutral, and reverse-positive) on FSN. To operationalize the concepts of food sovereignty and the right to food and connect them to the tangible interventions and practices observed in each reviewed study, we also classified studies according to 11 action types theorized to have an impact on FSN; these included “Addressing inequities in land access and confronting the process of land concentration” and “Promoting gender equity,” among others. We found strong evidence from across the globe indicating that food sovereignty and the right to food positively influence FSN outcomes. A small number of documented cases suggest that narrow rights-based policies or interventions are insufficient to overcome larger structural barriers to realizing FSN, such as inequitable land policy or discrimination based on race, gender or class.

Keywords: food security and nutrition, food sovereignty, right to food, agroecology, sustainability, equity, food systems, Millennium development goals

INTRODUCTION

Progress toward ending hunger on a global scale has stalled. Reductions in global malnutrition and hunger rates have slowed after decades of decline, while the absolute number of people suffering from hunger and malnutrition is increasing (FAO, 2019). These trends were evident even before the emergence of COVID-19 and its impact on economies and global food security (FAO, 2020). Such challenges require an examination of approaches to strengthen food security and nutrition (FSN)—in particular, evidence-based assessments of underutilized or typically overlooked approaches that may be able to overcome barriers to progress where more established approaches have not.

Approaches to meeting FSN goals can be broadly classified by their focus: increasing agricultural productivity, the supplementation of foods and other means of delivering specific micronutrients to undernourished populations, and realizing the human rights of populations vulnerable to hunger and malnutrition. Of these approaches, *increasing agricultural production* is the most long-standing, and remains dominant at major institutions tasked with ensuring FSN as well as coordinating agricultural policies, such as the United Nations Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA). The theory of change or processual explanation behind this approach is that increasing productivity will meet the growing population's food needs by making food more available and accessible to the poor; it could also increase profitability on farms and stimulate rural economies where poverty and food insecurity is prevalent. However, greater food availability or capacity to purchase food does not ensure sufficient nutrition. Consumption of cheap, calorically-dense but non-nutritious starches has increased over the years, resulting in epidemics of obesity and diet-related diseases (Khoury et al., 2014). This coexists with the “hidden hunger” of micronutrient deficiencies estimated for two billion people (FAO, 2014; Bailey et al., 2015). A second approach, the nutritional supplementation for FSN, seeks to provide specific nutrients to large populations via staple foods. Since the 1920s, supplementation has mainly taken the form of staple foods fortified with nutrients like iodine and vitamins A, B, and D that have virtually eliminated diseases like goiter and rickets that were caused by single-nutrient deficiencies (Bishai and Nalubola, 2002). More recently, *biofortification* has involved developing crop varieties high in micronutrients commonly absent from diets (Bouis and Welch, 2010), such as a sweet potato rich in vitamin-A (Low et al., 2017).

An alternative, and more recent approach to the production-focused FSN approaches described above is rights-based. The theory of change behind rights-based approaches is to guarantee the human rights required to achieve food security and healthy nutrition. This may involve addressing political conflict, the denial of basic human rights, and other forms of oppression that are root causes of hunger and malnutrition.

Sen (1981) influentially argued that famines are not caused by a lack of food, but by a lack of “entitlements and capabilities,” or the social, economic, and political means to produce or acquire sufficient food. His approach represented a departure

from dominant thinking, and opened investigations into the political and economic conditions that shape access to food beyond agricultural productivity and innovations in agricultural technology (e.g., Watts and Bohle, 1993; Blaikie et al., 1994). If hunger has political causes, it follows that FSN can be strengthened or even guaranteed by policy and political actions. In this paper, we focus on two rights-based approaches: food sovereignty and the right to food¹. Building on a systematic review of peer-reviewed and gray literature, we aim to answer the question: What are the contributions of food sovereignty and right to food approaches to food security and nutrition?

Rights-based approaches—ranging from policies of governments or other institutions, to grassroots advocacy, to interventions by non-governmental organizations (NGOs)—touch people's lives and livelihoods in diverse ways and are implemented at varying scales. Food sovereignty, an approach originating with social movements, informs grassroots advocacy and demands, as well as policies of local institutions such as farmers' cooperatives. Additionally, food sovereignty increasingly informs interventions by some international NGOs and has recently appeared in some national policies (Knuth and Vidar, 2011; Wittman, 2015). The right to food, originating with an intergovernmental treaty that mandates national policies (United Nations, 1966), tends to be implemented as such—but also informs the policies of many non-governmental institutions.

In the next sections, we outline the emergence of food sovereignty and the right to food as rights-based approaches to FSN. Then, we outline our methodology to define theories of change associated with food sovereignty and the right to food, and action types associated with each theory of change. We subsequently characterize and evaluate the breadth of empirical evidence associated with the implementation of rights-based approaches. Finally, we highlight opportunities for further research on rights-based approaches and their impact on FSN.

Food Sovereignty

The concept of food sovereignty originated with small-scale producers organized as the transnational social movement La Via Campesina (LVC), and was launched globally at the 1996 United Nations World Food Summit. Food sovereignty is a broad concept focused on the rights of people—rather than corporations and market institutions, the actors that LVC believes have come to dominate the global food system—to control how and what kind of food is produced. LVC's seven principles of food sovereignty include: Food as a basic human right, the need for agrarian reform, protection of natural resources, reorganization of food trade to support local food production, reducing multinational concentration of power, fostering peace, and increasing democratic control of the food system (Claeys, 2013).

While mainly led by grassroots communities, food sovereignty has reached other spheres and has been enshrined in the

¹We recognize that the strengths of food sovereignty and right to food approaches may extend far beyond FSN, enabling, for example, improved ecosystem services and cultural diversity, and counteracting biodiversity loss (Perfecto et al., 2009; Iles and Montenegro, 2014; Pimbert, 2017).

constitutions and policies of several national, regional and municipal governments. In Latin America, Bolivia and Ecuador have included food sovereignty as a way to secure food needs of the local population (McKay et al., 2014). Also, food sovereignty has been mobilized in a range of NGO and grassroots community organizations to guide interventions at different geographical and institutional scales (Claeys, 2013; Chappell, 2018).

Right to Food

States have an obligation to realize human rights, including the right to food, under international law. The International Covenant on Economic, Social and Cultural Rights (United Nations, 1966) established this obligation. Article 11 establishes the right to an adequate standard of living, including food, and the right to be free from hunger. Article 12 establishes the right of everyone to the enjoyment of the highest attainable standard of physical and mental health. States are obliged to respect the right to food by not taking any measures that prevent access to food, by ensuring that individuals are not deprived of access to adequate food, and by proactively carrying out activities that strengthen people's access to resources and means to ensure food security. In cases where people are unable to realize the right to food, states are obliged to provide that right directly through food aid but should facilitate future self-reliance and food security (UNCESCR, 1999). The Committee on World Food Security (CFS) at the UN-FAO adopted the Voluntary Guidelines for the Progressive Realization of the Right to Adequate Food in the Context of National Food Security (Right to Food Guidelines) in 2004, providing a precedent for the inclusive and participatory approach to governance of FSN. Spurred by successive global food, financial and economic crises caused by the 2007–2008 food price spike, the CFS underwent a reform in 2009. The mandate to contribute to the progressive realization of the Right to Adequate Food was included in the vision statement of the reformed CFS (CFS, 2009) and has since been reaffirmed in most substantive CFS policy decisions.

The right to food has been implemented in specific policy instruments in many jurisdictions (Knuth and Vidar, 2011). For example, in India, the constitution guarantees the protection of life and requires the state to raise the level of nutrition of all citizens. In 2001, civil society groups went to court to demand that the right to food for all citizens was recognized, and their case was upheld by the Supreme Court. As a result, the various food, social security and livelihood programs enacted by the state in India have become a legal entitlement rather than a benefit program (Mander, 2012). In Brazil, the right to food was enshrined in the 1988 constitution and the re-democratization of the country created new channels of participation to define public policies in order to guarantee social, civil and political rights.

Food Security and Nutrition

Food security “exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 1996). Conceptually, food security and nutrition overlap, with food security being a necessary but not sufficient condition for nutrition security (Jones et al., 2014). The

four pillars of food security and nutrition are articulated by FAO (1996) and other organizations to include the following:

1. Availability: Sufficient food supply of appropriate quality.
2. Access: Adequate resources (including infrastructure and economic resources) to actually acquire appropriate and nutritious foods (i.e., the presence and functioning of appropriate entitlements).
3. Utilization: The ability to actually consume and benefit from an adequate diet, which is strongly affected by overall health status, clean water, appropriate sanitation, and health care (i.e., nonfood inputs in food security).
4. Stability: Consistency in access to adequate, nutritious food and nonfood resources—in other words, the avoidance of or resilience to natural, financial, or social shocks as well as stability in food security throughout seasonal or gradual changes.

Access to food is understood by a number of scholars (Sen, 1981; Watts, 1983; Blaikie et al., 1994; Holt-Giménez, 2002; Chambers, 2016) to have two critical dimensions: asset-based agency, currently emphasized under access as the second FSN pillar above; and institution-based agency, essentially concerned with where powers reside, and their transfer when necessary to increase empowerment (Chomba et al., 2015).

Institution-based agency is central to debates around the democratization of food systems. Since the four pillars were first articulated, increasing evidence indicates a need for more explicit ways of addressing critical aspects of human empowerment, recognition of rights, and reinforcement of community capacities (in particular with respect to water and sanitation, infant and young child nutrition, and women's education) to make progress in achieving FSN outcomes (Smith and Haddad, 2015). The methodological framework of this study incorporates a fifth FSN pillar on “agency,” in keeping with its emergence as a critical dimension, defined as:

5. Agency: The empowerment of citizens in defining and securing their own food and nutritional security, requiring sociopolitical systems wherein policies and practices may be brought forth by the will of citizens and be reflected in governance structures to enable the achievement of overall food and nutrition security. This includes access to accurate information, the right to such information and to other aspects of food security, and the ability to secure such rights (adapted from Rocha, 2009; Chappell, 2018, p. 57).

