

## Article

# Marketing Farmers' Varieties in Europe: Encouraging Pathways with Missing Links for the Recognition and Support of Farmer Seed Systems

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**Abstract:** Farmer seed systems come in many shades: Conserving, producing, and using diverse plant material for different motives and purposes, whether the conservation or selection of locally adapted plant varieties and populations, or the safeguard of social bonds to secure economic stability and integration into rural communities. In Europe, strict seed marketing rules, by viewing any exchange of seeds as commercial exploitation, have first outlawed these farmer seed systems and the varieties conserved and developed in these systems, before carving out limited space for them as derogations to the main regime that remains based on mandatory variety registration and certified seed production. Examining these spaces in the legislation of the European Union ('EU') and Switzerland, along with their practical implications on the ground, the article shows the conceptual shortcomings of the EU legislation to fully address all the characteristics of farmer seed systems, especially to recognize farmers' innovation. It exposes the need to carefully define, assess and adjust the underlying objectives of the future EU legislative effort to register farmers' varieties or allow for their exchange, to fully represent and address the complex socio-economic values and diversity of farmer seed systems. The success of these endeavors will lie in the truthful representation, but also the engagement of farmers and social actors that not only conserve, but also dynamically manage agrobiodiversity.

**Keywords:** agrobiodiversity conservation; sustainable use; seed systems; farmer innovation; seed marketing laws



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## 1. Introduction

While all seeds used in production were saved and developed by farmers in the dawn of agriculture, they have gradually been replaced by seeds derived from public plant breeding, and then by the private sector, especially in industrial regions such as Europe [1]. This shift is attributed to rising public expenditure in breeding, but also to policies supporting private investment, such as intellectual property rights, or those ensuring the marketing of high-quality seed of uniform plant varieties, viewed as a prerequisite to achieve maximum outputs and good returns for farmers [2], food security and market transparency, palliating the informational asymmetry in the seed market [3]. While boosting agricultural productivity and setting the foundations of a strong seed industry, these policies have nonetheless neglected and outlawed farmers' varieties [4]. These varieties, understood as encompassing both the novel products of farmer-led breeding (such as evolutionary populations), and the traditional or heirloom varieties conserved by farmers and gardeners, have slowly been integrated into European seed marketing legislation as derogatory regimes from the end of the 1990's, and even more prominently since 2008 [5]. However, the success of this integration has been limited in practice, with

quite few or no varieties registered in certain EU Member States, and relatively small uptake of seeds from registered farmers' varieties [6,7].

We posit that such dire acknowledgement and lack of success are mainly due to the inherent theoretical and practical shortcomings of the regimes set out in Europe, especially in the European Union ("EU"). Indeed, currently applicable EU seed marketing rules fail to address the entire range of farmers' innovation and their varieties, setting out inadequate and disproportionately restrictive criteria for their registration and production [8]. Farmers' varieties are introduced as a derogation to conventional rules established for the needs of industrial crop production, rather than in a specifically tailored regime that could fully recognize the role of farmers as both stewards and developers of biodiversity and reflect the complex socio-economic values and diversity of farmer seed systems. We further posit that the inadequacy of EU seed marketing rules to address farmer seed systems also stems from the underlying objectives of the legislation, which is geared towards the static conservation of identified plant varieties, and fails to address the many functions of these systems. EU seed marketing rules view the registration of farmers' varieties solely as a means to ensure the conservation of agricultural genetic diversity (for further use in public or private plant breeding), rather than widening the offer of locally adapted seeds, or empowering social actors engaged in the dynamic management of such biodiversity and responding to their specific needs and concerns. As a result, they miss the mark of curating space to address the needs of farmer seed systems and recognize their contribution to the sustainable use and management of agrobiodiversity, beyond a purely conservationist perspective. To do so, these rules would need to not only allow the informal exchanges that characterize farmer seed systems, recognize their role both in seed production and agrobiodiversity conservation, but also acknowledge that they develop plant varieties adapted to their local agroecological conditions. Such an inclusive approach would align with the obligations of States to not only conserve, but also ensure the sustainable use of agrobiodiversity, as prescribed in Articles 6, 8, and 10 of the Convention on Biological Diversity ('CBD'), and Articles 5 and 6 of the International Treaty of Plant Genetic Resources for Food and Agriculture ("ITPGRFA"), along with the realization of farmers' rights enshrined in Article 9 of the ITPGRFA and Article 19 of the United Nations Declaration on the Right of Peasants and People Living in Rural Areas ("UNDROP").

The need for inclusive seed marketing laws, and the shortcomings of the EU seed marketing regime in that regard will firstly be assessed through the description of the many shades of farmers' varieties and the farmer seed systems they circulate in and are the products of (Section 2). It will be followed by a description of their appreciation in EU seed marketing laws (Section 3), and in Switzerland (Section 4), two regions with a comparable landscape of actors and weight of seed industry in overall agricultural production systems. Particular attention will be given to the underlying rationale of the two seed marketing regimes, assessing if and how they address the complex socio-economic values and diversity of farmer seed systems, and more specifically, if and how they recognize farmers' innovation and their contribution to the sustainable use and dynamic management of agrobiodiversity. The descriptive analysis will be accompanied by the concrete experiences of two social actors engaged in the conservation and dynamic management of agrobiodiversity in Italy and Switzerland, where the regimes allowing the registration of farmers' varieties have been actively used by these actors. This will allow us to assess how these approaches have succeeded or fallen short in acknowledging the many facets of farmer seed systems and to bring forward some recommendations for the future (Section 5).

## **2. Farmers' Varieties: A Diverse Range of Equally Diverse Plant Material?**

"Farmers' varieties", as products of plant breeding, selection, and exchange processes, encompass very different practical realities and result in different types of cultivars and seeds, in both agronomic and legal terms [9]. They are nonetheless unarguably generated by farmer seed systems and circulate first and foremost within the complex and diverse

networks that characterize these systems. Because farmer seed systems are embedded in social relations and institutions that constitute the social, economic and political fabric of rural life, it is challenging to provide a compellingly holistic account of their role in seed production, distribution and development [10]. Indeed, farmers play multiple roles in a modern seed system: not only as growers or multipliers for formal seed producers, but also as innovators through traditional variety selection, seed saving or more formalized participatory breeding and research programs; just as they are key actors for the on farm conservation of genetic material [11,12]. Long characterized through the seemingly derogatory expression of “informal seed systems”, which is increasingly challenged due to the permeability that exists between the informal and formal sector (not least on account of seed marketing legislation), farmer seed systems are in essence networks created through social ties established during seed exchange and transfer events, organized either informally or in formal institutions [10,13].

Farmer seed networks are generally characterized by an alternative science system, low-input farming techniques, the flow of seeds within a network and an embeddedness in sociocultural systems, which contribute to the maintenance of evolutionary processes [14]. These networks conserve, manage and develop farmers’ varieties, and thus encompass both a static, more traditional dimension, linked to historical and socio-cultural heritage, but also include a more dynamic dimension, which accounts for varietal selection and evolution processes that are carried out by these social networks and their actors. Farmers’ varieties have many names: landraces, heirloom, or traditional varieties, dynamic or evolutionary populations. As a result, there is little consensus on what they truly incorporate [15,16]. They nonetheless all reflect ‘dynamic populations of a cultivated plant that has historical origin, distinct identity and lacks formal crop improvement, as well as often being genetically diverse, locally adapted and associated with traditional farming systems’ [17]. The term “farmers’ variety” is thus used to identify both “old” varieties maintained, and exchanged by farmers for times immemorial [17], but also “new” varieties and populations selected, bred, produced and marketed by farmers, whether as individuals, or more often than not, within social networks [18].

