

Article

# Comparison of Farm Structures, Success Factors, Obstacles, Clients' Expectations and Policy Wishes of Urban Farming's Main Business Models in North Rhine-Westphalia, Germany

Bernd Pölling

Department of Agriculture, South Westphalia University of Applied Sciences, 59494 Soest, Germany; poelling.bernd@fh-swf.de; Tel.: +49-2921-378-3225

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**Abstract:** Low-cost specialization, differentiation, and diversification are common business models of urban farms in developed countries. Similarities and differences between them as well as detailed insights into specific farm characteristics are widely absent in scientific discourses. This paper compares farm structures, success factors, obstacles, clients' expectations, and policy wishes between specialized, differentiated, and diversified farms as well as diversifiers into agriculture. A standardized questionnaire was used for 21 personal in-depth farm interviews located in metropolitan areas of North Rhine-Westphalia, Germany. Being located in a metropolitan area is the most often named Unique Selling Proposition (USP). This is also mentioned as most important success factor followed by sociability and personal contact to clients, which both underpin the importance of direct producer-consumer linkages in urban settings. Additionally, it is assumed that a single food criterion is not sufficient to be successful, but several have to be merged to meet clients' expectations. In terms of marketing, differentiated and diversified farmers prefer a multi-channel approach, while specialized farmers and diversifiers into agriculture focus mainly on one specific channel. While both specialized farmers and diversifiers into agriculture cultivate smaller areas of farmland, the latter one offers the greatest number of jobs including those outside agricultural production. The findings obtained are expected to support farms and agricultural advisory services in individual decision making of future business development strategies and increase knowledge of urban farming's main business models.

**Keywords:** urban farming; business models; specialization; differentiation; diversification; urban agriculture; producer-consumer linkages

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## 1. Introduction

### 1.1. Urban Farming

Recently, food production in and around cities has received growing awareness and interest. Urban agriculture (UA) is a current issue researched scientifically and practiced in wider society [1–4]. Different UA definitions exist in academia [5]. An often cited one defines UA as “a permanent and dynamic part of the urban socio-economic and ecological system, using typical urban resources, competing for land and water with other urban functions, influenced by urban policies and plans, and contributing to urban social and economic development” [6] (p. 59). Actors, forms, activities, motivations, backgrounds, and objectives of UA differ greatly. Urban Agriculture is mainly distinguished into the two segments (1) urban farming and (2) urban gardening [2,7]. The sole focus within this paper is on urban farming, which builds on the professional industry under the wider urban

agriculture umbrella. Urban farming pursues primarily commercial goals [8]. Other designations are *inter alia* “commercial urban farming”, “peri-urban agriculture” [5,9], “metropolitan agriculture” [10] or “urban fringe agriculture” [11]. Opitz *et al.* (2015) define it as “a small- to large-scale agriculture that cultivates agricultural land predominantly at the fringe of cities. It is first and foremost economically motivated and is operated by professionals with medium to large distribution pathways from direct marketing up to global value chains” [5]. Urban gardening is small-scaled, while urban farming covers and cultivates considerably larger areas [1,8,9,12]. Urban farms are located mainly at the fringe (peri-urban), but also to some extent within (intra-urban) agglomerations [7,13,14]. Parallel to its contributions to the urban economy and agricultural sector, it also provides reasonable amounts of local food for the city [5]. In terms of food provision and food security it plays a considerably larger role than urban gardening. Agriculture has always been part of the city; however it was conceptually marginalized for a long time from the city as well as agricultural perspective. Agricultural activities in cities tend very often to be perceived as an obsolete form of economic activity, occurring in regression [15]. Yet, some cities have rethought the importance of food production in or close to cities on different levels [16]. Mainstream agriculture perceives itself as a purely rural economy and the terms agriculture and rural development have been, thus far, rather synonymous. However, a map-based estimation of global urban and peri-urban agriculture concludes that food production is far more than a rural phenomenon [17]. Cities of more than 50,000 inhabitants plus buffers of 20 km around these cities’ boundaries are home to approximately 60% of the global irrigated and 35% of the global rain-fed cropland. However, this proportion reaches six per cent for the cities themselves. This recent estimation puts agriculture on the urban agenda. Additionally, the prevalence of good pre-conditions for farming in and around cities, e.g., soil fertility, favorable micro-climates, and access to organic fertilizers, underlines not only the local, but also global relevance of UA [3]. Urban environments influence agriculture considerably. These cause heterogeneous adjustment strategies of farms practicing here to maintain themselves profitable and competitive [10,13,16,18,19]. Low-cost specialization, differentiation, and diversification are characteristic business models of urban farming within developed countries [20]. Similarities and differences between them as well as insights into these business models’ specific farm characteristics are widely absent in scientific discourses. The theoretical background (2.) summarizes state-of-the-art on key business models. This literature review shows that scattered case studies including business models’ characteristic farm structures and success factors have been published, but comparisons of UA’s business models especially with regard to obstacles, clients’ expectations, and policy wishes are lacking. Therefore, inter- and transdisciplinary research in this field focuses widely on collecting data to define and categorize key business models of UA [21,22]. This builds the study’s basis to compare the business models low-cost specialization, differentiation, and diversification by using detailed farm insights originating from in-depth farm interviews located in agglomerations of Germany’s densely populated federal state North Rhine-Westphalia.