Overlapping and Dynamic Rights-Based Approaches

One challenge to synthesizing evidence for these rights-based approaches is that they often involve overlapping concepts. Food sovereignty, in particular, has evolved to articulate the rights of countries to determine food policies as well as the broader rights of communities and movements to influence the formal and informal institutions that govern food systems (Claeys, 2013; Lambek et al., 2014; Chappell, 2018). Popular movements continue to expand and refine the conceptualization of rights included in food sovereignty frameworks, guided, for example,

by multiple feminisms and Indigenous approaches to knowledge making (Bezner Kerr, 2020; Morales, 2021). While the right to food has more formal definitions recorded in laws and policies, the concept continues to evolve and diverge in practice from place to place, particularly with regard to the importance of people's agency in defining food policy (Chomba et al., 2015).

The food sovereignty and right to food concepts inform each other, and the conversations that define and re-define them play out in interacting arenas. While the definition and scope of food sovereignty is generally driven "from below" by social movements and their collaborations with researchers and NGOs, and the right to food is largely driven by governments and intergovernmental processes, neither happens in isolation. In practice, both concepts advocate supporting local food systems, protecting the social and economic rights of producers and consumers, protecting communities' rights to land and water, and promoting gender equity in policy. Both approaches address the actions of states and formal institutions. In very broad strokes, food sovereignty differs from the right to food in that it centers social movements in its analysis and addresses the dynamics of power and agency within communities and movements, and between social movements and formal institutions, while the right to food has a more state-focused, legal approach. However, in practice, many of the policies, projects, and case studies reviewed here are informed by both rights-based approaches.

In this review, we treated food sovereignty and the right to food as independent concepts, and conducted independent literature searches, screening processes and quantitative analysis for each. This approach allowed us to assess the evidence for each on its own terms. After presenting the results for each review, we discuss the similarities and differences between them, and the evidence for rights-based approaches to FSN as a whole.

Research Approach

To assess the contributions of food sovereignty and right to food approaches to FSN, we conducted systematic reviews of peer-reviewed and gray literature from 1992 to 2018. We focused on empirical studies that provide quantitative or qualitative evidence of a causal relationship between the right to food or food sovereignty and FSN, and assessed factors influencing the diverse contributions of rights-based approaches to FSN.

Evidence for the contributions of food sovereignty and right to food approaches to FSN has been broadly documented and is heterogeneous. Peer-reviewed literature, published over decades, documents associations between the social and ecological aspects of food systems dynamics and their effects on producer and consumer communities. However, much of the evidence for the contribution of rights-based approaches to FSN may lie outside of peer-reviewed literature, given how these concepts have been mobilized by social movements and inter- and non-governmental organizations. There is an increasing recognition of the importance of including diverse sources of knowledge, such as the knowledge and experience of local communities, which have historically been ignored or not validated in research or western-science approaches. Where many earlier global assessments of ecological sustainability, such as the Millennium Ecosystem Assessment, had clear

guidelines to limit consideration of knowledge to peer reviewed data, the IAASTD (International Assessment of Agricultural Science and Technology for Development) and the IPBES (Intergovernmental Platform for Biodiversity and Ecosystem Services) both explicitly included traditional knowledge as sources of information. Many global platforms increasingly feature case studies as valuable sources of context-specific knowledge (for example, FAO's Agroecology in Action Profiles).

Evaluating heterogeneous sources documenting the impact of rights-based approaches for FSN requires novel approaches. New methods enable in-depth understanding of causal relationships based on qualitative and case study data, and build on these to infer broader patterns in a form of meta-analysis (Magliocca et al., 2018). In this review, we have adapted the methods in Magliocca et al. (2018) to enable us to assess these varied and valuable sources of data. We sought to identify research or case studies that (1) describe the experience of a clearly delineated community affected by interventions or policies (either their own or external) related to food sovereignty or the right to food, and (2) report the effects of these interventions or policies on food security and nutrition at the household and/or community level. We aimed to include both quantitative and qualitative assessments, and to include reports published as peer-reviewed and as gray literature.

METHODS

Identification of Studies

We conducted two independent searches: one for food sovereignty and the other for the right to food. We obtained studies on each through a search in academic databases, a manual search of key organization's websites, and consultation with key experts. Search terms were based on literature and consultation with key experts (see **Supplementary Material 1**), and identified and tested in collaboration with librarians from Cornell University. Searches on academic databases were focused on PubMed, Web of Science, CAB Abstracts, and Agricola. To identify gray literature, a review team assembled a list of key organizations involved in food sovereignty research (**Supplementary Material 2**) and searched their websites for case studies related to FSN. Additionally, we assembled a list of key experts on both the right to food and food sovereignty, and requested any unpublished case studies from them by email. The search included references from 1992 (1 year prior to the formation of the most relevant global movement for food sovereignty, La Via Campesina) and September 26, 2018 (2 years after which the right to food sovereignty was explicitly demanded by the NGO forum during the UN Food Systems Summit).

Screening

First, we de-duplicated search results using Zotero (www.zotero.org). Then, we used Rayyan (www.rayyan.qrci.org) for initial inclusion/exclusion screening of titles and abstracts to exclude the following types of studies: (1) Opinion pieces that did not report empirical data; (2) Reviews that did not report primary data; (3) Studies without human subjects; (4) Studies that did not address food sovereignty, the right to

food or an indicator of these approaches; (5) Studies that did not report food security or nutrition outcomes (either quantitative or qualitative); (6) Articles in languages other than English, Spanish, French, Portuguese, Italian, and German. Two reviewers screened each study for inclusion/exclusion, and in the event the reviewers disagreed about a citation meeting the inclusion/exclusion criteria, a third reviewer broke the tie.

Eligibility

We accessed full texts for all studies included after the first screen. After reading the full text, we excluded several additional studies based on the above-mentioned exclusion criteria. Most of the studies dismissed at this stage were excluded because they did not report empirical data. We accepted studies reporting either quantitative or qualitative data, but to be included, studies had to report both an indicator of at least one aspect of the right to food or food sovereignty, and evidence of a change in FSN status. Initially, we intended to assess study quality using questions based on the Critical Skills Appraisal Program's checklists (CASP, 2018), by applying the case-control studies checklist to quantitative studies, and the qualitative checklist to qualitative studies. However, these quality assessments would exclude virtually all of the gray literature and case studies, which generally either do not explicitly report methods in enough detail to pass the bias assessment, or report experiences in forms other than systematically collected data. Because the data contained in gray literature and case studies had significant value for addressing our key research question, we opted not to exclude any studies using these checklists.

“Action Types” for Food Sovereignty and the Right to Food

Food sovereignty and the right to food are high-level concepts rather than specific practices. To operationalize these concepts,

we first identified a core “theory of change” (Magliocca et al., 2018) that underlies each concept, specifying the main ways that rights based approaches are theorized to influence FSN. We then drew from relevant literature (e.g., Pimbert, 2006; Lemke and Bellows, 2015; Anderson et al., 2019) and our collective experience in academic, intergovernmental, and social movement engagements with these approaches to define a set of “action types” expected to affect FSN (Table 1). The action types can be thought of as categories of calls to action and policy proposals widely discussed within food sovereignty and right to food discourse. The action types are necessarily a reduced and simplified typology that doesn't fully encompass the holistic, dynamic, and contested concepts of food sovereignty or the right to food. Distinguishing these action types, however, allowed us to delineate search terms based on actions, so that studies that documented evidence relevant to the action types could be included in the sample whether or not they used the words “food sovereignty” or “right to food.” The two concepts overlap in their theory of change, and as a result, they share several action types and accordingly some studies appear in both reviews.

We searched, reviewed and classified studies by the principal action type investigated. Although many studies addressed more than one action type, reviewers assigned a single principal action type to each study, based on which action type was most directly measured or assessed in the study's methods. As a result, we included studies that reported a causal relationship between a kind of action widely promoted by either food sovereignty or the right to food, and FSN outcomes, even in cases where the publication did not explicitly use the term food sovereignty or right to food (see Supplementary Material 1).

Coding and Analysis

We coded right to food and food sovereignty studies according to several categories that identify the context and methodological

TABLE 1 | Food sovereignty and the right to food: theories of change and action types evaluated in this review.

Rights-based approach	Theory of change	Action types
Food sovereignty	Policy instruments, grassroots efforts, and NGO interventions that seek to build food sovereignty of peoples and communities had significant impacts on the food security and/or nutrition of those peoples or communities	<ul style="list-style-type: none"> A. Supporting local producers and/or protecting local markets B. Addressing inequities in land access and confronting the process of land concentration C. Recognizing, valuing, and supporting the dissemination of local and traditional knowledge D. Increasing autonomy over the production process through agroecological production practices E. Asserting/expanding the social and economic rights of producer and consumer communities F. Promoting gender equity
Right to food	Policy instruments, grassroots efforts, and NGO interventions that address the right to food have significant impacts on the food security and/or nutrition of peoples or communities	<ul style="list-style-type: none"> A. Advancing physical availability and economic access to adequate food through appropriate actions by governments and non-state actors B. Fulfilling human rights that affect food access, availability, and utilization C. Creating and supporting local and regional markets to make food accessible D. Advancing the rights and capabilities of marginalized groups to produce and access food E. Protecting the right to access land, water, and genetic resources for food and agriculture, or redistributing these rights F. Promoting gender equity

approach of each study, including: (1) type (Quantitative, Qualitative, or mixed-methods; corresponding to an intervention or observation; cross sectional, case control, or longitudinal); (2) date, location and region; and (3) sample size. In assessing the impact of each study, we sought to identify associations between rights-based approaches and FSN outcomes; therefore, we also characterized (4) the measure of food sovereignty or right to food or an indicator of these approaches; (5) action types (Table 1), and (6) measure of food security/nutrition outcome. For each study, the effect of a food sovereignty or right to food approach on FSN outcomes was recorded as positive (+), negative (-), neutral (0), or reverse positive (reverse+). Reverse positive scores referred to cases in which a reduction in food sovereignty or a lack of right to food policies leads to a reduction in FSN. Reverse positive results still indicated a positive relationship between rights-based approaches and FSN, but were tallied separately. We coded action types according to what we identified as the dominant action type in each study. Some studies involved more than one action type, yet we only assigned one principal action type to each study to avoid double counting studies. Data and code used for analysis and visualization are available at https://github.com/devonds/rights_and_food_security.