Because of this dual complex nature, the many-facets of farmers’ varieties hit an expected wall faced with the understanding and definition of seed marketing legislation in Europe, and its approach to “plant varieties”. Whether in the European Union (EU) or in Switzerland, a “plant variety” is defined with reference to the legal concept that has given rise to the specific intellectual property rights regime that is plant variety protection, based on the International Convention for the Protection of New Varieties of Plants, first signed in 1961, then amended in 1978 and 1991 (UPOV Convention). As a result, the precept of a plant variety is centered around distinctiveness, uniformity, and stability (DUS), which are important criteria for industrial agricultural production focused on yield and productivity, but are fundamentally inadequate for farmers’ varieties, both old and new. Diversity and agroecological farmers, indeed tend to value and emphasize other criteria [19], just as organic and low-input farmers, which cannot rely on the same range of chemical inputs as their conventional counterparts, and therefore require different criteria to ensure higher production levels, with specific adaptation to the environment [20]. Farmers’ varieties, whether in their more traditional or modern evolutionary sense, have as a result been cast as outsiders in European seed policies, which has unmistakably failed to protect the development of farmer seed systems, or to recognize the collective innovation that they represent [21].

In Europe, farmer seed systems have been confronted to norms and modernization efforts through regulations, but still retain their diversity at cultural, environmental, climatic and farming levels [22,23]. Farmer seed systems encompass far wider realities than the issue of seed marketing alone. Yet, one of their core features remains the continuous practice of saving, using, exchanging, and selling their seeds. This core element is enshrined in the notion of ‘farmers’ rights’ in Article 9 of the ITPGRFA [24,25] and has been more recently framed as a human right in Article 19 of the UNDROP [26,27]. Both texts

additionally emphasize the need to recognize and protect farmers' traditional knowledge and to ensure the participation of farmers and peasants in decision-making, thus reaching beyond the limited realm of seed marketing laws [24,28]. Yet, these laws heavily impact the recognition and protection of farmers' and peasants' rights, by amounting a large portion of actions that characterize farmer seed systems to seed marketing and disallowing the sale and at times even the exchange of unregistered varieties [29]. Seed marketing rules put the emphasis on protecting farmers from low-quality seeds and potential unfair business practices of seed providers. They aim to address the information asymmetry that exists between the seed provider and its user, and have been shown to disproportionately focus on the technical rules, guidelines, procedures, protocols, and organizational mandates of public authorities, rather than viewing seed systems as a whole [8]. As a knowledge and input intensive market, the European continent, whether in the EU, its Member States or in Switzerland, has followed (if not led) this path through stringent seed marketing legislation aimed at ensuring the identity of seeds, their quality, and additional unconcealed objectives of agricultural productivity, as penned in the preambles of applicable legislation. Recent evolutions of seed marketing laws both in the EU and Switzerland, from the 1990's onward, have nonetheless attempted to modulate and make carefully limited room for farmer seed systems, whether in the definitions of their scope, or through specific pathways for the registration of farmers' varieties.

### **3. Pathways for Addressing Farmer Seed Systems and Registering Farmer's Varieties in the European Union**

Rules to be followed by operators wishing to market seeds in the EU are found in an astounding number of twelve species-specific Directives that date back to the 1960s [30]. The main principles of EU seed marketing legislation are set around the notion of mandatory variety or operator registration prior to the marketing of seeds (based on criteria ill-adapted to farmers' varieties), coupled with strict seed production requirements through mandatory seed certification requirements (with the notable exceptions of standard vegetable seeds and propagating 'CAC' material for fruit and vine species). These Directives show notable difference between species and need to then be transposed into the national legal orders of EU Member States, which in effect leads to twenty-seven different legal regimes for the marketing of seeds in the EU [31]. In principle though, they all uphold strict rules for variety release, which is conditional to pre-marketing official tests carried out by public authorities to ensure the variety's distinctiveness, uniformity, and stability, mirroring the standards and protocols initially envisaged for the grant of intellectual property rights. Once a variety is registered into a national catalogue it is automatically listed in the EU Common Catalogue for agricultural species and for vegetables, which opens the door to the EU common market, and then its seeds need to comply with general quality requirements. These also often need to comply with seed lot certification requirements, which uphold criteria set out for world trade through the Seed Schemes of the Organization for Economic Cooperation and Development.

Through a twist in tides at the end of 1990s, EU seed marketing laws have nonetheless started to carve out either indirect room, or formal space for the registration and marketing of farmers' varieties, mainly in the shape of derogations to the mainstream regime [5]. This section will describe the space delineated for farmer seed systems and their diverse varieties in seed marketing rules in the EU, highlighting the rationale behind each regulatory action, the type of varieties that can potentially be covered in these spaces, and their limitations.

#### *3.1. Addressing Farmer Seed Systems through the Material Scope of Seed Marketing Legislation*

First and foremost, EU seed marketing rules indirectly address farmer seed systems through their material scope, by defining the activities that fall under their purview, and those which do not. As a prelude, it should be noted that the EU seed marketing rules solely apply to species that are expressly listed in the Directives, regulated because of their commercial relevance for the EU. Species that are not in the scope of the seeds marketing legislation include for instance quinoa, emmer, parsnips, and all aromatic herbs. It should

also be noted that certain species that are not regulated at EU level can be regulated at national level on a voluntary basis, which is for example the case of lentils in France or emmer in Italy. This means that all activities characterizing farmer seed systems in less commercially relevant plant species fall outside of the scope of the EU rules on seed marketing and can thus continue to thrive according to their own socio-cultural norms, albeit respecting other applicable legislation, such as phytosanitary rules guaranteeing plant and seed health (Regulation EU 2016/2031).

Secondly, and most importantly, EU seed marketing Directives only apply to the “marketing of seeds”, which is defined since 1998 in the seven main EU Directives (beet seed, fodder plant seeds, cereal seed, seed potatoes, oil and fiber plants, vegetable seeds and the common catalogue of agricultural plant species) as the “sale [ . . . ] aimed at commercial exploitation of seed to third parties, whether or not for consideration”. As a result, the Directives directly state that the “trade in seed not aimed at commercial exploitation of the variety [ . . . ] shall not be regarded as marketing”. The notion of seed marketing is nonetheless a grey area where different Member states have different interpretation and implementation of EU directives. The European Commission has recently made clear that, in their own reading, the “Directives do not allow exchange of material between farmers because the definition of marketing covers any supply or transfer of seed for commercial exploitation” [32]. By prohibiting, as a principle, the key component of farmer seed systems, identified as the barter of seeds amongst farmers, equating it to the commercial exploitation of seeds, the EU seeds marketing framework inflicts the greatest obstacle to the production and marketing of farmers’ varieties [33].