### 1.2. Objectives and Main Conclusions

The main objective of this paper is to characterize similarities and differences between urban farming’s business models low-cost specialization, differentiation, and diversification in terms of farm structures, production and marketing, services, public and policy issues, success factors and obstacles, and clients’ expectations. The characteristic business models within urban and peri-urban environments are described in literature, but little is known about more detailed farm characteristics and attributes. It is assumed that the aspects under investigation differ between the business models. Detailed knowledge originating directly from in-depth farm interviews is of multiple values. Firstly, knowledge in this field is fragmentary and secondly it supports agricultural practice directly. In-depth information on urban farming’s business model characteristics enables agricultural extension services to guide farms and to enhance communication between agriculture and public authorities. Urban farming’s heterogeneity requires individual development strategies for farms, which is often following low-cost specialization, differentiation or diversification. These adjustments are rather often initiated

or accompanied by extension services. This paper is not targeting representativeness, but it assesses main characteristics of urban farming's business models by concentrating on farm structures, success factors, obstacles, clients' expectations, and policy wishes.

Location is the most frequently named Unique Selling Proposition (USP). This is also mentioned as the most important success factor followed by sociability and personal contact to clients, both of which underpin the importance of direct producer-consumer linkages in urban settings. Additionally, it is assumed that a single food criterion is not sufficient to be successful, but several have to be merged to meet clients' expectations. In terms of marketing, differentiated and diversified farmers prefer a multi-channel approach, while specialized farmers and diversifiers into agriculture focus mainly on one specific channel. While specialized farmers and diversifiers into agriculture cultivate smaller areas of farmland, the latter one offers the greatest number of jobs including those outside agricultural production. The more diverse a farm, the more clients' expectations are named by the farmers. The findings obtained are expected to support farms and agricultural advisory services in individual decision making of future business development strategies and increase knowledge of urban farming's main business models.

## 2. Theoretical Background: Urban Farming's Main Business Models

The following theoretical background condenses knowledge of the main business models including their characteristic farm structures; state-of-the-art of urban farming's main business models low-cost specialization, differentiation, and diversification is summarized here. Thereafter discussions on the survey's key results build on the existing knowledge in this field, especially by focusing on the rarely investigated aspects of success factors, obstacles, clients' expectations, and policy wishes.

Urban farming "is confronted with disadvantages [ . . . ] as well as advantages [ . . . ] caused by urbanization" [23] (p. 2). Farmers have to make use of urban opportunities and minimize urban disadvantages to pursue competitive business paths. Advantages and disadvantages differ according to the business models and individual structures of urban farms, but generic pros and cons are definable. Farm viability is challenged especially by land-related constraints, like fragmentation, access to land, loss of land, land ownership, and insecure land leasing conditions. Farmland in towns and cities is often of marginal importance in spatial planning [24,25]. Agglomerations are foremost characterized by urban elements, like buildings, traffic, and energy infrastructures. Competition for unbuilt land in cities is strong. Farmland is mainly used for building purposes whereas woodlands and recreation areas are protected by higher conservation statuses than farmland, which is mainly treated as a reserve for other, more profitable activities [26–30]. Urban expansions convert farmland especially adjacent to already existing built-up areas. This land is often comparable fertile as cities in temperate latitudes traditionally developed in areas that were historically advantageous for crop production. These circumstances concentrate farmland losses on the most productive farmland. Decreasing land reserves induce rising land prices [31,32]. Furthermore, fragmentation of farmland continues, which hampers cost-efficient and competitive cultivation. Land tenure has to be highlighted in the context of constraints and hurdles for viable urban farming as well. The majority of urban farmers lease land or other key resources, like farm buildings. Leasing contracts are often short-term [7,31]. This allows landowners to modify conditions in case of greater profit opportunities on rather short notice. These risks for farmers complicate planning and implementation of promising business models over longer time spans, as land use is insecure and largely dependent on land owners' attitudes [33].

