



Seed Diversity, Farmers' Rights, and the Politics of Re-peasantization

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Abstract. Over the last decade, the practice of using and exchanging locally adapted seeds has become a focal site of grass-roots organizing in the rural areas of Europe, spear-headed by the mobilization of seed networks in different countries and regions. Countering the restrictive scope of existing seed regulations, these networks are composed of family farmers, collectives, farmers movements, researchers, agronomists, and non-governmental organizations that are actively engaged in the development of farmer-based seed systems as a source of both peasant autonomy and environmental sustainability. Within the context of a broader struggle to overcome the multiple crises of the agro-industrial model, the reproduction of farm-saved seeds is closely associated with the promotion of agro-ecological alternatives that enhance integration, resilience, and livelihood security. Correspondingly, the goal to diversify food and seed systems puts renewed emphasis on the role of peasant innovation and localized consumption in processes of agrarian transformation. Combining sustainable farming methods, participatory forms of knowledge and de-commodified circuits of exchange, these initiatives reassert the centrality of the social and ecological role of agriculture in Europe beyond the reductionism of market-based approaches to rural change.

Introduction

Over the last decade, the practice of using and exchanging locally adapted seeds has become a focal site of grass-roots organizing in the rural areas of Europe, spear-headed by the mobilization of seed networks in different countries and regions. The first network, Red de Semillas, was established in Spain in 1999, followed shortly thereafter by the creation of Rete Semi Rurali in Italy in 2001, and Réseau Semences Paysannes in France in 2003. Similar initiatives have also emerged in Austria (Arche Noah), Portugal (Colher Para Semear), Switzerland (Pro Specie Rara), Hungary (Védogyelet/Protect the Future), Germany (IG Saatgut), Bulgaria (Agrolink), Romania (EcoRuralis) and Scotland (Scottish Crofting Federation) among others. Bringing together family farmers, collectives, farmers movements, researchers, agronomists, and non-governmental organizations, these networks are actively engaged in the development of on-farm seed management systems that allow producers to diver-

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sify their farming practices, reduce costs, and strengthen control over their resource base.

As an alternative to the multiple crises of the agro-industrial model, the reproduction of farm-saved seeds is closely associated with the promotion of agro-ecological practices aimed at recycling nutrients and energy on-farm, enhancing soil organic matter and biological activity, and optimizing interactions, integration and stability (Gliessman, 1998; Altieri and Toledo, 2011). Under highly variable climatic and market conditions, the use of different crops on the same farm, different cultivars of the same crop, and heterogeneous cultivars, reduces the risk of crop failure, generates sustained yields with lower costs and intake requirements, while also providing for more varied dietary and livelihood opportunities (Ceccarelli, 2009; Lockie and Carpenter, 2010; Altieri and Toledo, 2011). Correspondingly, the genetic heterogeneity of local landraces allows farmers to cope with fluctuating pest and disease pressures, and work in complex agro-ecosystems characterized by variation in soil qualities, topography, and water availability. As the product of diverse breeds produced and maintained by farmers over several cultivation cycles, local seeds are the vehicle of recombined genotypes and newly formed diversity that co-evolve with changing socio-cultural practices and needs (Visser, 2002; Chable et al., 2009).

Under the same rationale, the transition to agro-ecology puts renewed emphasis on the role of peasant innovation in processes of agrarian change (Altieri, 1995). More specifically, as a counterpoint to the privatization and specialization of agricultural research, the mobilization of seed networks provides an arena for farmers to work collectively at the dynamic management of agricultural biodiversity by means of shared experiences of participatory plant breeding, collaborative research, and farmer-to-farmer exchange. Reflecting the attempt to overcome the 'epistemic rift' (Schneider and McMichael, 2011) brought about by the commodification of agricultural nature and the displacement of food and seed production off-farm (Kloppenborg, 1988), these initiatives foster the development of a decentralized and participatory model of agricultural innovation based on a plurality of forms of knowledge that can be reciprocally accessed, exchanged and reproduced.