On account of advocacy efforts of social actors such as farmers and seed savers associations, numerous EU Member States have adopted a different stance on the scope of the seed marketing legislation, allowing the transmission of seeds from farmers’ varieties against payment or in kind under certain conditions [27]. While Austrian seed laws allow the transmission of seed against payment and in kind in small quantities if the farmer or user does not trade in seed [34], Danish authorities ascertain that seed laws only apply to marketing of commercial and larger-scale agricultural and horticultural production [35]. French authorities recognize farmer seed exchange in the limits of mutual assistance [27], and have recently posited that seed marketing rules do not apply to the “the assignment, supply or transfer, whether free of charge or against payment of varieties belonging to the public domain to non-professional end-users not aiming at the commercial exploitation of the variety” [36]. These interpretations are nonetheless contested by other EU countries, and the European Commission itself, as mentioned above. For instance, in Estonia and Poland, any exchange of seeds amounts to their marketing, and non-registered seeds cannot circulate, even in farmer seed systems, shattering their very essence.

### *3.2. Addressing Farmer Seed Systems through Specific Registration Pathways for Farmers’ Varieties*

Aside from essential considerations with regards to their scope of application, the EU seed marketing Directives have also carved official space for the registration of different types of farmers’ varieties into the EU Common catalogue (or in a parallel system for the future regime of organic heterogenous material), thus opening the way for their formal marketing across the EU.

#### *3.2.1. Conservation Varieties and Landraces*

The first derogatory regime that allowed the registration, marketing, and production of certain types of farmers’ varieties in the EU relates to so-called “conservation varieties” established by the Commission Directive 98/95, with the new goal for EU seeds marketing legislation of ensuring the conservation of genetic diversity. The legal text sets the tone by defining a landrace as “a set of populations or clones of plant species that are naturally adapted to the environmental conditions of their region” corresponding more to the definition of an “ecotype”, rather than a more-transdisciplinary approach to landraces [37]. It puts emphasis on the risk of losing these varieties through human intervention or



environmental change, without mentioning the seed systems or actors behind them, nor the values attached to these varieties. At first only allowed for agricultural crop species, and then to vegetables species, this departure from the initial goals of the EU seed marketing laws nonetheless implicitly acknowledged that these laws had contributed to the genetic erosion of agrobiodiversity.

However, it had not led to a single variety registration ten years after its adoption by the European Commission [6]. While the main rationale and principles of the regime were maintained, the second attempt of the European Commission to allow the marketing of landrace seeds, Directive 2008/62, partially addressed the shortcomings of the previous text, notably by providing more guidance to public authorities with regards to procedural requirements to be followed in the registration process and subsequent controls. The new text retained its former definition of landraces and authorized Member States to adopt ‘their own provisions as regards DUS’. These provisions still need to at least be based on characteristics listed in the applicable UPOV technical questionnaires completed by applicants, establishing uniformity also based on off-types, with the possibility to waive official examination of the variety through public testing. The regime of conservation varieties thus offers the possibility to create lighter procedural requirements with regards to variety registration, while maintaining strong links to criteria set by the UPOV regime. It also maintained the obligations regarding seed production rules, through mandatory seed certification (except for seed potatoes). Another major caveat of this regime concerns geographical and quantitative restrictions set out in Commission Directive 2008/62. Seeds from conservation varieties may only be marketed in their region of origin, in which the variety has historically been grown and to which it is naturally adapted, just as the quantity of seeds marketed for each conservation variety cannot exceed the quantity necessary to sow 100 hectares, or 0.5% of the seed used in the same species in the country. Although conservation varieties find their way into the official catalogues of Member States and the EU, they thus do not make their way into the common EU seed market. One year later, the opportunity to register conservation varieties into the EU catalogue was extended to vegetable species through Commission Directive 2009/145. The legal instrument upheld the same tailored conditions, except for the opportunity to market standard seed awarded in parallel to the applicable regime for all vegetable seeds, where controls regarding seed quality lots can operate post-marketing. While the quantitative restrictions for conservation varieties of agricultural species are calculated with regards to their global acreage, these limits are set per package size for vegetable seeds.

Most of the applicants for the registration of conservation varieties are scientific and public bodies, followed by farmer associations, private citizens and a low number of seed companies [32]. The registration and use of conservation variety seeds depend on a variety of factors. The authorities’ viewpoint on the notion of the “region of origin” plays a considerable role. In certain countries like Belgium, these regions are very limited, allowing the sale of seeds solely within the institutional realities of the country, divided between its three official Regions. This may explain that, although public authorities do not require official examination of the varieties, and that the cost of registration itself is quite low, no agricultural conservation variety has been registered in the country, and only two vegetable varieties were registered by Flemish authorities. In other countries, such as Austria, this criterion tends to extend to the entire national territory or covers areas large enough to allow the possibility to produce the seeds, which might explain why the seeds of 29 agricultural conservation varieties are allowed to be marketed in the country. The highest numbers of conservation varieties in agricultural species are found in Sweden and Italy, which together account for almost half of the 353 conservation varieties of EU Common Catalogue, with respectively 74 and 70 varieties. These success stories may be explained by different factors, but the authorities’ flexibility towards the notion of region of origin provides a first clue. Indeed, in Italy, adjustments were made to certain applications, as it has been the case for the Frassineto and Sieve varieties, for which Tuscany was initially indicated as the area of origin, but later amended to include all central and

northern Italy, on account of advocacy efforts of national farmer organizations such as Rete Semi Rurali. The existence, strength and dedication of farmers' associations or civil society organizations also plays an undeniable role in the functioning of uptake of this derogatory system for landrace registration and marketing. When a large interpretation of the notion of "region of origin" is coupled with relaxed controls from public authorities, the quantitative restrictions put upon the production and marketing of conservation varieties seem less problematic than at first sight.

The main hurdle stated by most crop diversity actors attempting to navigate the system and register conservation varieties relate to the strict dossiers that need to be put in place for such registration, with all the accompanying bureaucracy that it entails for small structures for limited benefits and marketing prospects. The stringency of seed lot certification for agricultural crops, and the maintained links with the concept of a plant variety derived from the UPOV system, rather than the populations that tend to be developed through participatory and evolutionary plant breeding are additional fundamental in-built barriers [7]. Indeed, the derogatory regime imposes sensible burden for the registration of conservation varieties, through the need to demonstrate a strong link between the variety and its region of origin and to provide proof of the risk of genetic erosion, with little guidance to national authorities as to the actual implementation of its precepts. Not only does the regime only concerns agricultural crop and vegetable species, but it also imposes significant quantitative and geographic restrictions for the marketing of seeds from conservation varieties. Furthermore, although there is a high number of landraces registered in the EU Common Catalogue, thus officially opening the doorway into the seed market, these numbers are not representative of their actual availability for use in fields. Indeed, national seed authorities interviewed for the recent study requested by the European Commission in 2021 admitted that "there [was] either no data available or that there [was] no, or a negligible level of, conservation variety production" [38].