Otherwise, huge consumer markets for agrarian products and services related to agriculture build the foundation for many viable and successful business models. The positive effects of metropolitan areas on agriculture were scarcely noticed in the past [28]. The most important one is the nearby consumer market, which offers favorable preconditions for food marketing and service provision inside urban boundaries. Urban farming considers the whole value-added chain of cultivation, processing, and marketing in the place of quantitative and qualitative demand [12,34]. This is, on the one hand,

relevant for common products and marketing channels, but also offers pathways for new linkages to urban demands and markets [35].

Mainstream agriculture—summarized with the simplified statement “grow or give way” prevails in rural environments, but is only of marginal relevance in urban spheres. Urban farms’ strategies are affected by various factors explaining mainly two directions they develop towards [10]. Either farms give up respectively turn into part-time farming with main incomes coming from activities outside agriculture, or farms adjust towards urban influences for profitability reasons [6]. These adjustments follow different ways resulting in urban farming’s heterogeneity. Urban farming is more diverse than in the rural counterpart, which is often dominated by one or two prevailing farm concepts per region. The urban variety and complexity causing heterogeneous adjustment strategies is highlighted by several authors (e.g., [1,2,8,9,12,13,19,23,33,35,36]). Frequently used farm adaptations range from high-value crop production, niche products, and marketing strategies apart from global markets to the provision of various services [3,10,33,37]. Products, added-values, and services away from mainstream offers and global market dominated price mechanisms are of relevance and contribute to urban farming’s diversity [35]. These frequently exploited farm adaptations are condensed by van der Schans (2010) in three overarching business models, which are defined by him as common urban farming business models in developed countries: low-cost specialization, differentiation, and diversification [20]. These UA business models show similarities to—but also differences—from the generic strategies cost leadership, differentiation, and focus defined by Porter (1980) for firms in general [38].

Two quotations from literature cover these characteristic business models by linking, firstly, high added-value crop production and cost efficiency to low-cost specialization, secondly, linking vertical integration of the added-value chain, marketing apart from global markets, and niche products to differentiation, and, thirdly, linking plurality in production and services to diversification [3,10,33,37]:

- (1) “For an urban environment, agricultural production systems that take advantage of the close proximity of resources and consumers, such as those offering fresh, added-value, specialty products would be most appropriate” [7] (p. 2500) and
- (2) Urban farming “has been identified as being more diversified, polarized and multifaceted than elsewhere” [9] (p. 640).

Van der Ploeg *et al.* detect a “growing squeeze on agriculture” [35] (p. 395). They postulate that since the late 1980s the profit difference between production’s gross value and costs in agriculture decreases due to multiple reasons. The two ways to broaden the gap between gross value and costs are, firstly, the exploitation of new revenues and, secondly, reduction of costs. It is estimated that this squeeze on agriculture is comparable strong in urban environments, which forces farms to increase the gross value or reduce the costs to respond to the squeeze. Here, urban farming’s business models differentiation and diversification are primarily looking for new revenue streams, while the low-cost specialization is predominantly reducing costs by focusing on one or few goods or services.

Specialization on one or few products to maintain competitiveness and profitability is used by some urban farms. Herein, products characterized by high added-values, high transportation costs, freshness and high perishability hold comparative advantages due to embedded advantages of producer-consumer proximity [10,13,19,33,39]. Specialized farms raise the added-value per farmland unit to stay competitive under limited and further decreasing farmland capital. Productivity, efficiency improvement, and intensification are closely linked to this business model. Cost leadership—a generic strategy of companies defined 1980 by Porter [38]—represents economies of scale, which is only possible to a limited extent for farms in urban environments [40]. In a wider sense, low-cost specialization of urban farms aims to lower costs by focusing on one or a few products and thus correlates with the cost leadership strategy. Low-cost specialization of farms in and around cities is analyzed by several scholars [6,10,12,19,33,36,39,41]. Many of these farms focus on horticulture including vegetables, fruits, ornamental plants, and other special crops. Urban farming’s orientation towards specialization

and productivity is verified by several case studies from North America and Europe [19,37,42,43]. Agglomerations, in which high-value production has been identified as important farm development strategy, are in terms of greenhouse production inter alia Paris and Lisbon [43], Copenhagen [19], and The Hague [44]. Increasing added-value through livestock farming however plays a minor role within urban environments. This can be explained with a focus on crop production due to the prevalence of fertile soils in and around many cities and with likely interferences of livestock emissions to nearby settlement areas.