In a parallel development, the reproduction of locally adapted seeds and crop varieties enhances the ability of producers to access diversified circuits of distribution and consumption embedded in specific social, cultural and territorial contexts. Ranging from solidarity purchasing groups, community-supported agricultures and box schemes, to systems of direct sale and local market-places, these mechanisms of exchange 'unveil rather than obscure the economic, social, and environmental conditions of production' (Fonte, 2010, p. 9) by promoting shared values, direct social contacts, and short links and distances between producers and consumers. Premised on the articulation of shared notions of just price, quality, and trust that replace the need for external certification, the 'value' of local varieties becomes part of a political project centred on the socio-ecological reproduction of local economies and environments beyond the reductionism of market-based approaches to rural development.

Within the context of newly emerging grass-roots initiatives that seek to re-localize control over the organization of food production, distribution, and consumption, the mobilization of seed networks can be characterized as a concrete expression of the *practice* and *politics* of re-peasantization in the rural areas of Europe. On the one hand, the use of locally adapted seeds allows producers to sustain autonomously their resource base and engage in a mode of farming that is 'distinctively different' from entrepreneurial and capitalist agriculture (Van der Ploeg, 2010, p. 22). On

the other hand, by providing farmers with de-commodified forms of access to their means of reproduction, the mobilization of networks of seed and knowledge exchange promotes the active reconstitution of the 'peasant condition' (Van der Ploeg, 2008) as a collective political effort sustained by relations of reciprocity and co-operation. In this respect, the emergence of seed networks politicizes the relationship between peasant autonomy and agro-ecology beyond the level of the individual farm unit, thus redefining the social, cultural and ecological roles of farming and farmers' rights as a source of both food sovereignty and environmental sustainability.

The Politics of Re-peasantization

According to Jan Douwe van der Ploeg (2008, p. 155), the emergence of processes of re-peasantization constitutes a 'far reaching shift' that is currently reshaping the European countryside. As an alternative to the concentration of corporate power in the food system, and the consequent asphyxiating effects of direct dependency on industrial and financial capital, the reconstitution of the peasantry reflects a widespread struggle for autonomy and survival in a context of increasing rural marginalization and generalized economic depression. Specifically, Van der Ploeg defines the 'peasant condition', or 'principle', as the product of a set of strategies aimed at distancing the unit of production from up-stream markets while linking it to diverse circuits of exchange and output markets.¹ These include the creation and development of a 'self-controlled resource base,' the 're-grounding' of farming in nature, and the promotion of labour intensification, craftsmanship, and multifunctionality.

The current transition to peasant-like ways of farming is thus closely associated with the mobilization of new forms of self-provisioning, knowledge, and labour that allow for increased self-organization and control over the production process. Within this framework, and in stark contrast with the dominant model of agro-industrialization, peasant farming is understood and practiced as a form of 'co-production' – premised upon 'the interaction, and mutual transformation of social and material resources which constantly differentiates and transforms agriculture' (Van der Ploeg, 2010, p. 13). Correspondingly, the promotion of 'self-provisioning' and lower-input techniques reasserts the centrality of local cultural repertoires, craftsmanship, and skill-oriented technologies in peasant-led patterns of innovation. Reconstituting the 'organic unity of mental and manual labor' in the process of production (Van der Ploeg, 2008, p. 154), this reskilling of farming practices is aimed at enhancing the 'reproductive value' of agriculture's resource base (McMichael, 2012, p. 115) such that autonomy is further enlarged.

To a large extent, the development of peasant alternatives is made possible by the mobilization of networks involved in the reproduction and distribution of locally adapted, farm-saved seeds. To be sure, the use of local varieties underpins the viability of peasant agriculture in so far as it allows producers to cut costs, diversify their farming practices, reduce dependency on agro-industries, and engage with the specificity of local ecosystems as the product of distinct, culturally mediated processes of socio-natural change (Swyngedouw, 2000; Castree, 2001). As both product and means of (re)production, local seeds embody a dual character that links both ends of the farming process (Kloppenborg, 1988, p. 10), and constitutes a fundamental component of peasant autonomy. By the same token, the ability of individual producers to access and sustain seed and genetic diversity on-farm is contingent

upon their participation in co-ordinated initiatives of farmer-to-farmer exchange and agro-ecological innovation. The development of self-managed seed systems is, in other words, mediated by the rise of interlinked networks that ensure the availability of dynamic flows of genetic material, knowledge, and resources through relations of reciprocity and de-commodified exchange.