We analyzed results applying a synthesis method, following Magliocca et al. (2018). Synthesizing or integrating knowledge about a heterogeneous topic that draws upon multiple sources of data, explanation, and analytical techniques, risks losing the potential depth of each methodological approach. Magliocca et al. (2018) suggest an alternative to conducting syntheses to conserve the richness contained in multiple study approaches; they advocate for explicitly identifying the “theory of change,” “causality” or causal relationships that the researchers examine as well as the “conditionality” of the findings, in order to identify the bounded range of conditions under which a generalization is expected to be true. The types of studies included in this review are heterogeneous in terms of the processes to account for validity of the results; the value studies hold for their corresponding creators and audiences; and their potential publication bias, which typically favors studies reporting positive or significant results between drivers and effects—in this case, the association between rights-based approaches and FSN. To avoid flattening this heterogeneity, in this paper we focused on the theory of change (associated with the action types defined for each rights-based approach; see Table 1), on quantifying the evidence, and on qualitatively analyzing the state of the evidence for rights-based approaches with an emphasis on where and under what conditions they result in significant changes in FSN.

This review is not focused on quantifying the number of positive vs. negative results in the compiled evidence for two reasons. First, publication bias almost certainly favors documentation of studies with positive results. Second, much of the experiential knowledge of rights-based approaches, and particularly about the impacts of food sovereignty, are reported in case studies. Of these, some rely on systematically collected data while others are based on personal or institutional experience and reflection. We consider these experience-based reports to be valuable sources of evidence, because they often contribute

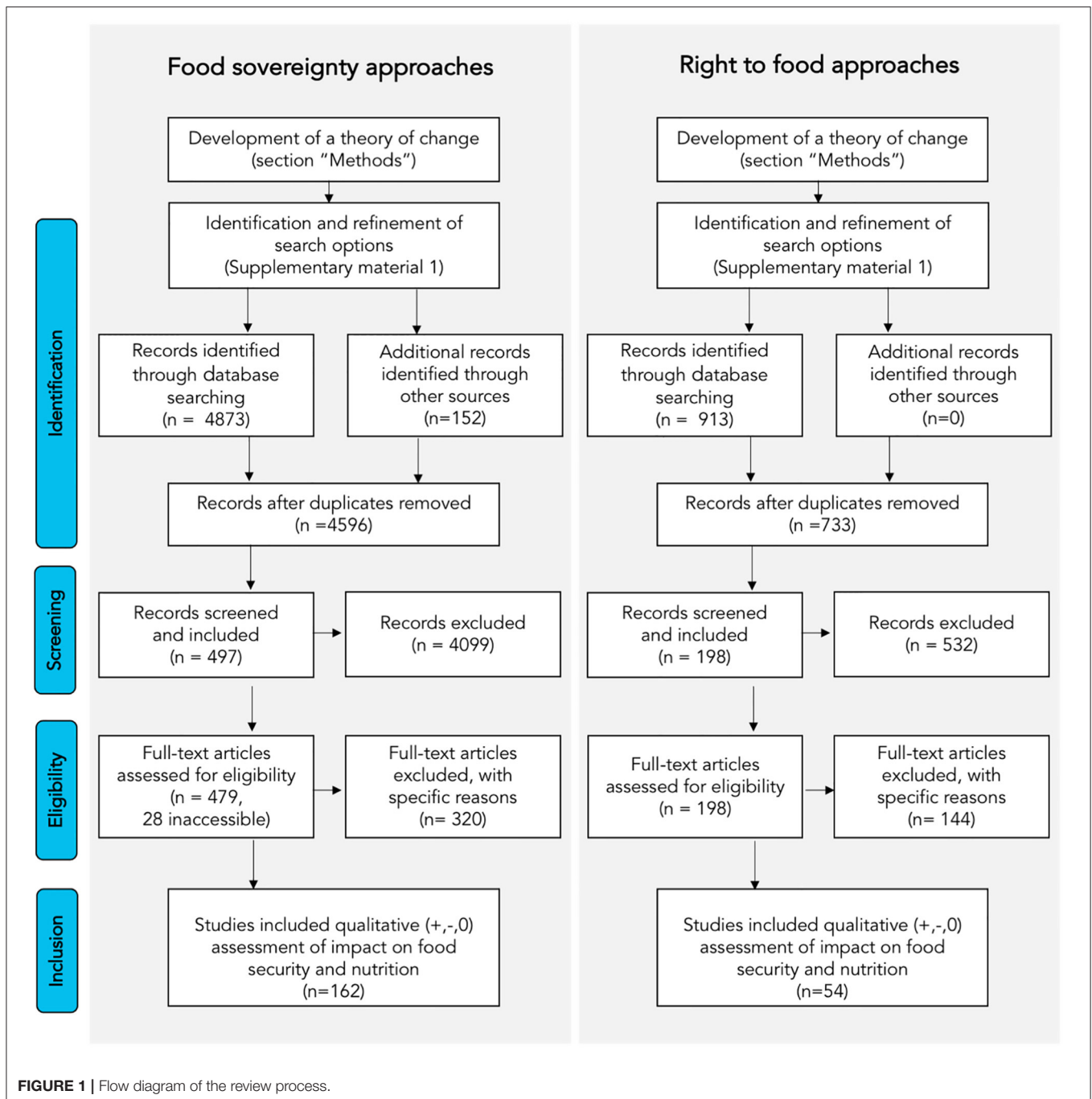
underrepresented points of view (e.g., that of farmers or fishers) and often include a depth of experience that most formal studies are unable to capture. However, pooling and counting the results of less formal, experiential reports along with those of systematic research would be misleading.

RESULTS

Review Process and Literature Overview

We identified a total of 4,873 books and articles on food sovereignty and 733 books and articles on the right to food through structured database searches. We found an additional 152 articles and reports on food sovereignty through other sources, including website searches of key food sovereignty organizations and consultations with key experts. Using similar methods, we found no additional literature on the right to food that was not also included in the article database search. Based on titles and abstracts, screeners excluded all but 497 studies on food sovereignty and 198 on the right to food. After excluding additional studies that were inaccessible or did not explicitly report a quantitative or qualitative assessment of FSN outcomes, we included and coded 162 studies on food sovereignty and 54 studies on the right to food (Figure 1). Most studies on food sovereignty were qualitative ($n = 100$), followed by mixed-methods studies (27) and 15 quantitative studies; more than half reported observations ($n = 118$) with 27% reporting interventions ($n = 44$), and most studies included cross-sectional approaches ($n = 135$). Studies on the right to food included 22 qualitative, 17 quantitative and 15 with mixed-methods approaches. More than 90% of the right to food studies reported observations ($n = 50$) with few studies reporting the results of interventions ($n = 4$); and 85% of the right-to-food studies were cross-sectional ($n = 46$).

Studies addressing the impacts of rights-based approaches on FSN have increased through time, were conducted in broad geographic locations, and mainly showed positive relationships. Most of the studies were published after 2010, especially those concerning the impact of food sovereignty for FSN (Figure 2). Most studies were peer-reviewed for both rights-based approaches (food sovereignty $n = 55$; right to food $n = 44$). There were more studies evaluating relationships between food sovereignty and FSN in the gray literature ($n = 55$), compared to studies evaluating impacts of the right to food ($n = 6$). In terms of the spatial distribution of the studies, relations between food sovereignty and FSN have been documented in all geographic regions, with the greatest representation in Central and South America and the Caribbean ($n = 60$), followed by sub-Saharan Africa ($n = 44$). Studies evaluating the implications of the right to food have been conducted in Africa ($n = 17$) and in the Americas ($n = 25$), and to a lesser extent, in Asia and the Pacific ($n = 9$). We found no studies on the influence of the right to food on FSN from the West Asia/North Africa region (Figure 3). Studies addressing impacts of food sovereignty for FSN most frequently reported positive ($n = 121$) or reverse positive impacts ($n = 29$), and studies on the impacts of the right to food for FSN reported overwhelmingly positive ($n = 24$) or reverse-positive results ($n =$



23), with only five studies reporting negative impacts. This was true across literature types (Figure 4) and regions.

Along with quantifying the number of positive vs. negative studies, we also examined the evidence for each "action type" that we identified under the high-level concepts of food sovereignty and the right to food. At the end of the results section, and later in the discussion, we look at the relatively few cases in which rights-based approaches had a negative or neutral impact on FSN, and discuss the barriers and limits to such approaches for realizing FSN.

Impacts of Food Sovereignty Actions

The reviewed literature represented all of the food sovereignty "action types" we identified (see methods). More than half of the studies examined the effect of either action type D, increasing autonomy over the production process through the adoption of agroecological practices (54 studies), or action type E, protecting the right of communities to access land, water, and genetic resources for food and agriculture, or redistributing these rights (40 studies; Figure 5). The impact on FSN was not equally positive across food sovereignty