Urban societies' food demand patterns constitute the basis for differentiation strategies of nearby farms via distinction from commonly used ways of agricultural production and marketing. Differentiated production fills niches apart from commodity crops and livestock breeding [20]. In the production part, exotic species, traditional breeds and other rare or even new crop and animal varieties produce Unique Selling Propositions (USPs). Urban influences encourage urban farmers to innovate the business towards differentiation [9,45]. Differentiation strategies do not solely focus on primary production, but largely incorporate processing, packaging, distribution, and marketing [20,46]. Intermediaries of the value-added chain are excluded by vertical integration on-farm. Condensed value-added chains offer manifold additional business fields. Producer-consumer relationships are based on personal, transparent, and reliable interactions with the aim to receive higher prices than on anonymous commodity markets. In order to build these close relationships, direct marketing arrangements between producers and consumers are decisive and a characteristic feature of the differentiation business model. The vicinity to huge consumer markets offers favorable conditions for direct marketing of food and non-food products [8,9,28]. Thus, farmers are encouraged to exploit city-bound local and regional marketing as key marketing channel. These short food supply chains result in direct producer-consumer linkages. Urban farm's direct marketing arrangements embrace diverse selling strategies. Frequently used are farm shops, farmers' markets, sale booths, and pick-your-own offers. Additionally, food boxes and online shop orders directly delivered to the customers' doors increase the number of direct marketing strategies. A study of direct selling urban farms in Swedish Uppsala and Spanish Barcelona Metropolitan Region most frequently names farmers' markets, consumers' cooperatives, CSA (Community Supported Agriculture) and shops in the city as appropriate marketing channels [47]. Apart from individual persons, facilities like restaurants and public canteens offer further possibilities to shorten the value-added chain [20]. Recently, additional direct farmer-citizen interactions emerge progressively. Two prominent examples are CSA and rental concepts of land, plants, and animals. An increasingly used concept in Germany is "rent-a-field" (German: *Mietgärten*), which merges commercial urban farming with non-professional hobby gardening activities [48]. It is mainly located in and around cities with certain population quantities. Interested people rent small gardening plots on seasonal base. They cultivate and harvest a variety of plants, mainly vegetables. Beforehand, the plots are prepared by the farmers, which get paid for renting the land in return. This concept is mainly offered by farms which are already conducting direct marketing on-farm to create synergy effects. Organic farming is an example for product differentiation. Empiric research on organic farming's spatial distribution in the context of urban and rural is ambivalent. Some case studies conclude that urban areas are privileged for organic farming, like in Montreal, Canada [28], in the UK [49], and in Denmark [19]. In contrast, Tobias *et al.* (2005) conclude that urban environments are underprivileged for Swiss organic farming [50]. They assume that other, here natural, influences possess a larger influence on organic farming's spatial distribution pattern than urbanity.

Diversification builds the third business model frequently used by urban farms to competitively adjust to urban conditions. Scientific discussions particularly on farm diversification started in the late 1980s and early 1990s [51,52]. Orientation towards services is one pillar, but also product diversification has to be considered here. It is most effective if the different farm components create synergies. "New products and new services have meant a diversification towards new markets and this contrasts sharply with [ . . . ] trends towards specialization" [35] (p. 403). Diversification

is directly correlated to multifunctionality [46,53]. Urban environments encourage farms to exploit diversified business models due to larger numbers of potential private and public clients. Moreover, urban conditions complicate to resist against more cost-efficient, larger-scaled rural competitors on agricultural commodity markets. Contrary to economies of scale, some diversified farms are able to make use of economies of scope [54]. Herewith, farmers are able to profit from the same resource, like a good, building or knowledge, in different ways. Diversification supplements farmers' incomes by using farm resources in several ways by adjusting to the urban environment [16,55]. The variety of service activities is manifold. It includes especially touristic, recreation and leisure-time, social and education, and landscape-related services, which are theoretically and empirically discussed by various scholars [2,9,10,18,28,36,52,56,57]. Equestrian services are a common strategy of diversified farms. The provision of services related to horses is a viable alternative to primary production "as long as sufficient population density exists within easy traveling distance" [18] (p. 195). Some regional and empirical case studies result in significantly higher spatial distribution densities of horses and horse farms in more urbanized areas [19,58–60]. A second example for diversified farms is social farming; also often called "green care" and "care farming". Herein, productive farming is combined with and used for healthcare and attached social services for people with special needs. It is of higher relevance in urban and peri-urban settings due to its proximity to higher numbers of (possible) clients [20,61,62]. Social farming is a possibility for traditional farms to diversify, but it also builds a diversification strategy of businesses from outside agriculture stepping into the farming sector, especially from charitable organizations.