The Spanish seed network, for example, is composed of 17 different regional subgroups that bring together small-holders, farmers organizations, technicians, consumers and researchers committed to the recovery, use and exchange of locally adapted seeds. The network is primarily involved in the co-ordination of local and regional seed fairs, training workshops, participatory plant-breeding events, and initiatives that facilitate the reproduction of farmer's knowledge associated with the selection and conservation of local varieties (Red de Semillas, 2008). Over the last nine years, Red de Semillas has held an annual meeting, the 'Fair of Cultivated Biodiversity,' in order to create a 'political space' for the shared use of agro-ecological knowledge and techniques developed by farmers, researchers, and seed curators within different regions and communities of Spain. Correspondingly, the network has participated actively in the development of databases, publications, farmer-based seed banks, and advocacy projects aimed at enhancing farmers' abilities to access, use and distribute local seeds.

Similarly, the French network consists of over 50 farmer and national organic agriculture organizations, as well as artisans, small-holders, seed producers, and farm-seed cleaners involved in the selection, breeding and multiplication of peasant varieties. In particular, the network offers a space for farmers to work collectively on the immediate *in situ* dynamic management of agricultural biodiversity, by co-ordinating initiatives of participatory plant breeding structured in different working groups per species (wheat, corn, vegetable, fruit and fodder) (Chable and Berthelot, 2006). Premised on the combination of experiential knowledge and new scientific approaches, these experiences of 'cognitive praxis' (Tovey, 2002, p. 5) foster the development of on-farm processes of selection and adaptation that allow producers to work independently from agro-industries and the expert systems (Corrado, 2008; Borras, 2009), while countering the subordination of breeding activities to corporate objectives.²

Parallel to the technical/political work undertaken in the fields, these networks have been at the forefront of regional, national and international campaigns aimed at legalizing the use and exchange of farmers' seeds beyond the restrictive scope of EU regulations. In this respect, the mobilization of everyday practices of re-peasantization is complemented by overt forms of political organizing, with small producers across Europe seeking formal recognition of their right to manage and reproduce biodiversity on farm.

Seed Regulations and Farmers' Rights

The production and marketing of seeds are strictly regulated in Europe by specific seed trade and variety protection laws. Each member state of the European Union is required to maintain a national catalogue of officially recognized varieties as a mandatory precondition for variety release and commercialization. In order to be legally registered nationally and in the EU Common Catalogue, varieties have to meet standards of distinctiveness, uniformity and stability (DUS) and undergo testing to prove their value for cultivation and use (VCU) over a minimum two-year period.³

These procedures interlock with the system of intellectual property rights protection as set up by the UPOV (International Union for the Protection of New Varieties of Plants) Act of 1991, and are often handled by the same government agencies and integrated into the same national legislation.⁴

The adoption of standard rules for seed testing and registration has become a constraint to the conservation and development of varieties appropriate for small-holder farming in ecologically diverse conditions (Vellvé, 1992; FAO, 2004). Indeed, the high levels of genetic homogeneity and stability required for registration are closely associated with the standardization of breeding techniques that are perfected in laboratories and at research stations under 'optimal' high-input conditions outside of farmers' control. The management of variety testing is often based on the extensive application of artificial fertilizer and pesticide inputs that conceal environmental variations in the trial and favour varieties with broad adaptability and yield stability even where this has no agronomic advantage (Louwaars, 2005, p. 5; Ceccarelli, 2009). The costs involved in the registration and certification process constitute a further vehicle of diversity loss in so far as both public and private breeders tend to submit for official release only those varieties that are likely to perform well in all test locations (Louwaars, 2007, p. 58). As a whole, the regulatory framework established in the EU has led to the development of a formal seed system dominated by genetically uniform varieties that are bred to maximize yields in homogenous landscapes (through the use of pesticides, fertilizers and irrigation), as well as to meet the increasing demands of industrialized harvesting, processing, and retailing operations (Veteläinen et al., 2009).