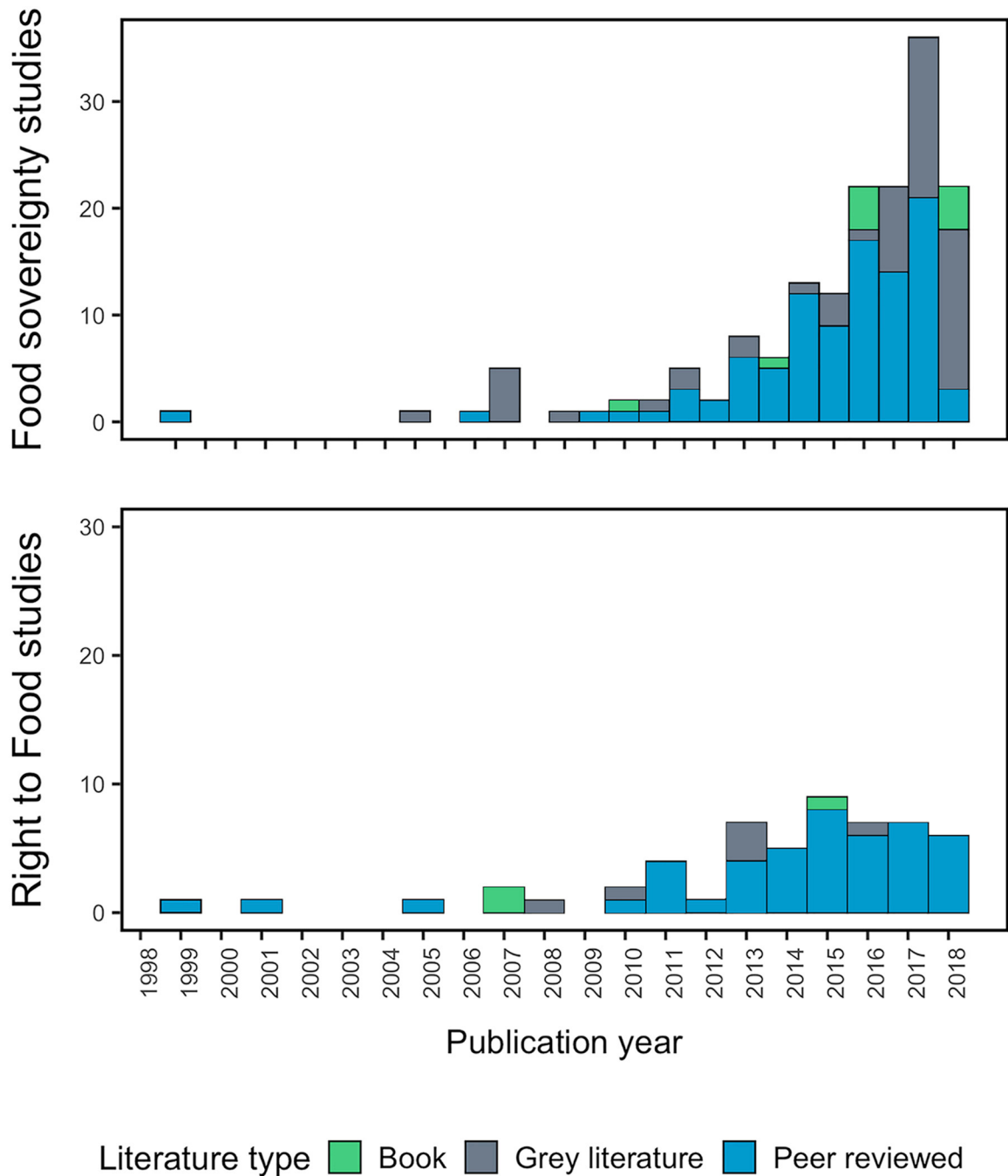
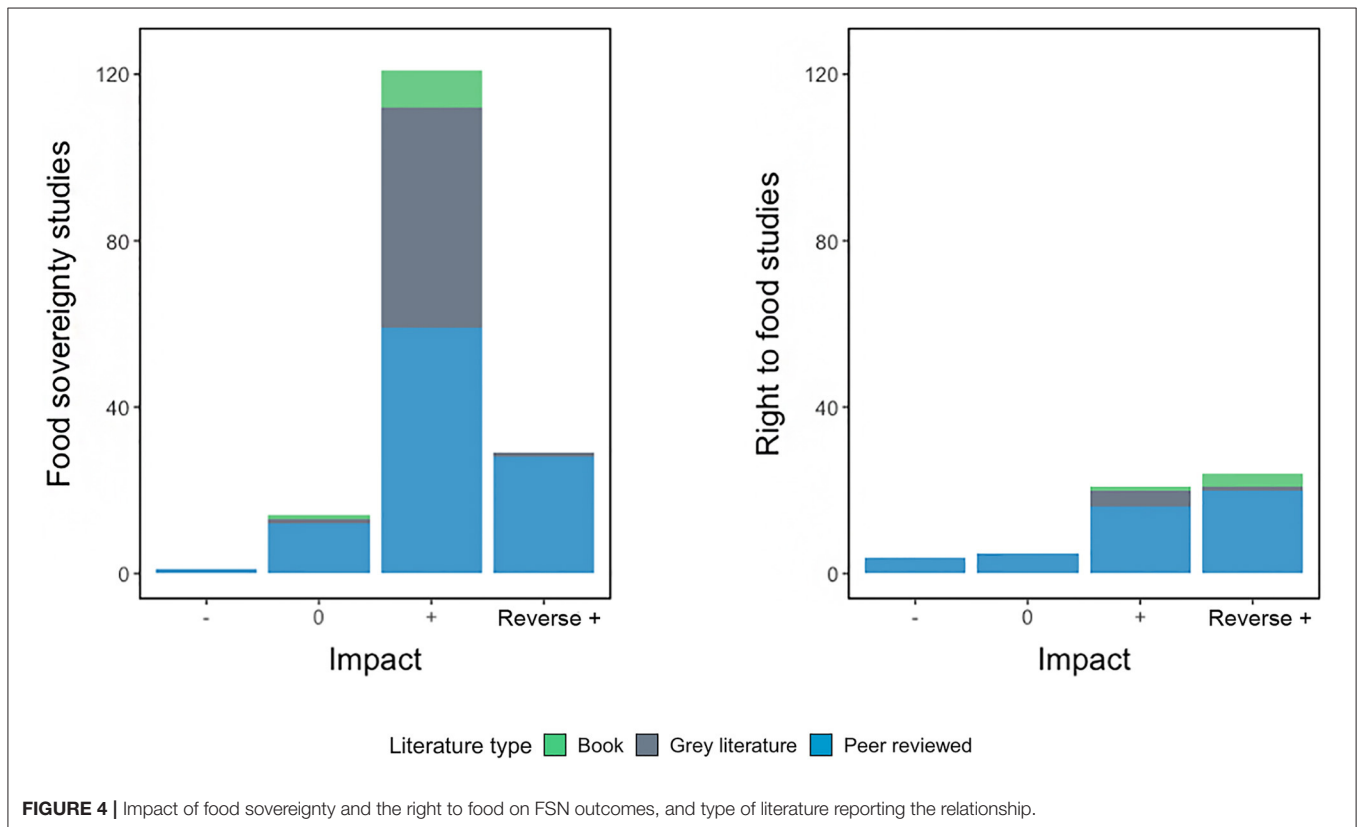
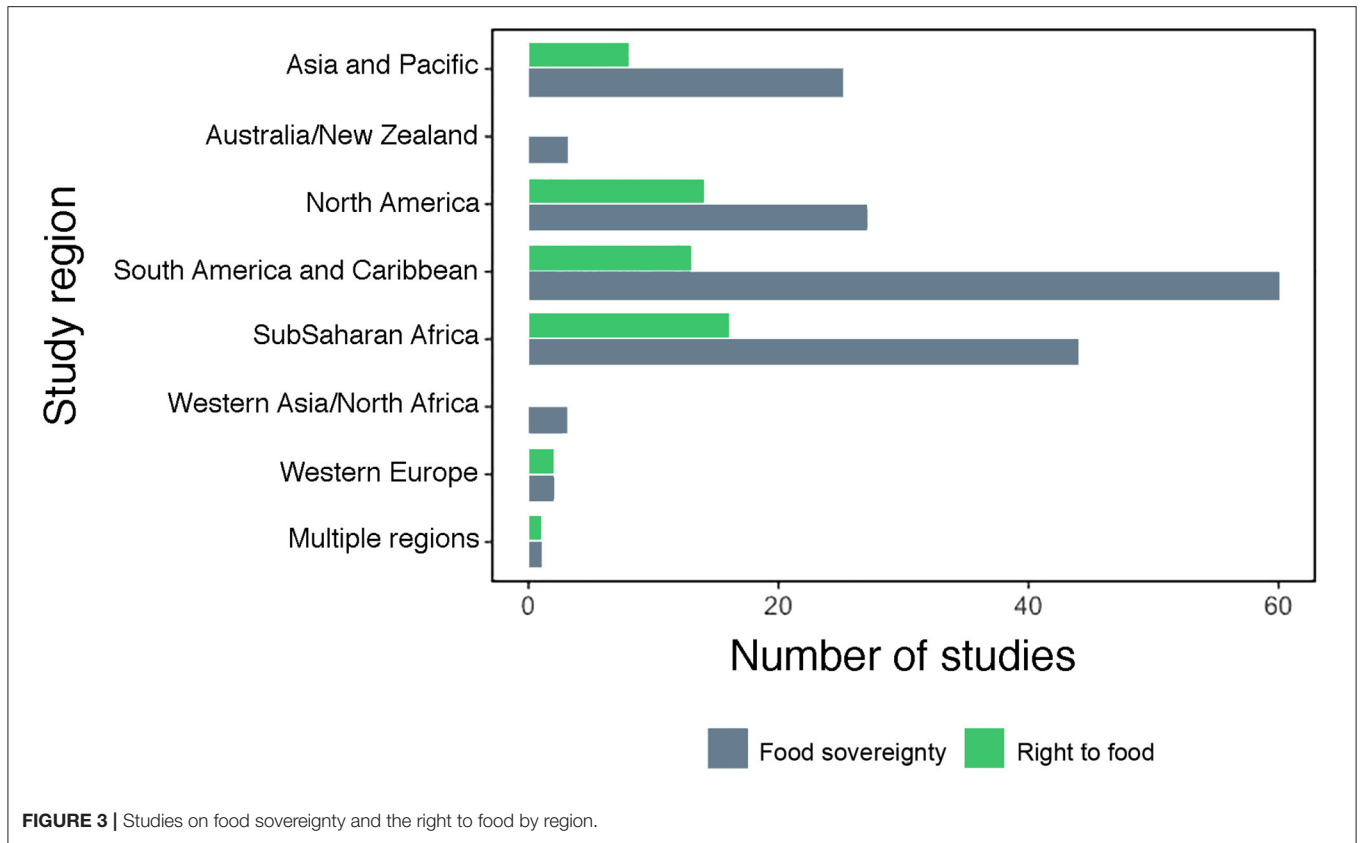
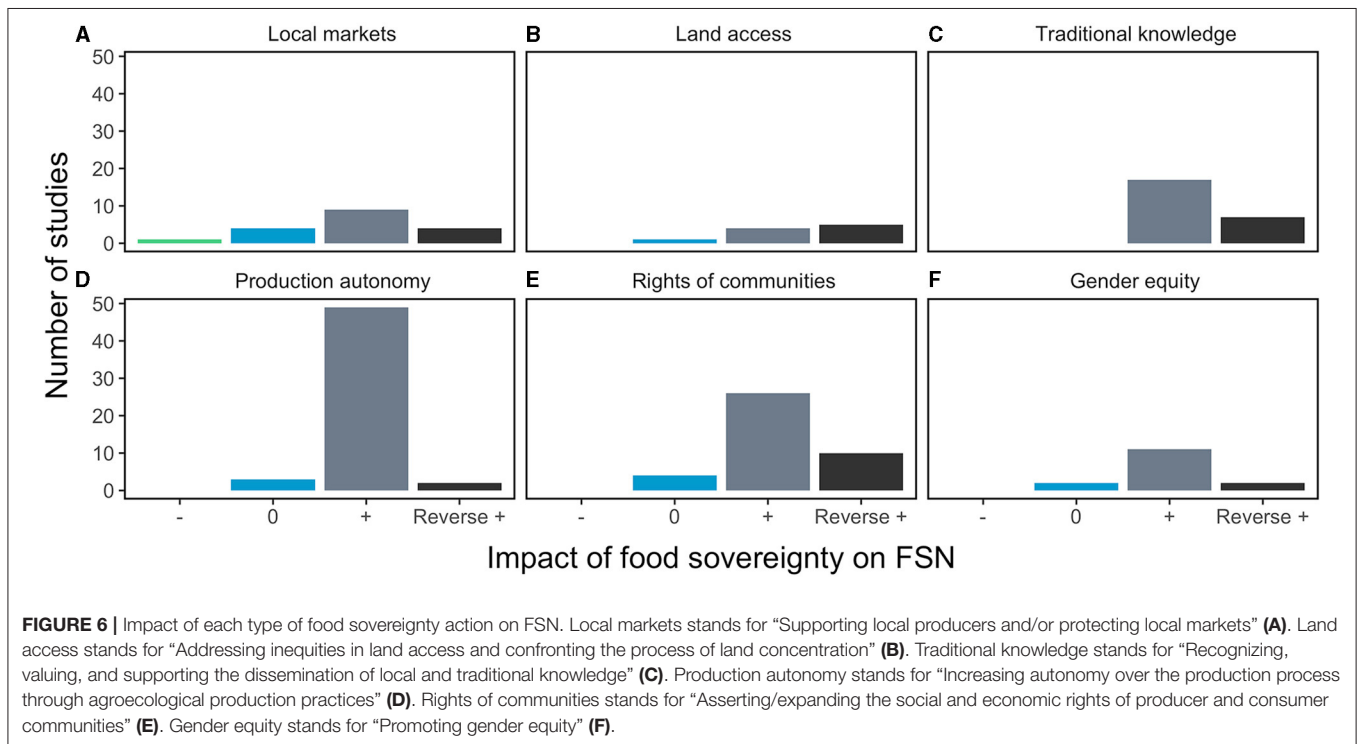
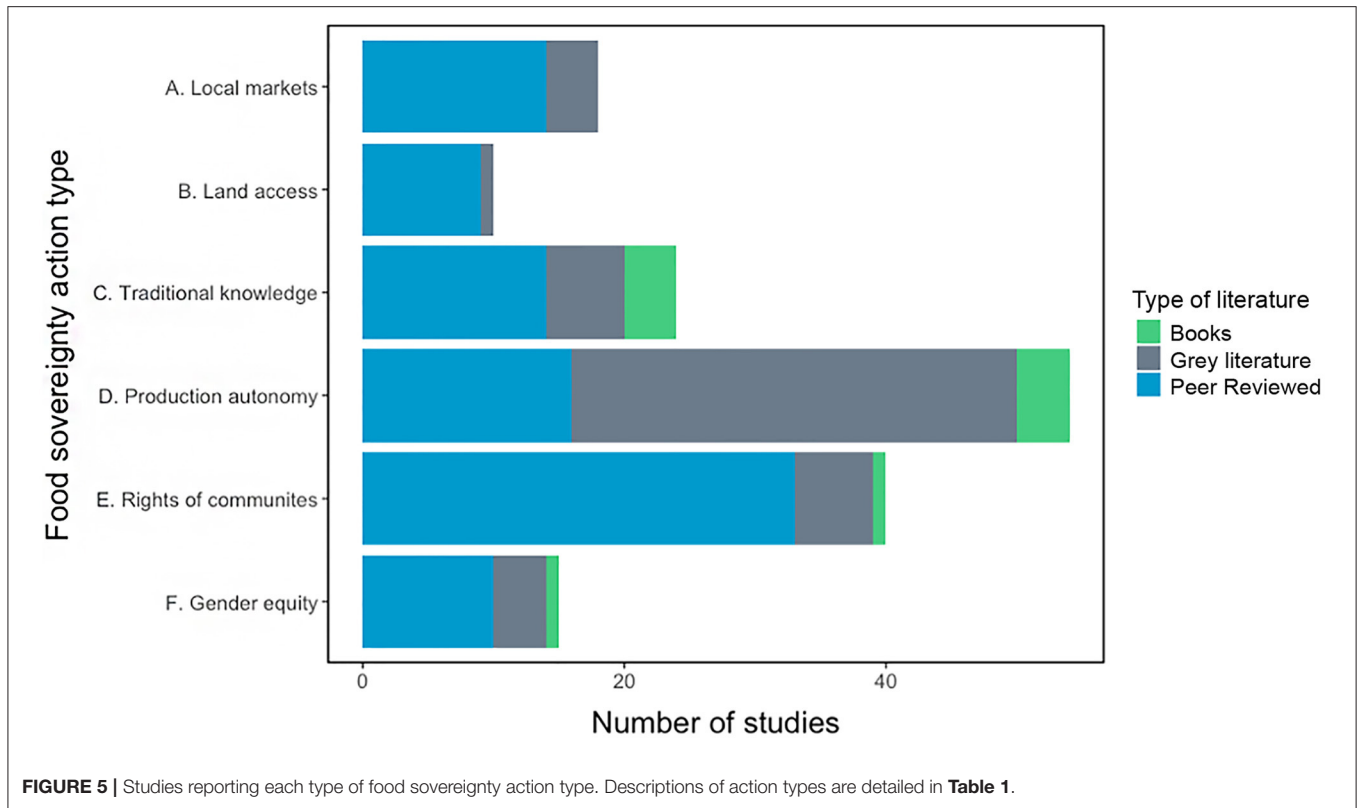