These findings are reinforced by the practical experience of the Italian Rete Semi Rurali network on-farm crop diversity management, which has directly engaged in the conservation varieties' regime. As a network, Rete Semi Rurali has closely followed the pathway for registration of conservation varieties, trying to influence its implementation in Italy with the aim of opening new spaces for action for farmers. They have obtained a specific derogation for farmers who grow conservation varieties, allowing them to sell their seed with a simplified procedure compared to seed companies (Art. 19bis of the national law 1096/71 and Art.4 of the ministerial decree of 12 November 2009). After a period of almost inactivity, with few applications for registration, the conservation variety regime started to get used more progressively. In the case of agricultural species, 80 conservation varieties have been registered or are in the process of being registered, broken down as follows: durum wheat (24), common wheat (23), maize (14), rice (13), rye (1), potato (2), spelt (1), and emmer monococcus (1) and dicoccus (2). In the case of vegetables, 42 conservation varieties were entered and 16 as having no intrinsic value. Thus, if we look at the number of registered varieties, we could say that a good number of varieties are finding their way into the seed market, increasing the choices available to farmers and the diversity of the whole system. If we look at the seed production areas indicated in the applications for registration of agricultural species, we find that about 1340 hectares are planned for a total production of about 2500 tons of seed. These would be interesting numbers were it not for the fact that the reality is very different. In fact, moving from paper to the field, the 2018 data show that the total certified seed area for durum wheat, common wheat and rice was derisory at a paltry 64.96 hectares, and that in any case applications for certification concerned only 126.67 hectares. Out of the approximately 1340 possible hectares, 126 hectares were applied for field inspection, of which about half were admitted for seed production. These numbers tell us that less than 5% of the potential of the seed that could be produced as conservation varieties was used and that there is a problem in the capacity of the actors to produce good seed if 50% of the fields were not found to be compliant. But another interesting fact is that almost all the area affected by

seed certification is in Sicily, 55 hectares out of the total, as if the rest of Italy was not yet affected by this phenomenon. Even if there is as of today a relatively considerable number of conservation varieties registered in Italy, which points to a success story overall (80 for agricultural species, 58 for vegetables), this trend has also partly been driven by a rhetoric similar to the one which underlies the registration of landraces in regional agrobiodiversity registers: local, traditional, farmers' varieties are seen as a static resource, to be maintained untouched in their genetic identity by any possible variation [39]. While this rhetoric is sometimes driven by good intentions, it also has become functional to commercial interests: not unfrequently, the registration of a conservation variety becomes a first step to branding and protecting a niche market for the end products from that variety, which hence becomes somewhat exclusive to the actors within that niche and very restricted geographical area. This reduces landraces' dynamic, ever-changing and adaptable nature, which determines their resilience and adaptability, to a static, commodity-based dimension, and sometimes even brings the resource at the border of the public domain in which it should be maintained [39].

The EU conservation variety regime provides greater legal space for the maintenance of existing crop genetic diversity [5] and may constitute an interesting entry point for a specific type of farmers' varieties (i.e., old varieties (whether because they have been deleted from the official catalogues or been traditionally maintained by farmers, gene banks or public institutes) that are relatively uniform and stable enough to make it through the requirements). However, its limited framing, aimed to combat genetic erosion in specific regions, and its potent links with the main seed marketing regime it desires to derogate to, present considerable shortcomings with regards to the widening of seed offer to farmers for whom uniformity and stability are not essential and to the recognition of farmer innovation in seeds. The lack of inclusion of new genetically diverse varieties or populations into the conservation regime has been attributed to successful lobbying by the seed industry against what they considered a "back-door opportunity for the registration of new varieties that do not meet the regular standards" [3].

The reform process that was initiated in 2008 by the European Commission, under the Better Regulation framework, aimed to adjust the regime of conservation varieties. The reform process released the document "Options and analysis paper" [40], followed by a formal proposal for a single horizontal Regulation to replace all species-specific Directives in 2013 [41], but was rejected by the European Parliament in March 2014, and withdrawn by the European Commission in March 2015. In the proposed text, the registration of farmers' varieties would have been possible based on an "officially recognized description", for which DUS examination would have no longer been mandatory. The partial lifting of stringent seed production rules was also envisaged, as seeds from registered landraces would have been allowed to be sold as standard material, with no mandatory seed lot certification (Preamble 39, Article 57 of the Proposal). Letting go of currently applicable quantitative restrictions, the proposed regime still maintained the geographical attachment to the region of origin of landraces. The entire rationale of the proposed regime remained the minimization of genetic erosion and its accompanying conservationist mindset (Preamble 36), mirroring to a great extent the shortcomings of the current regime with regards to the products of innovation from farmer seed systems, and their inherently dynamic nature.

### 3.2.2. Varieties with No Intrinsic Value for Commercial Crop Production

In parallel to the new category of "conservation varieties", Commission Directive 2009/145 established another pathway into the market for farmers' varieties of vegetable species, coined "varieties with no intrinsic value for commercial crop production that have been developed under particular conditions", otherwise known as "amateur" varieties. Through far less restrictive criteria for registration, without any linkage to a specific region or origin, but more emphasis on the aspect of "non-commercial crop production", this category for registration has led to a much more important number of registrations. While only 159 vegetable conservation varieties are registered in the EU Common catalogue,



one finds 812 varieties developed for growing under particular “agro-technical, climatic or pedological” conditions in the database. Even though the links with relevant UPOV technical questionnaires are also maintained for their registration, the application process is usually free of charge, based more on the description of the variety, rather than their official examination, and their seeds can be marketed as standard seeds, although in small packages. Unlike the conservation variety regime, seeds of “amateur varieties” can be marketed freely in small packages throughout the common EU market once registered in a national catalogue, a crucial element which considerably shifts the cost-benefit analysis of the regime.

The registration of “amateur varieties” tends to come from different actors than those using the conservation variety regime, entailing fewer public institutes, but rather comprising of small to medium sized companies, usually specialized in the sale of seed in small quantities to gardeners, and seed saving and conservation networks (which tend to gather gardeners more than professional farmers). The highest number of varieties is found in France (310), where the regime had existed at national level, followed by Germany (148 varieties), and Austria (117 varieties); three countries where both specialized and organic seed companies, as well as gardener associations, have a very strong presence.

Due to the limited amount of information uploaded in the national and then EU catalogue with regards to amateur varieties, and the lack of data on the quantity of seeds produced, it is unfortunately not possible to assess if and how many of the registered amateur varieties are landraces, elder cultivars, heirloom varieties, or new varieties that are the product of participatory or organic plant breeding [7], or whether the high number of registrations actually translate into a higher availability of seeds. Nonetheless, the regime breaks with the premise of agrobiodiversity conservation confined in regions of origin and recognizes the value of plant selection for other purposes than commercial crop production. It presents valuable opportunities for the recognition of the work carried out by social actors and farmers’ associations working with vegetable seeds, along with avenues for economic gains and uptake of these varieties, even if in limited amounts. The “amateur” variety regime does provide marketing opportunities for farmers-breeders who also operate as seed multipliers, generally accompanied by a collaboration with larger associations or private companies. It nonetheless has a reduced impact on the potential use of these seeds by diversity and small-scale farmers in food production due to limitations on package size.

The aforementioned reform attempt in 2013 had proposed to replace this regime by a new category of “niche market material”, presented as “proportionate and sustainable rules for small scale activities [with seeds] adapted to local conditions and made available in small quantities” (Explanatory Note of the Proposal 2013/0137) [41]. The proposal even expressly mentioned farmer-breeders and gardener-breeders as the main target group of this regime, albeit with important caveats as to the size of the entities using the system, which had to be micro-enterprises to avoid abuse of the system (Preamble 27 of the proposal). The express mention of farmer innovation in this proposed niche market material regime was a considerable step forward, but we never got to see whether it would have truly broken with the tradition of UPOV technical questionnaires for variety registration, as all marketing modalities of this material were to be drawn after the adoption of the Regulation in a Delegated Act of the Commission (Article 36 of the proposal).