Significantly, the criteria that regulate the management and distribution of commercial seeds are also structuring the recently created market for organic seeds. The requirement to use organic seeds in organic production was first introduced by a European Council regulation (2092/91, *OJ*, L 198, 22 July, 1991, pp. 1–15) in 1991 and went into effect in January 2004, following the mandatory establishment of computerized databases for the registration of commercially available varieties in different countries (EC 1452/2003, *OJ*, L 206, 15 Aug. 2003, pp. 17–21). In practice, these regulations make it compulsory for organic farmers to use seeds from registered varieties that were reproduced for at least one generation under organic conditions. Paradoxically, the same rules prevent organic farmers from using locally adapted seeds that cannot be included in the national databases because they do not fit conventional standards of certification (IFOAM, 2011). Combined with the institution of plant variety protection regimes that severely restrict practices of on-farm seed saving, such provisions hamper the sustainable management of crop genetic resources rather than enhancing it. Indeed, by limiting the supply of organic seeds to the short-term propagation of commercially bred varieties under conditions of 'input substitution' (Rosset and Altieri, 1997), the implementation of mandatory standards curtails the range of genetic diversity available to farmers, while deepening the separation of farming and breeding activities. Within this context, the production and distribution of organic seeds is turned into a new 'high-value' market concentrated in the hands of few corporations, further eroding the ability of small-holders to autonomously reproduce their resource base.⁵

In reaction to these challenges, the institution of seed networks has become a means through which practices that are considered central to the promotion of ecologically embedded food systems as well as farmers' autonomy can gain political visibility and legal recognition. In this respect, the Italian network Rete Semi Rurali

has been actively involved in the formulation of legislative and ministerial proposals on the exchange of seeds and the recognition of collective rights on genetic resources, both at the regional and national level. Significantly, between 2001 and 2005 eight out of 18 regional administrations have adopted laws that protect local farmers' seeds and animal breeds as heritage of the region, allowing for the creation of separate catalogues for varieties at risk from genetic erosion. Following this trend, the network has further mobilized to call for the implementation of a Ministerial Decree that would move beyond the restrictive scope of current legislation on 'conservation varieties' in order to authorize the reproduction and commercialization of farmers' seeds (Bocci and Chable, 2009).⁶ Correspondingly, the French network Réseau Semences Paysannes has mobilized against the implementation of the so-called 'Mandatory and Voluntary Contribution Scheme' in France, which entails the collection of royalties on seeds derived from certified ones. Since the adoption of UPOV 1991, the enforcement of plant breeder rights on farm-saved seeds has engendered staunch opposition in France, in so far as the practice of replanting and selecting varieties originally obtained from the market is still widespread among small farmers, accounting for 50% of self-pollinating crops (Kästler, 2005).

Over the last seven years, the transnational mobilization of seed networks has led to the creation of the 'European Coordination on Farmers' Seeds' aimed at developing common positions for the implementation of farmers' rights to save, use, exchange and sell farm-saved seeds in accordance with Articles 5, 6 and 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture.⁷ In this respect, the Coordination has been actively involved in the development of shared recommendations for the review of EU legislation on the marketing of seeds and plant propagating material, focusing on the revision of DUS criteria, as well as the protection of farmers' seeds from appropriation and genetic contamination. Correspondingly, as most of its members are affiliated with the transnational peasant movement La Via Campesina, the European Coordination has adopted the notion of 'food sovereignty' to frame its political actions and goals. Deployed to signify 'the right of people to continue being agriculturalists' and produce food that is appropriate to their unique cultural, social and ecological contexts, the concept of food sovereignty embodies a shared set of values sustained by moral economic conceptions of reciprocity, social justice, and collective rights (McMichael, 2008). This form of politics originates in the fields, and is exemplified by the multiple ways in which small-holders manage and reproduce agro-biodiversity as a fundamental component of their *peasant* way of farming.

La Verde, Spain

The goal to reproduce locally adapted seeds has characterized the work of the co-operative La Verde in Villamartín, Spain, for the last 24 years. La Verde was founded in 1987 when a group of day labourers – members of the SOC union – obtained three hectares of public land to grow food for self-sufficiency. Today, the co-operative brings together six families working on 14 hectares of land and sells the majority of its products directly through local markets and consumer associations. From the outset, La Verde adopted an agro-ecological mode of production as a way to secure a year round supply of fruit and vegetables, reduce costs, work independently from conventional markets, and counter the negative socio-environmental impacts of industrial farming (E. Perez, personal interview, Villamartín, 11 May 2011). For

the same reasons, and due to the lack of commercial varieties suited to organic agriculture, the use of local seeds for horticultural crops has become a core component of La Verde's farming practices. Over the years, the co-operative has developed the largest bank of farm-saved seeds in Spain, which currently supplies most organic small-holders in the region.