FIGURE 2 | Publication year of studies on the impact of food sovereignty and the right to food on FSN. Included studies were published between January 1992 and September 2018 (2018 is a partial year).

action types. Positive impacts dominated in action types D, E, C, and F. Most studies of action types A and B reported either positive or reverse positive results as well, but there was a greater representation of studies reporting neutral impacts in those two action types. The sole study reporting a negative impact for FSN was in action type A (Supporting local producers and/or protecting local markets; **Figure 6**). In the research on food sovereignty,

literature types concentrated on different action types. The majority of gray literature (62% of studies) concentrated on increasing autonomy over the production process through agroecological production practices (action type D). Meanwhile, the majority of peer-reviewed literature (34% of studies) focused on asserting/expanding the social and economic rights of producer and consumer communities (action type E).





Supporting Local Producers and/or Protecting Local Markets (A)

A central tenet of food sovereignty is the right to local and community control of food and agricultural markets, particularly in response to forces of globalization (LVC, 2007). Our review included 18 studies that assessed the impact of this type of action on FSN. Of those, 13 reported either a positive or reverse positive impact, one reported a negative impact, and 4 reported no impact; it was the only action type for which positive results did not overwhelmingly dominate. Still, positive results were most common. Cases of positive impacts include, among others, a study of the perceived impacts of a public purchasing program in Mato Grosso, Brazil, implemented by food sovereignty proponents. In this case, small- and medium-scale farmers reported that the public purchasing program granted them autonomy from commodity markets where they were unable to compete with larger agribusinesses (Wittman and Blesh, 2017). Another study in Guatemala found that farmers strengthened their food security by combining traditional *milpa* farming practices and off-farm employment opportunities within rural areas, giving them more flexibility to invest in their local food systems (Isakson, 2009).

Addressing Inequities in Land Access and Confronting the Process of Land Concentration (B)

Five studies on the impact of land tenure report reverse positive impacts, where a loss of tenure resulted in a decrease of FSN, while four studies reported the positive effects of increasing land access for FSN, and one study reported no impact associated with this action type. Encroaching shrimp production in Khluna, Bangladesh decreased access to land and labor opportunities for landless workers, resulting in reduced food access (Paprocki and Cons, 2014). For Maasai pastoralists in Olgos, Kenya, a policy shift from community land tenure to individual land titles resulted in fragmentation of grazing lands, which undermined food security along with social structures and ecosystem resilience; work is now underway to restore community land tenure (Tiampati, 2018). Conservation policies can also restrict access to land for agriculture, hunting and gathering with negative impacts on FSN, as documented in Oaxaca, Mexico (Ibarra et al., 2011) and Sulawesi, Indonesia (Siebert and Belsky, 2002). This last case reported a positive impact on FSN, documenting how farmers organized to take back the right to practice shifting cultivation in an Indonesian national park, increasing their food supply and security.

Other studies document cases in which communities have gained or strengthened land tenure, with positive impacts on FSN. Members of two Indigenous groups in the state of Minas Gerais, Brazil, joined forces to purchase land, which opened opportunities to produce food and restore ecocultural traditions (Rocha and Liberato, 2013). Across British Columbia, Canada, farmers are using multiple legal structures for community land tenure initiatives, enabling them to access land that they would be unable to afford individually; this has helped increase supplies of fresh fruits and vegetables in both rural and urban communities (Wittman et al., 2017).

Recognizing, Valuing, and Supporting the Dissemination of Local and Traditional Knowledge (C)

Diversified farming practices informed by traditional ecological knowledge, such as incorporating livestock and wild plant harvesting, are associated with greater nutritional diversity. The 24 studies in this action type reported either positive ($n = 17$) or reverse positive impacts ($n = 7$) in multiple locations, from northwestern India (Bisht et al., 2018) to Pohnpei, Micronesia (Englberger et al., 2013), to an Indigenous community in South Dakota, United States (Ruelle et al., 2011). In some cases, formal education programs designed around traditional ecological knowledge provided students with both actionable farming techniques and a sense of broader possibilities for meeting FSN needs (Chollett, 2014; Seminar et al., 2017; Mier et al., 2018). Although in this section we only count studies involving valuing local and traditional knowledge as main action type, this can also imply promoting gender equity, as documented in several villages in South Asia (Mazhar et al., 2007) (and described in action type F, below), and increasing autonomy over the production process through agroecological production processes (action type D, below).