### 3.2.3. Temporary Experiment on Cereal Populations

Although promising an entry into the EU seed market for farmers’ varieties, the aforementioned derogatory regimes did not break with the main premise of varietal uniformity in plant reproductive material, a premise which was rigorously criticized and disproved by researchers engaged in participatory plant breeding with farmers, based on diversity and populations [16]. Several large-scale research projects had been funded by the EU to study the impact of the strict rules for seed marketing rules on farmer seed systems. One of the first ones, coined “Farm Seed Opportunities”, was designed

inter alia to characterize the requirements of different stakeholders with regards to the diversity of varieties derived from the on-farm conservation, management, breeding and of regional agricultural systems in Europe [42]. Coordinated by the French INRA, the project ran from 2007 until 2010, and helped prepare derogatory regimes to facilitate the certification and marketing of seed in the interest of conserving plant genetic resources. It was immediately followed by SOLIBAM (Strategies for organic and low-input integrated breeding and management), which ran from 2010 until 2014, more specifically focused on diverse plant populations and their resilience to stress [43]. The breeding efforts carried out together with farmers associations and social actors engaged in the conservation and dynamic management of agricultural biodiversity led to the creation and development of populations of vegetables and cereals [44]. These populations could not, however, find their way into the EU seed market due to their heterogeneity and needed a considerable change of paradigm in the EU seed marketing legislation.

The rejected Commission Proposal of 2013 had foreseen the possibility to market “heterogeneous plant reproductive material”, recognizing this material’s contribution to the “increase the genetic variability of agricultural crops, the genetic resource basis and biodiversity in the Union, the sustainability of agriculture and to the adaptation to climate change” (Preamble 17 of the Proposal) [41]. The proposed regime broke with the DUS paradigm, as this material was described as not belonging to a variety. However, the proposal did not define this new type of material, rather delegating this task, along with the adoption of the modalities of registration, traceability, labelling, packaging, and seed production to the European Commission in a future Delegated Act (Article 14§3). It is thus unclear which types of farmers’ varieties would have fallen under the proposed regime, even though the underlying rationale was the recognition of certain types of innovation potentially stemming from farmer seed systems.

In parallel to this process, which ended by the rejection of the entire reform proposal, a temporary experiment was launched in 2014 through Commission Implementing Decision 2014/150, based on “new research in the Union on plant reproductive material that does not fulfil the variety definition as regards uniformity, which showed that there could be benefits of using diverse material, in particular with regards to organic production or in low input agriculture for example to reduce the spread of diseases” (Preamble). This experiment allowed the marketing of new populations of wheat, barley, oats, and maize developed by breeders and farmers. The experiment, which ran in six EU Member States (United Kingdom, Italy, France, Denmark, Germany, Netherlands) was extended until 28 February 2021, and aimed to gather information on potential ways forward to ensure the identification of these diverse populations. To that end, it allowed the marketing of non-certified seeds of material notified to public authorities which participated in the experiment.

Completely abandoning the UPOV technical questionnaires, registration of heterogeneous material was based on the description of the material, the breeding schemes used, the region of production, the degree of heterogeneity and characteristics of the population. All applicants and producers also had to be registered to ensure traceability and gather data, while quantitative restrictions were set to maximum 0.1% of seed of the same species produced in that year in the participating Member State. The temporary experiment led to the registration of 35 populations (mostly of wheat), and to the marketing of 100 tons of seeds, staying nonetheless below commercial scale marketing, except for the Organic Research Centre’s Wakelyns population in the United Kingdom and the SOLIBAM populations in France, Germany and Italy [45]. The regime, and the key researchers and actors involved in its successful uptake, nonetheless led the way to a broader legislative approach to heterogenous material and diversity in the EU seed marketing realm, and thus to the recognition of the innovative work of farmers as breeders.

The conceptual shortcomings of the conservation variety regime led the Italian Rete Semi Rurali network to question a purely conservation-focused approach and to get more involved in the dynamic management of on farm agrobiodiversity, including a strong focus

on participatory research and seed system-wide innovation. Because of the network's participation into several EU research projects, including those mentioned above (FSO and SOLIBAM), and building upon the tools and relations accumulated throughout the years by the association, full advantage was taken of the temporary experiment allowing the marketing of populations in Italy. In constant dialogue with public authorities, RSR helped establish a baseline procedure for on farm certification of the populations not using the standard DUS criteria, and developed a transparent labelling system for the population seed presenting the participatory breeding process, the actors involved, and social rules associated to the seed packages, as well as the construction of a financial sustainability mechanism for RSR to reap some benefit from the sale of such seed, transitioning to a more self-sustaining research and development model for the future [39].

### 3.2.4. Organic Heterogeneous Material and Organic Varieties

The latest change in the EU seed marketing rules which allows the potential marketing of farmers' varieties stems from the new EU Organic Regulation 2018/848 and its innovative provisions on seeds, which will enter into force on 1 January 2022. Building on research on diverse populations and the temporary experiment on cereal populations, and guided by the objective of boosting the supply and use of organic seeds in organic production, the Organic Regulation derogates from applicable seed marketing rules, allowing (a) the marketing of seeds from "organic heterogeneous material" (Article 3§18, and 13), and (b) opening the way towards a temporary experiment to assess the criteria for the description, production and marketing of seeds from "organic varieties" (Preamble 39, Article 3§19). While the latter concept remains a product of formal organic breeding (Annex II Part 1.8.4), focusing on the enhancement of genetic diversity, and will remain within the mainstream paradigm of variety registration based on DUS and VCU protocols, albeit with adapted criteria, the former may very well lay down a new era in the marketing of seeds from farmers' populations. It should be noted that these developments were fought mainly by the European Parliament, which had a strong mandate on seeds in the long negotiations of the Organic Regulation and were initially met with sharp resistance from other European public authorities, as well as the seed industry [46].

Indeed, "organic heterogeneous material" (OHM) is defined as a plant grouping, but not a plant variety in the sense of UPOV and establishes a comprehensive derogation to conventional variety registration and seed certification mechanisms. Seeds from this material can be marketed after its notification, rather than registration, based on a dossier (with no official examination and testing), comprising of different elements that essentially identify and describe the material and its history of breeding or production. Commission Delegated Regulation 2021/1189, adopted on 7 May 2021, lays down the details of this entirely novel notification regime of OHM, and the production rules for seeds of such material. The text explicitly posits that organic heterogeneous material may be the result of "on-farm management practices, including selection, establishing or maintaining the material" (i.e., the product of farmer innovation and agrobiodiversity management techniques and the knowledge of all social actors which take part in farmer seed systems). With no quantitative or geographical restrictions for the marketing of this material's seeds, whether in acreage or package size, the absence of mandatory seed certification, and the relatively light-touch procedures for the notification of material, which do not refer to complex technical questionnaires but rather an informative dossier, this new regime breaks with the paradigmatic and procedural complexities that had previously prevented farmers to market their seeds in all legality and certainty. With its inherent flexibility and proportionate obligations with regards to seed quality or labelling requirements, it is also perhaps the closest reflection of the attributes and values of farmer seed systems. However, the entire regime quite naturally comes together with the strict requirements and controls of organic certification, even though the seeds may be marketed after one or two generation of multiplication in full organic conditions depending on the species (Annex II Part 1.8.2, notwithstanding applicable conversion periods if the operator was not certified organic beforehand).