As pioneers of organic agriculture in Southern Andalucía, producers at La Verde maintain a 'holistic' approach that aims to distinguish itself from mainstream organics (cf. Guthman, 2004; Lockie et al., 2006; Luetchford and Pratt, 2011). Accordingly, to reduce dependence from all off-farm inputs – biological and synthetic – they enhance soil fertility through ecological processes of nutrient and energy recycling based on crop rotations, intercropping, fallowing, and the use of manure. Within this context, while distinct varieties from the same population are sowed at different times to disperse the risk of crop failure and extend the harvesting season, the diversification of land use through intercropping, flowering plants, and agroforestry is meant to encourage natural enemies of pests and reduce the incidence of weeds. In a similar vein, wild plants from the area are used as forage and green manures, losses are tolerated, and insect habitats are allowed to thrive as part of the farm's 'ecological infrastructure' (Scialabba et al., 2002; Luetchford and Pratt, 2011, p. 91).

In order to autonomously sustain the functional diversity of local resources, La Verde has developed an integrated system of on-farm selection, storage and multiplication of seeds. Building upon a range of cultivars collected from local small-holders and public seed banks, this system has evolved through different forms of farmer-to-farmer exchange, participatory breeding, and experimentation. Since the foundation of the co-operative, its producers have been actively involved in local and regional initiatives of seed exchange to ensure the free flow of genetic materials underlying the development of heterogeneous crops and locally appropriate varieties (see De Schutter, 2009). As new varieties are introduced in La Verde's seed bank, they undergo an initial phase of characterization and evaluation that precedes the reproduction of seeds in larger fields. In order to maintain specific traits of cross-pollinating varieties, they are planted in distant rows or partially covered at the time of flowering. Correspondingly, seeds are extracted at the end of the growing season from select fruits displaying desired characteristics in terms of size, shape, colour, plant vigor, and taste. This dynamic management of biodiversity is complemented by different methods of plant breeding and seed conservation that have allowed La Verde's producers to create, preserve and renew hundreds of varieties of horticultural crops.

Through these activities and its active participation in the Spanish seed network, La Verde has become an important hub of knowledge exchange and peasant innovation. Over the years, its members have turned it into a vibrant centre of agro-ecological training for young researchers and producers, hosting hundreds of visitors who join them to study and work, in addition to organizing workshops, talks, on-site visits, and participatory trials on the selection and management of farmers' seeds (Soriano et al., 1996). Working in collaboration with Red de Semillas and different research centres, the co-operative has also played a key role in the implementation of several experimental projects aimed at reintroducing traditional landraces in the fields and evaluate their potential for cultivation and exchange. This work has led to the production of new inventories that characterize each variety on the basis of morphological and agronomic descriptors and allow for the reproduction of knowledge associated with their use (Soriano et al., 1998).

Parallel to the development of an autonomous source of locally adapted seeds, La Verde has mobilized to sell its products through a diverse network of localized markets and consumer groups. Seeking to secure access to a system of distribution that circumvents corporate middlemen, the co-operative's members have built upon direct contacts with neighbours and local consumers, held meetings, sold produce at market stalls or through local shops, and linked up with other organic producers to create a marketing co-operative. At present, they supply several organic shops and purchasing groups on a weekly basis, in addition to distributing their seeds to small-holders and farmers groups all across Spain. In this way, La Verde is engaging in everyday practices of resistance that build upon seed autonomy and pave the way for alternative forms of production and consumption as *de facto* expressions of food sovereignty rights (Andersen and Winge, 2008).

Consorzio della Quarantina, Italy

The role played by crop genetic diversity in the development of sustainable farming methods is also exemplified by the experience of the Quarantina Consortium in the mountainous *hinterland* of the Genoa province. The Consortium was first established in 2000 by 20 Ligurian farmers committed to the preservation and reproduction of the Quarantina potato and other local varieties that were cultivated traditionally in the region. It has now grown to 480 members, including 60 producers, 60 shops and restaurants, and other affiliates such as consumer and solidarity-based purchasing groups. As a precondition for membership, all producers in the Consortium practice peasant agriculture, working on family-run farms for self-consumption or direct sale. Their produce is sold exclusively on-farm or to other members (shops and restaurants) following shared rules that allow for the development of an alternative market separate from conventional channels. Within this context, producers are guaranteed a fair price and a secure source of income, while distributors on the other end of the spectrum gain in visibility and reputation, in addition to a guaranteed supply of high-quality produce.