Increasing Autonomy Over the Production Process Through Agroecological Production Practices (D)

Agroecological practices include a wide array of methods and technologies that decrease farmers' reliance on external inputs by instead taking advantage of ecological functions (Wezel et al., 2014). Examples of practices include increasing on-farm nutrient cycling with compost and cover crops, or controlling pest populations with crop diversity. A total of 49 studies were found with positive impacts on FSN, whereas three studies reported no impact and two studies reported reverse positive impacts. Many studies in this category document farmer-researcher collaborations to develop or apply agroecological methods in a particular context. For example, Indigenous gardeners in northern Ontario, Canada found ways to grow potatoes and bush beans without the use of greenhouses, achieving comparable yields to high-input agriculture (Barbeau et al., 2015). In Cuba, facing a shortage of synthetic fertilizers, farmers, and researchers have developed a suite of ecological soil management practices that significantly improved both yields and farmer autonomy; the success of this approach is documented in both rural (McCune et al., 2011) and urban (Leitgeb et al., 2016) parts of Cuba. An in-depth case study of several families dedicated to agroecological production in the Sierra Sur of Ecuador found that agroecological practices decreased input costs while increasing produce quality, with positive FSN impacts for the families and their communities (Ochoa Minga and Caballeros, 2016).

For many Indigenous communities, adopting agroecological production practices is inseparable from the work of valuing and reviving traditional knowledge and practices (although counted only in this action type for consistency). Researchers working in Yucatan, Mexico saw promising preliminary results in their project that coupled agroecological practices with participatory action research to address seemingly intractable food insecurity (Putnam et al., 2014). In case studies of agroecology projects in four communities in Guatemala, researchers documented not

only improved FSN outcomes, but a greater sense of autonomy and self-esteem among many participating families, and an increased capacity for collective action among participating communities (Salazar and Caballeros, 2016).

Within this action type, several studies documented cases in which one key agroecological practice—cultivating diverse crops—positively impacted FSN. There is evidence for a positive impact of diversification or conservation of Indigenous crops on FSN in places ranging from the Patagonian steppe in Argentina (Eyssartier et al., 2015), the Tolon-Kumbungu district of Ghana (Quaye et al., 2009), and multiple locations in Bolivia (Jacobi et al., 2017) and Guatemala (Salazar and Caballeros, 2016).

Asserting/Expanding the Social and Economic Rights of Producer and Consumer Communities (E)

This action type concerns the democratic processes and popular movements that aim to expand rights for both producers and consumers. Twenty six studies reported positive impacts involving communities who effectively increased access to fresh fruits and vegetables by campaigning for city ordinances in several North American urban areas (Minkler et al., 2018), collectively advocated for changes in existing food aid systems (Miewald and McCann, 2014), or created innovative produce distribution mechanisms (Block et al., 2012; Kato and McKinney, 2015; Lagisetty et al., 2017).

Ten studies investigated cases in which a lack of social and economic rights constrains people's ability to achieve food and nutrition security, coded as reverse positive impacts. In Haiti, one study reported that poor people's food preferences were shifting toward more processed and less nutritious foods, and that social inequities, especially race and class, underpinned a cultural devaluation of more nutritious peasant foods (Steckley, 2016). Similar observations on the role of marginalization based on race, indigeneity, or class in nutrition transitions were made in Ecuador (Vallejo-Rojas et al., 2016) and Sri Lanka (Townsend et al., 2017). Other studies reported that a lack of social or economic rights directly undermined FSN in other ways. Debt and patronage relations undermined food security and sovereignty among rubber plantation workers in the Bolivian Amazon (Romanoff, 1992). In northern Malawi, a lack of access to locally adapted seeds limited people's ability to achieve food and nutrition security, which was exacerbated by power asymmetries and anticompetitive actions by agri-food companies posed as interventions to promote food security (Bezner Kerr, 2013).

Promoting Gender Equity (F)

Out of 15 studies in this action type, 12 reported evidence of the positive impact that women's empowerment had on FSN across many geographic and economic contexts. In Uruguay, technical assistance grounded in feminist and agroecological perspectives proved effective at improving FSN, in part because women favored diversification of crops and household livelihood activities (Oliver, 2016). Interventions designed to promote maternal autonomy and decision making resulted in better child health outcomes in Indonesia (Agustina et al., 2015) and Nepal (Cunningham et al., 2015). Two studies reported negative

outcomes for FSN due to lack of women's empowerment. Among Ugandan women dairy farmers, the introduction of a forage chopping tool eased labor demands, but women were generally unable to translate gains in efficiency into gains in FSN because they had to spend saved time in activities as defined by their husbands (Kiyimba, 2009). Another set of case studies in Georgia and South Africa documented ways in which violence against women impeded FSN (Bellows et al., 2015). A report from the NGO ActionAid Brazil detailed how agroecology projects often encounter limits in the form of strict gender roles and other cultural limitations imposed by men, and documented some successes in overcoming those limitations (Lopes and Jomalini, 2011).

Impacts of Right to Food Actions

We found 52 studies documenting the impacts of the right to food for FSN and they involved all action types. The greatest number of studies ($n = 16$) documented action type A, advancing physical and economic access to adequate food through appropriate actions by governments and non-state actors (Figure 7), with the impacts of Creating and supporting local and regional markets to make food accessible (action type C) for FSN having the fewest reports ($n = 4$ studies). The impact for FSN was not equally positive across right to food action types. Reports were entirely positive (or reverse positive) in action types C, D, E, and F, whereas neutral results were only found in action type A and negative results were found in action types A, B, D, E, and F (Figure 8). Gray and peer-reviewed literature in the right to food focused on different action types. Gray literature was entirely concentrated on three action types: B (fulfilling human rights that affect food access, availability, and utilization), C (creating and supporting local and regional markets to make food accessible), and D (advancing the rights and capabilities of marginalized groups to produce and access food. Much of the peer reviewed literature concentrated on action types A (advancing physical availability and economic access to adequate food through appropriate actions by governments and non-state actors) and B (fulfilling human rights that affect food access, availability, and utilization).

Advancing Physical and Economic Access to Adequate Food Through Appropriate Actions by Governments and Non-state Actors (A)

This action directly focuses on the outcomes of projects and programs by governments or other actors to increase access to food. In this sense, the action could be seen as not substantially different than the "access" pillar of food security, yet the studies reviewed reveal the strong equity dimension that the right to food contributes to the attainment of food security and nutrition. The majority of studies reviewed under this action are, as is to be expected, from those countries and regions that have already implemented government policies on the right to food or on food access through government intervention, including Brazil, India, the United States, South Africa, and Australia.

Studies reported mainly reverse-positive and negative effects, with few positive effects of this action type for FSN. Six studies reported on the reverse-positive effects of this action type.

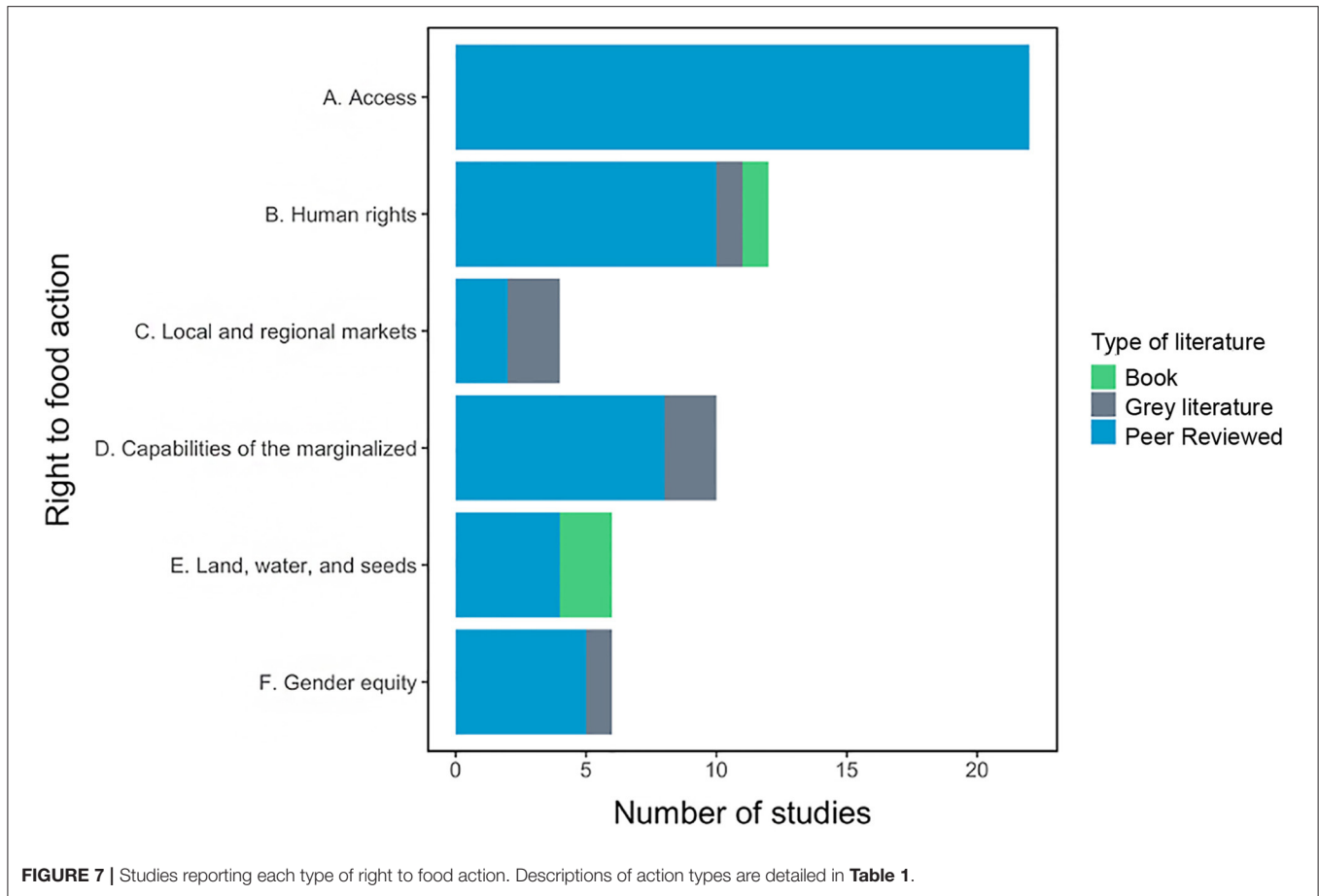


FIGURE 7 | Studies reporting each type of right to food action. Descriptions of action types are detailed in **Table 1**.