Although the exact impact of this new notification regime will not be seen before 2022, multiple actors are now preparing to notify material of several other evolutionary populations in different species (tomato, zucchini, bean, chickpea, maize, rice, and oat in the case of the Italian Rete Semi Rurali network). The new regime of OHM is indeed seen as a key tool to pave the way for more diverse and inclusive seed systems in organic agriculture.

There are many ways in which seeds of different types of farmers' varieties may find their way into the market in the EU (Figure 1). Yet, the complexity of the regimes, drafted as derogations to mainstream rules and retaining their central paradigm, but also their inherent conceptual shortcomings, which view farmers' varieties as those at risk of genetic erosion needed to be conserved in certain regions, rather than the stand-alone product of farmer innovation and agrobiodiversity management practices, considerably constrict these opportunities' impacts on the support and development of farmer seed system and the diversity they represent. The recent changes seen in the legislation from 2014 onwards, which embrace diversity and heterogeneity, recognize the value of farmer-led innovation, and carve out a truly ad hoc marketing and production regime do show promise to palliate these shortcomings, but their true effects remain yet to be seen in practice. Furthermore, these derogatory regimes only concern the marketing itself of farmers' varieties, and do not touch to other core characteristics of farmer seed systems, which can be upheld only if viewed as outside the scope of seed marketing rules developed chiefly for the needs of industrial crop production, where farmers endorse only the role of producers.

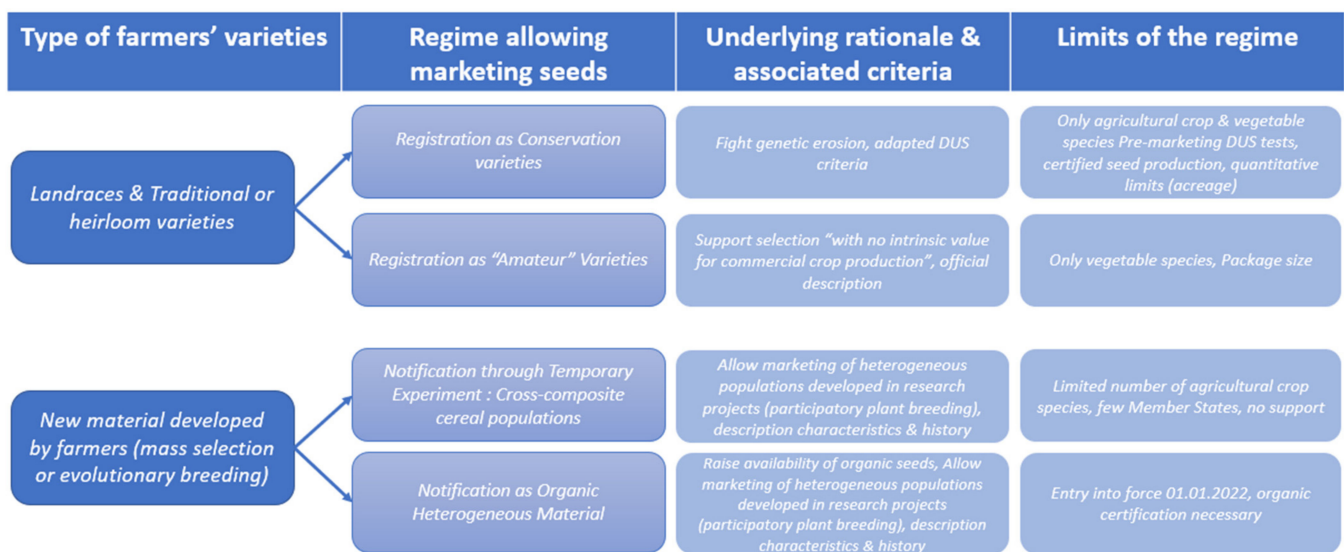


Figure 1. Different pathways for the registration of farmers' varieties in the EU.

#### 4. Farmers' Varieties in Switzerland

The Swiss conventional seed marketing regime is similar if not identical to the EU regime in its general precepts. Much like its EU counterpart, it opens the seed market only to distinct, uniform, and stable plant varieties, and mandates seed lot certification with regards to seed production. The adoption of the ordinance 916.151 in 1998 has, for instance, been seen as the cause of the withdrawal of agricultural research institutes from breeding activities, especially participatory plant breeding efforts on local varieties, more specifically on wheat [47]. Yet its stance on the registration of farmers' varieties and farmer selection efforts has evolved into a completely different, much more inclusive and flexible regime, well-suited to the many needs and diversity of farmer seed systems.

It should be first noted that, in Switzerland, the informal exchanges and sale of seeds between farmers are not viewed as commercial exploitation of seeds, nor is the sale of seeds in small packages, which can thus take place whether the variety is registered or not. Indeed, the Swiss ordinance 916.151 applies solely to the "professional production and



release of plant propagating material" [48], which is interpreted restrictively. The baseline for the recognition of farmer seed systems, and of its underlying social values, is thus already stronger in Switzerland compared to the EU.

Yet the country has gone even further in such recognition, by carving out a specific and simple regime where both heirloom varieties and populations that are the product of farmer innovations can take their place. In 2009 Switzerland reacted to activities that were initiated by the European Commission to change the existing EU seed marketing legislation. In parallel of the negotiations in the European Union, Switzerland started a process to change its existing "Ordinance on Seed and Planting Material of Field Crop and Fodder Plant Species and Vegetable Species of the Swiss federal department of commerce" dating from 1998, with the goal to harmonize it with the EU law. The process was led by the Swiss department of agriculture and accompanied by a public campaign called "Diversity for all" initiated by ProSpecieRara, a Swiss foundation for the conservation and recultivation of endangered cultivate plants and rare breeds. This campaign was supported by many different stakeholders like farmers-organizations, seed producers, breeders, and one of the largest supermarket chains in Switzerland (COOP) as well as some elected officials representing different political parties. After one year of consultations and discussions, the Swiss department of agriculture presented a new proposal that introduced several changes compared to the first draft and were finally adopted in 2010 [49].