### 3. Materials and Methods

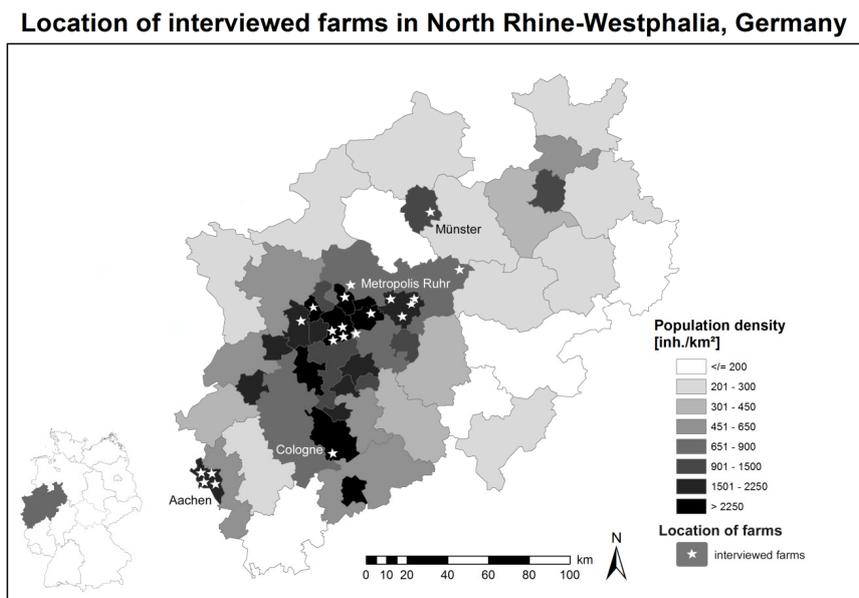
The literature-based theoretical background defines and characterizes key elements of the three most relevant business models in developed countries' urban farming. This knowledge is mainly bound to general farm structures, like production, marketing, and service provision, but information on success factors, obstacles, clients' expectations, and policy wishes is widely absent. This knowledge is of relevance for the farming sector and associated advisory services to develop towards viable and promising business models and it can also be of value for planning and policy to recognize viable farming in urbanized regions as a tool to boost cities' sustainability [6,8].

Based on the literature review, personal farm interviews were carried out to detect detailed insights of specialized, differentiated, and diversified farm models. Members of working group "Entrepreneurial models of urban agriculture" of the EU COST-Action "Urban Agriculture Europe" (2012–2016) developed and tested a standardized questionnaire for urban and peri-urban agriculture in Europe ([63]; see Supplementary Material). The questionnaire asks for numerous quantitative and qualitative data, especially geographical setting, agricultural practice, marketing, institutional environment, success factors, obstacles, clients' expectations, policy wishes, and societal benefits. The investigated topics considered in the questionnaire are based on discussions and negotiations of the working group members—scientists and practitioners in urban farming—collaborating in this research field. State-of-the-art knowledge is largely ensured by inputs from these European experts.

Within the densely populated federal state North Rhine-Westphalia (NRW), Germany, COST-members carried out 21 interviews with urban farmers located in urban and peri-urban areas. Fifteen of these farms are located in Metropolis Ruhr, four in Aachen, one in Cologne and one in Münster (Figure 1).

The farm interviews in NRW were chosen as good-practices to be analyzed in terms of farm structures, success factors, obstacles, clients' expectations, and policy wishes. The four business models considered herein are specialized farms, differentiated farms, diversified farms, and diversifiers into agriculture. These manifold farms, which represent the four business models, show how farming is able to make use of urban environments to stay economically viable. The three business models listed first are traditional farms, while diversifiers into agriculture are newcomers coming from outside the agricultural sector. Two farms belong to the specialized business model; one is a floriculture

farm in Aachen and one a high-quality equestrian service farm without productive farming in Essen, Metropolis Ruhr. Furthermore, eight of the 21 interviewed farmers run differentiated farms. Some differentiate their production focus away from traditional crops and livestock, while most other farms step into direct marketing strategies apart from highly competitive global commodity markets. The four diversified farms cover product diversification and also service provision to reduce dependence from agrarian goods and underlying market price mechanisms. Seven farms belong to the fourth business model diversifiers into agriculture. This business model covers companies diversifying from their core business into the agricultural sector. Within this survey, these are seven farms run by charitable organizations, which use food production to offer care farming for people with special needs.



**Figure 1.** Location of farm interviews in NRW. These farms are all located in the metropolitan areas Aachen, Cologne, Metropolis Ruhr, and Münster. (own illustration).