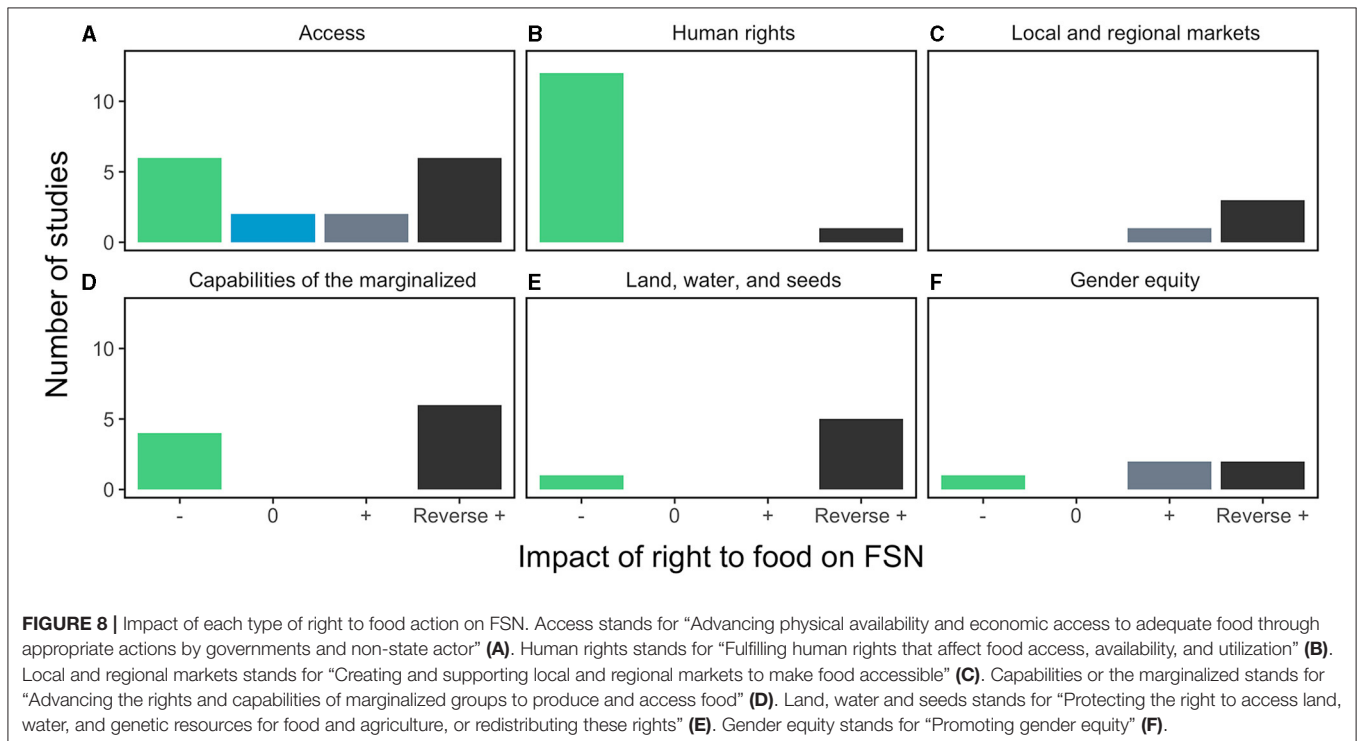


FIGURE 8 | Impact of each type of right to food action on FSN. Access stands for “Advancing physical availability and economic access to adequate food through appropriate actions by governments and non-state actor” (A). Human rights stands for “Fulfilling human rights that affect food access, availability, and utilization” (B). Local and regional markets stands for “Creating and supporting local and regional markets to make food accessible” (C). Capabilities or the marginalized stands for “Advancing the rights and capabilities of marginalized groups to produce and access food” (D). Land, water and seeds stands for “Protecting the right to access land, water, and genetic resources for food and agriculture, or redistributing these rights” (E). Gender equity stands for “Promoting gender equity” (F).

In Uganda, there were negative outcomes for children's food security in privately operated and unregulated children's homes where the right to food was not respected (Olafsen et al., 2018). A study in India found awareness of the right to food as a basic right and key factor for FSN is often missing, due to a lack of its inclusion in public programs (Mathur and Mathur, 2015). Also, not guaranteeing the right to food through policies or state programs had serious health consequences for *quilombola* communities (settlements established by former slave communities of African descent) in Brazil (Ferreira et al., 2011). Strikingly, six studies reported negative impacts of this action type on FSN. In India, programs to address food security served to displace previous food habits, with negative effects on FSN (Murty, 2018). Another study highlighted how the potential for private-sector subsidized programs intended to provide resources for food security could be subverted for commercial gains (Moran et al., 2017).

Frequently, studies reported positive impacts of school feeding programs for child food security and nutrition. In the United States, subsidized school meal programs that featured healthier meal options for food insecure children succeeded in maintaining student participation (Vaudrin et al., 2018), and instituting standards for the nutritional quality of meals changed the types of foods selected by students (Schwartz et al., 2015; Brewer et al., 2016). In San Diego, US, strikingly high levels of food insecurity could have been addressed by government programs, but only through recognizing the challenges of underserved populations (Smith et al., 2017). In other countries such as Colombia, managerial weaknesses in school feeding programs were related to a weak commitment to recognizing the right to food (Diaz et al., 2011).

Fulfilling Human Rights That Affect Food Access, Availability, and Utilization (B)

Respecting human rights as a prevailing condition for FSN was evident in 12 studies indicating food insecurity among those populations denied their fundamental human rights, accompanied by one study reporting a reverse-positive effect of this action type on FSN. In Canada, the occurrence of food insecurity among economically marginalized populations including women, Indigenous people, and children was nearly five times higher than in the general Canadian population, suggesting that intersecting axes of oppression negatively affect FSN (Normen et al., 2005). In three countries in sub-Saharan Africa, HIV/AIDS prevalence and access to treatment has been shown to influence human capital and the agency to achieve food security, with a strong disadvantage for female-headed households aiming to access key labor inputs for growing food (Curry et al., 2007).

Food deprivation is not merely a biological condition, but has psychological and social elements, including fears, learning deficiencies and difficulties in performing daily activities (Hamelin et al., 1999). The high prevalence of food insecurity in the Sergipe community of Grande Aracaju, Brazil was associated with precarious living conditions including poor sanitation and access to health services (Andrade et al., 2017). Along similar lines, high food insecurity in Mexico was characterized

by lower well-being, lower education levels, disability of household members, and lack of support from social welfare programs (Mundo-Rosas et al., 2014), and in India, caste-based discrimination in several districts impeded access to food and nutrition security (Thorat and Lee, 2008). These observations underscore how the success of right to food programs is tied to the realization (or lack thereof) of other basic rights, and mediated by power relations and participation in decision-making, with specific implications for marginalized populations (Kravva, 2014).

Creating and Supporting Local and Regional Markets to Make Food Accessible (C)

Our review included four studies of this action type, with three reporting reverse-positive effects and one reporting positive effects. An example of the capacity of local markets to ensure food security was evidenced in a study of the San Lorenzo village in the Bolivian lowlands (Hospes et al., 2010) where Chiquitane people have secured access to food, land and resources through reciprocity and other social relations and practices that provide labor for different activities. In other cases, governments have undertaken innovative measures to implement the right to food by mandating that state-run schools purchase food produced on family farms through regionally-based public procurement programs. Across Brazil, this policy has improved food availability for children as well as the livelihoods of family farmers (Schwartzman et al., 2017). Also, informal markets are increasingly being shown to be critical to food security—an important insight given that in many countries these markets are not legally allowed or encouraged. In Dar es Salaam, egg sales in informal markets generated income for local communities while allowing community consumers to access more affordable and higher quality eggs compared to those found in supermarkets (Wegerif, 2014).

Advancing the Rights and Capabilities of Marginalized Groups to Produce and Access Food (D)

This group of studies documents cases in which an expansion of human rights among marginalized groups leads to increased access to food or the means to produce it, and cases in which a lack of human rights prevents marginalized groups from producing or accessing sufficient food ($n = 6$ studies). In India, information technologies used in a public program promoted better access to food aid, as it gave people more freedom to choose how and what to use (Rajan et al., 2016). Also in India, positive food security and health benefits among poor, rural communities were attained through efforts to revitalize traditional Dalit foods, including through media campaigns on the value of millet-based foods, promotion of recipes and cooking classes, development of a millet processor, and mobile biodiversity festivals (Salomeyesudas et al., 2013). A similar project in Peru helped Indigenous people revitalize their knowledge, crop diversity, and food related practices, leading to some improvements in nutrition and food security (Damman et al., 2013). Reverse-positive effects of this action type on FSN were reported in Ghana, where dumping of commodity rice from countries that can produce it more cheaply, combined with

decreased governmental support for smallholders growing rice, has decreased the profitability of local farms and thus increased the food insecurity of local farming families (Suárez, 2013).

Studies of the success of food relief initiatives after emergencies may show outcomes that do not sufficiently implement a right to food approach, rendering a negative impact on FSN reported in four studies in this review. After a major landslide disaster in 2010 in the Bududa district of Eastern Uganda, some affected households resettled in the Kiryandongo district in Western Uganda. Food security was not uniform, and those with access to land were most able to access food and income (Nahalomo et al., 2018). Another study demonstrates that factors such as HIV/AIDS status may be a determinant of marginality, aggravating not only the capacity to work and receive income, but also the ability to participate in solidarity networks, enhancing the negative outcomes of marginality for people's food security (Kalofonos, 2010). Lastly, protected area policies that limit Indigenous peoples' access to their traditional territories may serve to increase their vulnerability, resulting in negative outcomes for food security, as was shown in a study of the Bribri people in La Amistad, Costa Rica (Sylvester et al., 2016).

Protecting the Right to Access Land, Water, and Genetic Resources for Food and Agriculture, or Redistributing These Rights (E)

Most studies in this action type ($n = 5$) involved cases where reduced rights to the means to grow, raise and harvest food negatively impacted FSN. In central Uganda, rampant land evictions due to increased land sales between 2006 and 2014 resulted in widespread insufficient access to food (Nahalomo et al., 2018). In Cameroon, increasingly resource-constrained populations had less access to wild foods that had formerly been important components of their diets; instead, they were increasingly resorting to cheaper (more refined, less nutritious) imported food, or to eating less frequently (Sneyd, 2013). In South Africa, commercial fishing vessels could disrupt key fisheries providing protein for local people and the poor, whereby governance systems addressing conflicts between large vessels and small fisherfolk have the potential to significantly improve food access (Isaacs, 2015). In contrast, smallholder farmers in El Salvador provide testimony as to how reinforcing their intimate expertise in managing specific agricultural environments improves FSN and enhances traditional knowledge about growing food (Millner, 2017).