The evolution of this innovative system is rooted in a process of 'economic recovery' of old potato varieties that used to be widespread in the Ligurian Apennines up to the early 1960s. In order to recuperate their productivity, the rural historian and founder of the Consortium, Massimo Angelini, began by reconstructing the chain of production of seed potatoes, collecting local knowledge on where and how to plant them, as well as involving producers in the development of on-farm methods of seed selection and conservation. Through rigorous observation, experiential breeding practices, and the adoption of specific precautions against the spread of viruses or diseases, the Consortium was able to raise average yields from 1:2 to 1:10 over the course of few years, reaching an average per hectare production of 100–150 quintals. Perhaps more importantly, the adoption of techniques that are 'in the very hands of producers' (Massimo Angelini, personal interview, Genoa, 15 June 2011) has allowed for increased self-organization and control over the production process, actively separating it from dependence on external expert and input markets.

With the aim to autonomously reproduce their resource base and market access, producers organize their work according to shared rules. These require that seed potatoes be grown at an altitude of at least 800–1,000 meters above sea level, where they are less vulnerable to diseases, and sold to other Consortium members in pre-established quantities and at given dates. Correspondingly, producers of 'consump-

tion' potatoes are required to give notification of their planting, growing and harvesting methods, to use common marketing strategies (i.e. the same label and bags), as well as to assess their potential yields and expected demand. All potatoes are sold at a pre-established price of €2 per kilo, which reflects a collective calculation of average annual costs, yields, and hours of farm work. By so doing, producers are able to closely monitor the quality of their seeds and final produce, as well as to operate in an alternative market premised on relations of transparency and a fair price.

The decision to sell at a guaranteed price is closely associated with the development of direct ties and participatory alliances between producers, distributors and consumers. In this respect, the Consortium has devised specific communication and marketing strategies that focus on direct sales and on-farm visits as an opportunity for local distributors and consumers to actively engage with local producers and their work. At the same time, the distribution of all produce at the local level has promoted the involvement of many small shops and restaurants as key players in the revitalization of rural areas. Seeking to develop an alternative market *vis-à-vis* the spread of big retailers, these strategies had a significant impact in a context where, as Massimo Angelini (personal interview, Genova, 15 June 2011) puts it, the 'presence or absence of small shops many times determines the viability of small towns'.

The Consortium's distinctive approach to the socio-ecological reproduction of local economies is also epitomized by the decision to work independently from external support and certification schemes. To be sure, rather than requesting that its members adhere to official forms of certification that would validate their products from the outside, the Consortium has opted for a system of auto-certification instead. Accordingly, producers are free to farm as they like as long as they are transparent about the methods they use. These usually consist of the use of manure, manual labour, crop rotation, and pieces of farm machinery on small plots of land. Hence, the Quarantina potato is but one among many local products grown and processed by the Consortium's members – other products include different varieties of garden vegetables, wheat, corn, rose syrup, and cheese. From the production of inputs to the organization of direct sales, producers are thus able to reduce costs without relying on a system of standards that 'mortifies the diversity of good farming practices' (Angelini, 2008) while empowering external players at the expense of local users.

A crucial component of this struggle for autonomy is the reproduction and exchange of locally adapted, farm-saved, seeds. To that end, the Consortium organizes a meeting once a year called 'Mandillo dei Semi', where producers from all over Italy can bring their seeds, plant cuttings, and home-made yeasts to share. Regularly attended by hundreds of participants, the event provides producers with an opportunity to not only swap their seeds, but also exchange the knowledge and experience associated with their work. Similarly, as an active member of the Italian seed network, the Consortium is committed to the promotion of different initiatives of peasant-led innovation, encouraging its members to attend meetings of farmer-to-farmer exchange and actively engage in the selection, description, and on-farm management of other varieties that were grown in their region before the introduction of commercial seeds.