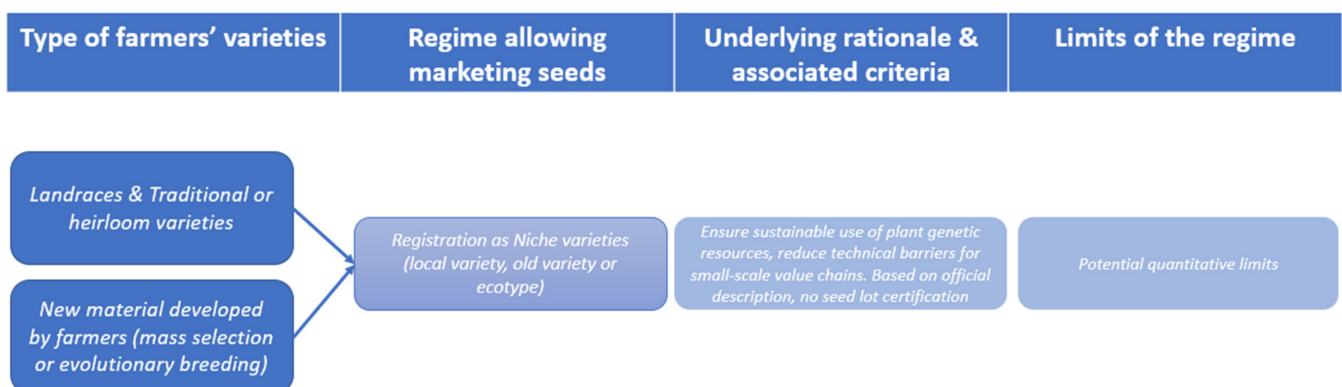
In Art. 2 of the Ordinance, the new category of "niche variety" was introduced, with sub-categories of landraces, old varieties, ecotypes or "other varieties". Landraces, or "country/local varieties" are defined as a "populations of plants of the same species resulting from natural and mass selection in the context of traditional agriculture in a given region". Allowing for these landraces to consist of several types of plants with morphological or physiological differences between them, and explicitly recognizing that they can be the product of selection efforts in farmer seed systems, the Swiss ordinance already differs widely from its equivalent EU regime. Furthermore, the ordinance refers to "old varieties", which have been withdrawn from the Swiss (or foreign) catalogue of varieties for more than two years; along with "ecotypes", "populations of plants of the same species that have been naturally selected under the specific ecological conditions of a region". A single and quite simple regime has thus been carved out, allowing not only the registration of populations that are developed in farmer seed systems, or through more targeted selection efforts. According to the ordinance, these niche varieties do not have to meet the requirements for registration in the catalogue. Applicants rather need to indicate the origin (without any impact on the marketing of its seeds in the entire territory) and attach a description of the niche variety or other information where available. The procedure for "ecotypes" requires the applicant to attach a selection or breeding scheme, along with the related UPOV technical questionnaire, but with no official testing and some leniency in the implementation of the criteria. Indeed, the entire rationale of the regime of niche varieties is to allow the marketing of varieties without having to fulfil the requirements that normally ought to be fulfilled to be registered on the official national variety-catalogue (Value for Cultivation and Use, Distinctness, Uniformity and Stability). The applicant must also declare that "to the best of their knowledge, the variety is not identical to any variety included in a Swiss or foreign variety catalogue, to any protected variety or any niche variety".

Already in the old version of the ordinance, the commercialization of seeds in little packages for amateurs was allowed without any registration in an official catalogue, as aforementioned. This approach was maintained, and the category of "niche varieties" remains solely relevant in a professional context where larger quantities of seeds are commercialized. Art. 29 of the Ordinance states that seeds of "niche varieties" are allowed to be commercialized without an official tag but with a sentence saying: "approved niche variety, seeds not certified". The updated legal framework also states that the Swiss department of agriculture "can" (but does not have to) determine quantitative restrictions. For field crops the department of agriculture defined a quantity of 0.1% per variety of the



cultivated area in total for this specific species. Even new selections or populations can be commercialized as “niche varieties” when the commercialized quantities do not exceed the amounts of those varieties that have been officially registered in the same species. The approval of a niche variety needs a description that defines well the variety (no DUS or VCU testing needed) and the name of the seed producer. The place and way of seed propagation and how the commercialization process is organized. The registration fee (CHF 50.-) must be paid only once, and not every year. As of today, on the catalogue for approved niche varieties, 41 vegetable varieties, 11 potato varieties, seven cereal varieties, and four maize varieties have been registered [50]. In an official submission, the Swiss authorities recognize that “the barriers for marketing old varieties are even high after granting the “Niche Variety”-status, as market-acceptance needs to be mediated along the complete value chain. For that reason, single farmers are not targeted by this regulation” [51]. The current intention is to also include the concept of niche varieties in the Fruit and Berry Planting Material Ordinance as part of the ongoing revision of the legal framework.

The rationale of the Swiss regime reaches farther compared to the EU’s focus on the static conservation of genetic resources and the amateur gardener segment, as the niche variety regime was designed “with the objective to enable the sustainable use of PGRFA and to reduce technical barriers for small-scale value chains” [51]. By acknowledging the internal genetic diversity of the populations that can be registered through the niche variety regime, it completely breaks with the UPOV-led paradigm of uniform plant varieties and recognizes one of the core characteristics of landraces or farmers’ varieties, their heterogeneity. The Swiss regime also explicitly recognizes the selection efforts that can be carried out in farmer seed systems, thereby allowing farmers to reclaim their role as innovators and breeders, beyond mere producers. It further offers farmers a wider, conscious and deliberate choice between homogeneous commercial varieties, and more diverse populations that are more adapted to local agroecological production [52], and can also be registered and commercialized by small-to-medium-scale farmer networks. The Swiss regime hence allows a single-entry point for different types of farmers’ varieties in a streamlined and straightforward regime (Figure 2).



**Figure 2.** Pathway for the registration of farmers’ varieties in Switzerland.

During the last 10 years working under the new Swiss ordinance, ProSpecieRara, a seed saver network working on the conservation and sustainable use of both plant and animal diversity, was able to reintroduce about 50 plant varieties into different marketing channels. Most of them were reintroduced in cooperation with the biggest supermarket chain in Switzerland that offers a large scale of organic vegetables. During all these years, ProSpecieRara never got in conflict with any quantitative or regional restrictions imposed by the actual directive described above. In general, ProSpecieRara construes that, for Switzerland, all the involved parties have found a valuable solution that leaves seed savers communities, and larger associations engaged in labelling and marketing like ProSpecieRara, enough freedom to operate to introduce landraces, old varieties, and

neglected species under the umbrella of the category “niche varieties”, back to the existing commercial value chain.

### **5. Shortcomings of Existing Pathways and Ways Forward toward a More Inclusive Seed Marketing Regime**

The comparison of the approach to farmer seed systems and their diverse varieties in the EU and Switzerland can be quite swift, faced with the complexity of the former regime, against the simplicity, but also inclusiveness of the latter with regards to the diversity of varieties, and its stance on the definition of seed marketing. However, comparing the regimes that allow the marketing of farmers’ varieties, their underlying rationale and associated criteria will prove beneficial to clearly highlight their limitations. This is especially the case for the EU, which is on its way to reform its legislation by the end of 2022. It thus has the opportunity to build an inclusive regime, with the participation of social actors in farmer seed systems, reflecting the many actions and values that co-exist in these systems.