There may be highly variable outcomes associated with agricultural development projects if disparities in power and access to resources are not directly addressed. Within the Southern Agricultural Growth Corridor of Tanzania, those farmers actively participating in and benefiting from the transfer of technologies to increase yields were those that were relatively well-endowed with land, access to water, investment capital, and some level of social organization (Tumusiime and Matotay, 2014). Researchers in Kenya identified differential access to resources as a human rights failure, where the limited access to decision-making power on the part of women-headed farming

households was the main constraint to addressing food security (Julliet et al., 2007).

Promoting Gender Equity (F)

We found five studies assessing how equity and rights for women impact FSN, with two positive and two reverse-positive reports. In an oral history study from Honduras, women recounted that they occupied land in order to feed themselves and their families. This had far-reaching effects on the food security of the community and other aspects of their empowerment, including political participation (Suárez, 2013). In the Indigenous communities of the Gwich'in nation, Northwest Territories, Canada, the consumption of traditional foods was important for the food security of women, although their availability is perceived as threatened by climate change (Kuhnlein et al., 2006). In Nepal, most women-led households perceived themselves to be food insecure at different levels and had no property rights. However, they accessed land for farming and used various adaptation mechanisms to contribute to food security (Bhawan, 2015). In terms of reverse-positive effects, in three out of five children's homes for girls in Uganda, the realization of the right to adequate food for the girls was not met (Vogt et al., 2016). In India, caste, clan, and socioeconomic status were found to affect the ability of women to access public food distribution systems and thus their right to food; this was aggravated by gendered relations, resulting in negative outcomes for women's food security (Pradhan and Rao, 2018).

Negative and Neutral Impacts on FSN

While the overwhelming majority of studies reported a positive relationship between rights-based approaches and FSN outcomes, studies that report neutral or negative impacts on FSN also provide valuable insight into the efficacy of these approaches, and the barriers to their effective implementation.

In many of the 14 studies reporting neutral impacts of food sovereignty on FSN, the intervention of choice was insufficient for overcoming larger structural barriers to realizing FSN. In northern Nicaragua, for example, many farmers participating in a coffee cooperative's initiative to establish home gardens saw the potential benefits to their household food security, but expressed doubt about their ability to maintain gardens in the long-term given the expense and labor required (Boone and Taylor, 2016). Two studies, in the United States and Canada, pointed to the mixed effects of urban gardening and farming projects that provide healthy food but also contribute to rising costs of living and gentrification that excluded the most food-insecure people (Miewald and McCann, 2014; Vitiello et al., 2015). The sole study reporting negative results similarly cites constraints on farmer decisions and livelihoods that could not be overcome by food sovereignty interventions. For impoverished farmers in the Telengana region near Hyderabad, India, local and agroecological modes of farming promoted by an NGO were often insufficient to meet household needs. Farmers were often constrained by small land holdings and low social status, and in many cases, growing market-oriented monocultures of cotton or corn presented a better option to provide cash income (Louis, 2015).

In the right to food review, the nine studies reporting negative or neutral impacts of the right to food on FSN describe ineffective policies and insufficient government interventions. Studies in two locations in India reported that household food subsidies were insufficient and exacerbated local state corruption (Garg, 2006; Jha et al., 2013). In South Africa, schools provided an important point of food access for girls, but also accelerated unhealthy transitions in body image and eating behaviors (Stupar et al., 2012). One study in Greece documented the ways emergency food assistance programs conflict with political efforts to address the underlying causes of poverty and hunger (Kravva, 2014). The studies reporting negative and neutral outcomes point to the possibility that poorly implemented right to food programs can have unintended consequences, and are in some cases simply insufficient to impact FSN.

DISCUSSION

This review compiles a broad set of cases in which food sovereignty and right to food approaches have strengthened food security and nutrition outcomes, demonstrating a general positive impact of food sovereignty and the right to food on FSN. It also includes several studies in which a loss of rights, or a failure to ensure rights, resulted in negative FSN outcomes. These studies are widespread, based on data from all continents except Antarctica, and documented in both peer-reviewed and gray literature. Publication bias typically favors positive results, so it would be misleading to judge the efficacy of rights-based approaches by the ratio of positive or reverse positive to negative or neutral impacts. However, the fact that reports of food sovereignty and the right to food supporting FSN are widespread across geographic regions in both the gray and peer-reviewed literature indicates that these approaches hold the potential to strengthen FSN in a wide range of contexts. Taken together, these studies indicate that rights-based approaches can be used to solve urgent problems of food insecurity and malnutrition.

Future research should focus on how, and under what circumstances, these rights-based approaches positively impact FSN, or fail to do so. The few observed neutral effects, and even fewer negative effects, of rights-based approaches on FSN are informative. In the food sovereignty literature these were largely cases in which a food sovereignty-oriented intervention was insufficient to overcome larger structural barriers to realizing FSN. Thus, neutral and negative outcomes of case studies should not be seen as an indication that the approach does not work. It is not the case, for example, that urban gardens and local food projects exhibiting mixed results (such as the gentrification documented in Miewald and McCann, 2014) cannot have positive impacts on FSN. Rather, their results may be limited because there are structures and forces in place that prevent them from reaching their full potential. Pre-existing forms of discrimination that fall along categories of difference such as race, indigeneity or ethnicity, class, gender, and ability, among others, can be so entrenched that a policy or intervention focused rights closely tied to FSN is not broad enough to overcome these oppressions. For those whose social locations are placed at the intersection of multiple oppressions, the structural barriers

to realizing FSN are even higher (Crenshaw, 1991; Nyantakyi-Frimpong, 2017). This indicates a need for intersectional analyses and attention to human rights and entitlements beyond those most directly linked to food (i.e., the right to housing, health and healthcare, education, and so forth), and to power relationships at multiple scales.

Similarly, the lack of studies on land access and tenure (food sovereignty action type B) and gender equity (food sovereignty action type F) should not be taken as an indication that these aspects of food sovereignty matter less for FSN outcomes. Instead, this review shows that there is an assessment gap in both research and policy with respect to these two action types. The same is true for the relatively few studies on access to markets (right to food action type B), which indicates market engagement is understudied in regards to realizing the right to food. The low number of studies in these action types indicates a particular need for research linking human rights-based FSN interventions to land access, gender equity, and engagement with markets.

Rights-based approaches to FSN, including food sovereignty and the right to food, hold the potential to advance the slow and seemingly intractable progress toward eliminating hunger and malnutrition. Current approaches to food security and nutrition are highly unlikely to meet intergovernmental targets by 2030, including the FAO's Zero Hunger target, and the food security and nutrition targets in the Sustainable Development Goals (FAO, 2019). Rights-based approaches like food sovereignty and the right to food differ from other approaches in that they work on the underlying set of human rights and entitlements that allow people and communities to achieve adequate food security and nutrition, in contrast to policies and approaches that, for example, focus solely on food availability and affordability (e.g., increasing food production or lowering food prices) or consumption (e.g., nutrient supplementation). This review includes ample evidence from across the globe that rights-based approaches can and do positively impact FSN in a wide range of contexts, and can potentially contribute to progress on intergovernmental targets in ways that increasing production and expanding supplementation cannot.

The collective scope and diversity of case studies in this review—documenting positive impacts of rights-based approaches, negative impacts of the loss of rights, and the limitations of some actions that addressed one kind of right but were unable to overcome lack of rights of another kind—suggest a course of action for rights-based approaches. Realizing FSN requires multiple efforts to address the different ways in which communities are made vulnerable, their agency to respond to changing conditions is constrained, and structural forces may limit their ability to secure adequate and culturally appropriate food and livelihoods.

CONCLUSIONS

This review searched for evidence of the contribution of rights-based approaches—food sovereignty and the right to food—to FSN. Overall, we conclude that the majority of reviewed studies found that food sovereignty directly improves FSN, that processes impairing food sovereignty and the right to food negatively impact FSN, that efforts to improve FSN through rights based

approaches can be limited by structural barriers difficult to overcome, and that impacts of the right to food on FSN are context-dependent. Most studies regarding food sovereignty examined the effect of increasing autonomy over the production process through the adoption of agroecological practices, with a positive effect on FSN. Comparatively, few studies focused on the role of land access, local markets, and gender equity to advance FSN. Literature in the right to food concentrated on advancing physical availability and economic access to adequate food through appropriate actions by governments and non-state actors, with mixed effects on FSN; and on fulfilling human rights that affect food access, availability, and utilization, with some negative impacts on FSN. Studies reporting negative or neutral effects of rights-based approaches involved unintended consequences regarding enhancement of structural barriers or displacement of former food habits and cultural norms that further impaired FSN. These constitute important cautionary examples for planners of rights-based interventions in land and food systems. There is a need for research that assesses the factors that increase or decrease the efficacy of rights-based approaches to FSN, and that describe the conditions for the changes. This study provides clear indications on different action types articulated by rights-based approaches that result in positive outcomes for FSN. However, more studies are needed to address dynamics determinants to equal access to productive resources such as water and land for men and women, intersectional approaches to FSN; and that detail how, and under what circumstances food sovereignty and the right to food positively impact FSN—or fail to do so. This is the first review to assess whether rights-based approaches have positive impacts on FSN, and adds weight to recent global calls for further research investment in rights-based approaches and their importance for FSN, and other benefits beyond direct human well-being (HLPE, 2019).

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: https://github.com/devonds/rights_and_food_security.

AUTHOR CONTRIBUTIONS

DS coordinated the review process and prepared the final draft. MC-S led the coding process, contributed to concepts

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and analysis, assisted in preparing the final draft, designed charts, and revised the manuscript based on feedback from anonymous reviewers. BG-H developed the concepts and methods for the review, prepared the first draft of the manuscript, and contributed to screening and keying the literature. NB contributed to screening and coding and provided feedback on the final draft. AB contributed to coding, provided feedback on the final draft, and revised the manuscript based on feedback from anonymous reviewers. RB contributed to coding, provided guidance on methods and concepts, and provided feedback on the final draft. JB contributed to coding and provided feedback on the final draft. EB contributed to coding, provided input on methods, and provided feedback on the final draft. MF contributed to screening and coding. DJ contributed to coding, provided input on methods, and provided feedback on the final draft. TK contributed to coding. SK contributed to coding, provided input on analysis, and contributed to the final draft. AG contributed text from the HLPE report. AW contributed text from the HLPE report. HW contributed initial concepts and methods and provided feedback on the final draft. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2021.686492/full#supplementary-material>

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