Limitations of the study have to be considered when discussing the results of this analysis: The 21 farm interviews serve as good-practices to analyse, compare, and discuss aspects of urban farming's business models, but they are not representative. As the interview design was jointly developed by the working group members, the questions are not explicitly targeted towards the conditions in North Rhine-Westphalia's agglomerations, but towards a broader and more generic European context. Additionally, the number of interviews between the four analyzed business models is unequal, which is caused by the open character of the data collection under which all COST-members were asked to use the standardized questionnaire for interviews of urban farmers.

However, the results of the personal interviews are systematically aggregated to draw conclusions on key similarities and differences between urban farming's main business models. Despite the limitations, which have to be thoroughly considered, the findings are suitable to be mirrored back to practical urban farming and also to the advisory services as important middleman supporting farmers in decision making.

## 4. Results and Discussion

### 4.1. Farm Structure: Farm Size, Jobs, and Landownership

The average farm size and number of offered jobs is higher within the sample compared to the federal state's averages. The average size of interviewed farmers is 60 ha, while this value is somewhat smaller for the federal state with 41 ha [64]. Between the investigated four business models the farm

sizes differ quite a lot (Table 1). The diversified farms are characterized by the largest farm size with on average more than 120 ha per farm, but ranges between 15 and 320 ha. Larger than the sample average are also the differentiated farms with 75 ha covering the spectrum from five to 130 ha. The two specialized farms and also the diversifiers into agriculture cultivate considerably less land per farm. The specialized farms increase the turnover per farmland unit by intensification and focus on certain products respectively services. The diversifiers into agriculture require also rather little farmland, because the core business is mainly outside land-bound farm cultivation. The diversification strategy into farming is used to enrich the number of business fields or to use farming as a selling strategy. Care farming in Germany is typically used from charitable organizations to enrich the business by offering a larger variety of jobs for people with special needs. Furthermore, agricultural work is used as a therapeutic approach for recovery of special symptoms as well as for addicted and young adults without clear prospects.

**Table 1.** Farm size and jobs of the 21 interviewed farmers grouped to the four business models.

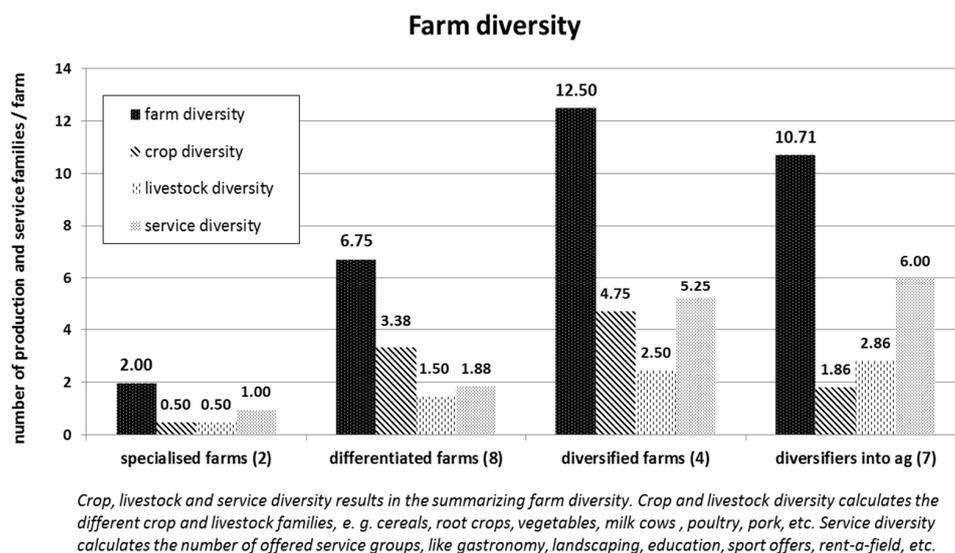
Business Model	Number of Farms	Average Farm Size (ha)	Average Number of Jobs (full-time equivalent)	Average Job Intensity (number of jobs/ha farmland)
Specialized farms	2	20	9	0.45
Differentiated farms	8	75.5	7.9	0.1
Diversified farms	4	122.5	13.1	0.1
Diversifiers into agriculture	7	18.2	43.2	2.73
Sum/Average	21	60.1	20.8	0.35