Conclusion

The first *International Assessment of Agricultural Knowledge, Science, and Technology for Development* (IAASTD), published in 2008, concluded that hunger, social divisions,

and environmental destruction will increase in the near future unless there are fundamental changes in the ways agriculture is practiced (McIntyre et al., 2008). After three years of research sponsored by representatives of 60 governments, the World Bank, most UN agencies, and more than 50 non-governmental organizations, the report determined that biologically diverse 'agro-ecological' farming and grazing methods, especially those that are practiced by small-scale food producers, make agriculture more 'multifunctional' and capable of improving rural livelihoods. Accordingly, the IAASTD noted that, in order to sustain the ecological and cultural diversity of agriculture and food systems, farmers' roles in the selection and conservation of seeds and genetic resources should be enhanced. Issued in the midst of the global food, energy, climate and economic crises of the past several years, the report is part of a mounting body of evidence that increasing food security into the future requires investing in smallholder agriculture that reproduces the resource base on which it depends rather than relying on large-scale, energy-intensive, specialized monocultures (Perfecto and Vandermeer (2010); FAO, 2011; IFPRI, 2011).

The development of an alternative food system is predicated in no small part on the diversification of access to, and management of locally adapted seeds. Indeed, as a source of autonomy, genetic diversity, and technology transfer, seeds sit 'at a critical nexus where contemporary battles over the social, technical, and environmental conditions of production and consumption converge and are made manifest' (Kloppenborg, 2010, p. 368). The use of local seeds disrupts the dominant model of standardization and corporate control by allowing for increased access to a diversity of products and methods of production and innovation, as well as to a diversity of purposes and venues of exchange that underpin the articulated autonomy of local communities. As such, by enhancing the right of producers and consumers to participate in decisions concerning the organization of their own agricultural and food system, 'seeds and seed saving are the foundation of food sovereignty' (McMichael, 2010, p. 178).

The mobilization of seed networks in Europe underscores the growing involvement of local producers in the formulation of agro-ecological alternatives that enhance both food sovereignty and environmental sustainability. By engaging in initiatives of seed saving and exchange as an expression of farmers' rights, these networks politicize the 'technical-ecological content of agro-ecology' (Rosset et al., 2011) beyond the implementation of alternative farming practices. Within this framework, the goal is to reassert the centrality of farming as a source of social, cultural and ecological reproduction that can meet local needs in a sustainable and participatory way.

Notes

1. In particular, following Friedmann (1978, 1980), Van der Ploeg argues that what distinguishes peasant farming from entrepreneurial and capitalist farming is 'the partial integration into markets' (2010, p. 12), or 'the capacity to operate on the boundary that separates commodity from non-commodity circuits' (2008, p. 270). In other words, whereas agrarian entrepreneurs primarily develop their farming activities by engaging in market dependency and extended commodity flows (2010, p. 5), peasant farming is built upon resources that enter the process of production as use values, and are reproduced autonomously through agro-ecological practices, expanded knowledge and fine tuning of labour, and relations of reciprocity. In this respect, by focusing on the process of re-peasantization as an expression of 'rebellion' and 'multi-level resistance' (2010, p. 7) Van der Ploeg moves beyond capital-centric theorizations of the 'persistence of the peasantry' that frame the meaning of social reproduction within the terms of reference of the wage relation (McMichael 2008, p. 216; see also Amin and Vergopoulos,