Options for the marketing of farmers’ varieties undeniably exist in the European continent, but rarely address the variety of material conserved, managed, and developed by farmers, nor do they adequately represent the dynamic social ties and values that bring them together. As a rule, the criteria upheld by EU seed marketing laws to determine access to the market and subsequent production rules, their interpretation by authorities and competent committees, along with associated costs, implementation and control mechanisms are not suited for the identification of varieties appropriate for small-holder farming in ecologically diverse conditions [53]. The main goals of European seed marketing legislation remain rooted in the need to enhance agricultural productivity by providing high-quality seeds of uniform varieties. Farmers are first and foremost viewed as users/clients of the seed marketing system and have been gradually recognized as stewards of agricultural genetic diversity. The wider objectives of international agreements such as the International Treaty on Plant Genetic Resources for Food and Agriculture and the Convention on Biological Diversity are now also considered and cited in the legislation’s preambles [17]. This explains the initial static approach of the EU towards farmers’ varieties, literally coining landraces registered for marketing “conservation varieties”, as a static resource to be preserved through its access to the seed market, against the risk of genetic erosion. Steps towards the inclusion of the products of farmer innovation into the realm of EU seed marketing have been very timid. Indeed, the Union has effectively only allowed populations of certain cereals to enter the market merely six years ago, only in certain Member States. Through the new concept of organic heterogeneous material, they have now extended the opportunity to all species, also beyond the specific products that are cross-composite population, embracing the wide notion of evolutionary breeding and farmer selections, albeit solely in the context of organic agriculture. Conversely, the space carved for farmer seed systems in Switzerland has been wider from the outset. Through the strict definition of seed marketing, which does not outlaw the exchange, sale and use of seeds within farmer seed systems outside of “professional” commercial exploitation, the Swiss rules recognize the foundation of farmer seed systems itself. Through the concept of niche varieties, which encompasses both a static conservationist approach to prevent the loss of heirloom and traditional varieties, and a more dynamic approach allowing for the registration and marketing of newly developed varieties and populations, the Swiss rules better reflects the dual conservationist and innovative features of farmer seed networks.

The future reform of the EU seed marketing acquis, which will lead to the publication of a proposal by the European Commission at the end of 2022, is a significant opportunity to palliate to the conceptual and practical shortcomings of currently applicable rules with regards to farmers’ varieties in the EU and mirror the simpler and inclusive Swiss approach. Preparatory documents submitted to the EU Member States explicitly mention the need to align the legislation to international law, but also to the general political objectives set out by the EU in its European Green Deal, and especially its Farm to Fork and Biodiversity Strategies [54]. The Commission’s Farm to Fork Strategy specifically addresses the issue

of seed security and diversity, announcing “measures to facilitate the registration of seed varieties, including for organic farming, and to ensure easier market access for traditional and locally-adapted varieties” [55]. Although no official text has been put forward yet at the time of writing, the European Commission has published a so-called “Inception Impact Assessment” [56], which precedes the full impact assessment that any major legislative proposal needs to go through before it is submitted to the co-legislators of the EU. This document outlines different policy options for the future reform, with very different potential impacts on farmer seed systems. While in a number of envisaged pathways towards reform, the mere exchange of seeds between farmers would amount to seed marketing, another option points to the establishment of an ad hoc regime for the exchange of seed between farmers or excluding seed conservation networks from the scope of the rules [54]. The recognition of the specificity of farmer seed systems, and the drafting of adequate space for them to exist and flourish, if such space is delimited in line with farmers’ rights enshrined in the ITPGRFA, and peasants’ rights enshrined in UNDROP, considering the different socio-economic and environmental dimensions of these seed systems, would be a major positive change in the EU. Another potential point of action identified by the European Commission is the revision of the current rules on the registration and marketing of conservation and amateur varieties. It is yet to be seen how these rules will be reshaped, and whether they could offer a simple and efficient way into the market for the wide range of farmers’ varieties, both old and new, all the while ensuring a larger choice of options of locally adapted seeds for farmers, as it is the case in Switzerland. The comparison between the two market access regimes shows that it is possible to include different realities of farmer seed systems and their varieties, whether old or new, in a single simple regime, reducing administrative burden for both public authorities and social actors willing to use the regime to scale up their production and build value chains for the sustainable use of crop genetic diversity.

As shown by the illustrative examples from Italy and Switzerland, the participation of farmers and associated social actors from the beginning of any process related to the marketing of farmers varieties is key to build trust between public authorities and these actors, but also ensure engagement of these actors in the actual process of registration and seed production. Although the EU Directives do not outright ban the production and marketing of farmer-produced seeds in certain EU Member States, they rarely integrate farmers’ representatives in their technical expert groups and committees, and create important hurdles for the development of community-based and small seed enterprises [33]. These entities are yet more likely to develop and market farmers’ varieties or varieties more adapted to specific agroecological conditions, as opposed to the larger market segments commonly targeted by bigger commercial entities [57]. The uptake of derogatory regimes allowing the registration of farmers’ varieties has been uneven throughout European territory. The engagement of social actors and farmers’ associations in the registration process plays a key role in such uptake [7], but also depends to a large extent on the values that bring these actors together. These values are as wide and diverse as the farmers’ varieties they aim to conserve, manage and use: whether rooted in more liberal mindsets of seed freedom [58], to a deep contestation of regulatory regimes; just as their ties and cooperation with public researchers, and relationships with seed authorities [59]. Social actors involved in crop diversity management, whether farmer networks, seed saver organizations, or researchers, continue to be predominantly viewed as seed users or ‘stakeholders mainly interested in biodiversity issues’ by public authorities [60]. The level of dialogue between these social actors and national authorities therefore plays a key role in the recourse to the registration and uptake of farmers’ varieties, raising trust in the system, and awareness on the activities and needs of these varied actors. Faced with the reality of inappropriate standards and the inadequate opportunities for new participants to the seed market, scholars have advocated for a different regulatory approach to seed marketing, shifting the role of public authorities towards technical and policy support for the development of a wider range of seed provision options, rather than ensuring the direct supervision of seed production [8].

When the regime fails to reflect the needs and values of these actors, for instance by imposing criteria and language built for the needs of industrial plant breeders, by disproportionately limiting the scale of marketing opportunities, by focusing public authorities' role on the control of seed production rather than a supporting one, or by not providing enough guarantees against misappropriation of registered varieties by third parties, it is bound to be under-used by the very actors it was designed for. Without breaking with the current monopoly of the uniformity-led paradigm to open to door for seed marketing, and without acknowledging the complexity of farmer seed systems, the right to seeds and accompanying State obligations recognized in article 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture and article 19 of the United Nations Declaration on the Right of Peasants and People Living in Rural Areas will not be fulfilled in the European continent.

## 6. Conclusions

Seed marketing rules of the European Union and Switzerland both start with the premise of ensuring high guarantees and procedural safeguards for developers and users of industrial crop production. About ten years ago, both have nonetheless carved out some room for farmers' varieties, whether more traditional landraces or more diverse new populations. Swiss authorities have favored a simpler and single regime for niche varieties, which provides enough flexibility to encompass the different characteristics and needs of social actors engaged in the conservation, sustainable use, and dynamic management of agricultural biodiversity, with loose limits on the quantity of seeds to be marketed under the regime. Farmers and associated social actors in the EU on the other hand need to navigate a complex web of incomplete pathways into the market, putting emphasis on agrobiodiversity conservation, rather than social empowerment or the recognition of farmer innovation. Understanding the drive, needs and difficulties of the different actors which play a role in farmer seed systems and networks, preserving their specificities outside of the world of seed marketing, all the while constructing adequate pathways for the varieties conserved, managed, and developed by or for these actors into the market will be key in the way forward to a sustainable, flexible, and fair EU reform.

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