While the business model diversifiers into agriculture are characterized by rather little farmland, they offer the most jobs. The seven surveyed care taking farms offer on average more than 43 full-time jobs related to agriculture. The engaged people with special needs as well as the pedagogues, therapists, and social workers supporting the people with special needs, upgrade care farming to a labor-intensive business. The people with special needs in care farming comprise physically and mentally disabled people, but also addicted people, seniors, and young adults facing problems on the regular labor market. The three business models of traditional farms offer about ten full-time job equivalents. The 21 interviewed farmers offer on average about 20 full-time jobs per farm. This is distinctly not representative, as the average reaches 3.4 full-time jobs per farm in the respective federal state [64]. Nonetheless, these presented job offers highlight the economic dimension of urban farming. The jobs are not limited to agricultural and horticultural production, but include also marketing, advertisement, and bookkeeping as well as a wide range of job opportunities in services, like pedagogues, therapists, educators, horse riding instructors, *etc.* The survey reveals a rather strong correlation between farm size and number of jobs for the traditional farms' business models with a correlation coefficient of 0.75. On the other hand, no correlation between these two factors exists for the whole sample of 21 farms (correlation coefficient 0.02). These findings, which are limited to a rather small number of interviews, show a trend to increasing job numbers with growing farm sizes for traditional farms, while newcomers into farming with core businesses outside agriculture blur this trend.

The lease of farmland is an important element of the farm structure and affects the whole farm concept. 17 of the 21 interviewed farmers lease farmland. A minority of one fifth own all the land they cultivate. It is common to lease farmland in addition to own land. About half of the interviewed farmers have at least some farmland in own property. A minority of diversifiers into agriculture owns farmland, while it is the majority for the traditional farmers. The aspect of landownership is highlighted mainly by the nine organic farmers of the sample, but in a diametric way. It is mentioned that farmers are generally reluctant to convert to organic farming because of insecure or even unpredictable mid- and long-term planning perspectives due to the prevalent practice of short-term leasing contracts. On the other hand, some landowners, mainly public ones, claim organic production systems as terms of lease. These public farms and farmland are often leased from care farms conducting organic and labor-friendly production for people with special needs.

#### 4.2. Diversity in Production and Services

The calculated farm diversities result from the addition of crop, livestock, and service diversity. Within this survey, diversified business models show higher farm diversities than the differentiated and specialized farms. The diversified farms reach the highest farm diversity value (12.5) followed by the diversifiers into agriculture (10.71), while it is considerably lower for the specialized farms (2.0) (Figure 2).



**Figure 2.** Average crop, livestock, service, and aggregated farm diversity values for the four business models.

The diversified farms result that high, because different services as well as various crop and livestock families are all rather often incorporated in individual farm strategies. This manifold approach is already implied in the name of the business model diversification. The diversifiers into agriculture are strongly emphasizing services, especially social and educational ones, while the numbers of crop and livestock families are lower. The differentiated farms reach on average a farm diversity of 6.75. Half of this diversity comes from crop diversity (3.38). The eight differentiated farms mainly differentiate crop production towards high-value crops and direct marketing strategies apart from highly competitive global commodity markets. Their service diversity is lower compared to diversified farms and diversifiers into agriculture. As the term specialization already implies, the farm diversity is lowest for this business model.

##### 4.2.1. Production Diversity

Production diversity of crops and livestock is highest for the diversified farms followed by the differentiated ones and the diversifiers into agriculture (Figure 2). The two specialized farms cultivate only one crop (ornamental plants) respectively keep only one livestock family (horses) resulting in the lowest production, crop, and livestock diversity values of all four business models. For the 21 investigated farms, the farm diversity is widely independent from the farm size (correlation coefficient: 0.19). Twenty of the 21 interviewed farmers grow crops—only the specialized horse farm does not grow any crops. Crop diversity is on average highest for the diversified (4.75) and differentiated (3.38) farms. More in detail, three quarters of the farms cultivate vegetables. The large majority of diversified and differentiated farms grow cereals, while it is less important for the diversifiers into agriculture and specialized farms (Table 2). On a lower level, similar distributions are visible for root crops. In total, nine farms cultivate root crops, especially potatoes, which are in all present cases connected with vegetable production. One third of the farms grow some kind of fruits,

which is more pronounced by diversified farms and diversifiers into agriculture. Four differentiated and diversified farms grow maize, which is in all four cases connected with livestock production, primarily cattle.

**Table 2.** Characteristics of production diversity: Crops and livestock <sup>1</sup>.

Products	Specialized Farms	Differentiated Farms	Diversified Farms	Diversifiers into Agriculture
Cereals	-	++	++	-
Maize	-	+	+	-
Rapeseed	-		++	-
Root crops	-	+	++	-
Vegetables	-	+		+
Fruits	-	-	+	+
Ornamental plants	++	-	++	-
Milk cows	-	+	-	
Cattle	-	++	-	
Pork	-	-	++	
Poultry	-	-	++	+
Sheep/Goat	-	-	++	+
Horses	+	-	+	++
Bees	-	-	-	++

<sup>1</sup> “++” > 20% and “+” > 5% above 21 farm-average; “-” > 20% and “-” > 5% below 21 farm-average.