- 1974; Lewontin, 1982). Within this framework, peasants are understood as 'disguised wage labour', indelibly tied to capitalist relations of production (Banaji, 1977; de Janvri and Garramon, 1977), or as 'wage labour equivalents', whose exploitation (by means of rent, debt, taxation, etc.) and reproduction (mediated by forms of household labour) perpetuate capital accumulation (Bernstein, 1994; Goodman and Redclift, 1982). Conversely, rather than focusing on the peasant condition as a symptom of failed modernization, or a problem for capital to resolve, Van der Ploeg conceptualizes the active reconstitution of peasant-like ways of farming as a widespread, articulated response to the crisis of social reproduction brought about by capitalist processes of agrarian restructuring.
2. Qualitative data on European seed networks were collected over the course of 2010–2011 through participant observation at public meetings, seed fairs, training workshops, participatory plant breeding and farmer-to-farmer exchange initiatives, as well as in-depth interviews with producers, researchers, consumers, and representatives from farmers' movements, NGOs, seed industries, and EU institutions.
 3. As stated by Council Regulation No. 2100/94 (*OJ*, L227, 1 Sept. 1994, pp. 1–30), 'distinctiveness means that the variety is distinguishable by one or more characteristics that results from a particular genotype or combination of genotypes, from all other registered varieties. Uniformity implies that a group of plants of a given variety must exhibit only a limited amount of variation in its distinguishing characteristics. Stability requires that these distinguishing characteristics remain unchanged after repeated cycles of propagation.'
 4. The International Convention for the Protection of New Varieties of Plants, developed under the auspices of the Union internationale pour la protection des obtentions végétales (UPOV), was initially adopted in 1961. It was revised in 1972 and, more substantially, in 1978 and 1991. It protects the rights of plant breeders provided they develop plant varieties that are new, distinct, uniform, and stable (art. 5(1)). Because of its requirement of uniformity and stability, the UPOV convention does not allow the protection of farmers' varieties, which are inherently unstable and in permanent evolution. The 1991 version strengthens the protection of original plant breeders' rights while it restricts the so-called 'farmer's privilege', removing the possibility for states to allow farmers to exchange or sell seeds saved from the harvest of protected varieties (De Schutter, 2009, p. 7).
 5. Currently, a large share of the organic seeds sold in Europe is distributed by a handful of major seed companies based in the Netherlands. The multinational seed company Enza Zaden, for example, works through Vitalis and other subsidiaries in 14 different countries to breed, produce, and distribute organic vegetable seeds all the year round. Other major seed companies like Bejo and Rijk Zwaan have become important suppliers of organic seeds, based on a network of production stations all over the world. The European databases also include seeds offered by global seed companies such as Dupont through its subsidiary Pioneer, the French seed giant Limagrain through its subsidiaries Advanta Seeds and Nickersons, and the German KWS (GRAIN, 2008).
 6. In partial recognition of the impact of seed laws on the management of plant genetic resources, in 1998 the European Council issued a new directive (98/95/EC, *OJ*, L 25, 1 Feb. 1999, pp. 1–26) to regulate the commercialization of locally adapted varieties threatened by genetic erosion, named 'conservation varieties'. This measure has been followed by the introduction of two directives providing guidelines for implementation with respect to agricultural crops (2008/62/EC, *OJ*, L 162, 21 June 2008, pp. 13–19) and vegetables (2009/145/EC, *OJ*, L 312, 27 Nov. 2009, pp. 44–54). The aim is to confer juridical legitimacy to these varieties, allowing them to be included in the national catalogues, as well as to create specific rules for the production and marketing of seeds. To date, however, while recognizing the limitations of the exclusive use of DUS requirements, these regulations restrict allowable varieties to those that fit the DUS criteria as much as possible, including very little derogation from the conventional certification procedure (Bocci, 2009; Chable et al., 2009). Only varieties deemed 'interesting' are accepted, and the term 'conservation' does not allow for the evolving character of landraces in the field, thus preventing producers from breeding and selecting them over time (Bocci et al., 2010). Additionally, the EU directive includes prescriptions that curtail the potential development of an alternative seed system by restricting the use and distribution of conservation varieties to limited quantities within narrowly defined 'areas of origin'. As such, these provisions fail to account for dynamic processes of seed exchange and adaptation within and beyond different regions, reflecting the attempt to apply the rules of conventional seed marketing to the much more variegated practices associated with the reproduction of agro-biodiversity (cf. Bertacchini, 2009; Bocci, 2009).
 7. The International Treaty on Plant Genetic Resources for Food and Agriculture was adopted by the FAO Conference on 3 November 2001 and was ratified by the EU on 31 March 2004. Article 5 requires the Contracting Parties to promote and support farmers and local communities in managing and conserving their plant genetic resources. Under Article 6, the Contracting Parties committed to develop and maintain policy and legal measures aimed at fostering the development and maintenance of diverse farming systems and maximizing intra- and inter-specific variation of landraces. Article 9 recognizes the contribution of local and indigenous communities and farmers to the conservation and develop-

ment of plant genetic resources as a basis for food and agriculture production and places the responsibility for realizing Farmers' Rights on national governments (FAO, 2009).

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