About 80% of the interviewed farmers keep livestock with a focus on poultry (48%) and horses (43%). Sheep/goat and cattle are named by nearly 30% followed by pork (24%), while three farms keep milk cows and bees each. Poultry is named by three of the four diversified farms. Only one of the eight differentiated farms keeps horses, while the proportion is relatively higher for the three other business models, especially diversifiers into agriculture. Sheep/goat and pork is preferably used by diversified farms and diversifiers into agriculture, while cattle are highlighted by the differentiated farms (50%). Along with cattle, milk cows reach the highest proportions in the business model differentiation. The three bee keepers are diversifiers into agriculture, while it is not conducted by a single traditional urban farm.

The summarized production diversity shows that the diversified farms cultivate and keep a wider range of crops and livestock compared to the other three business models. The diversifiers into agriculture focus mainly on vegetables and fruits, poultry, sheep and goat, horses, and bees. These crops and animals are suitable for labor-intensive, but also labor-friendly activities for people with special needs. The majority of approximately two thirds connect its production of crops and livestock with local and seasonal attributes. Nearly 90% of the differentiated farms offer seasonal/fresh food, which show a clear focus on independent production and marketing away from mainstream commodity markets and inboard price mechanisms on global scale.

#### 4.2.2. Organic Farming

In this sample, certified organic food production is mainly conducted from diversifiers into agriculture and differentiated farms. In care farming, organic production increases the number of possible working fields for people with special needs to work in rather labor-intensive agricultural production. Furthermore, the abandonment of chemical pesticides reduces the risks for the clients working on the farm. Four of the eight differentiated farms market certified organic food, which is always connected with direct marketing.

Apart from certified organic farming, four additional farms orient on organic production and higher levels of ecological and social sustainability, but without labeling. Two diversifiers into agriculture follow the regulations of organic production, but avoid the labeling because of the strict

obligations and control system. Additionally, one differentiated and one diversified farm pays special attention on animal-welfare. Both run a farm shop and offer farm visits for people generally interested in farming and food production.

#### 4.2.3. Service Diversity

The service diversity is maximum for the diversifiers into agriculture (6.0) and diversified farms (5.25), while it is remarkable lower for differentiated and specialized farms (Figure 2, Table 3). This is an expectable outcome, because specialized and differentiated farms primarily focus on production and marketing of goods. On the other hand, the business model diversification usually implies service-orientation. The service category mentioned by most farmers is education/information (76%), which is a part of the farm concept of all interviewed diversified farmers and diversifiers into agriculture. Education/information services are followed by the two agro-tourism services events (57%) and gastronomy (43%). Both are again mainly highlighted by the two diversification business models. Furthermore, events and gastronomy are often also connected with each other. Other agro-tourism services are named by less than 20% of the sample: 19% catering, 19% child's birthdays, 14% sports/art and 14% equestrian services. Generally, agro-tourism is in the large majority of cases combined with education/information.

**Table 3.** Characteristics of service diversity <sup>1</sup>.

Products	Specialized Farms	Differentiated Farms	Diversified Farms	Diversifiers into Agriculture
Education/Information	-	-	++	++
Events	-	-	++	++
Gastronomy	-	-	+	++
Care farming	-	-	-	++
Rent-a-field	-	+	++	-
Catering	-	-	-	++
Child's birthday	-	-	+	++
Lectures/Courses	++	-	++	
Landscaping	-	-	++	
Sport/Art	-	-	++	
Equestrian services	++	-	-	+
Wage-business	-	++	-	-
Petting zoo	-	-	+	
Accommodation			++	
Farm kindergarten				+

<sup>1</sup> "++" > 20% and "+" > 5% above 21 farm-average; "-" > 20% and "-" > 5% below 21 farm-average.

Care farming is named eight times; seven times from charitable organizations diversifying into agriculture, but also by one differentiated farm. This organic horticulture farm with direct sale also offers working places for addicted people and young adults facing problems on the regular labor market. The farm receives public payments for their qualification measures and actions for these people. The core business is organic production of vegetables and seedlings plus direct marketing via farm shop, farmers' markets, and delivery service of vegetables boxes. Furthermore, care farming is most often combined with services for other target groups without special needs: Between five and seven additional services contribute to their overall farm concepts; one integrates also a farm kindergarten.

Six interviewed farmers offer the participatory concept "rent-a-field", whereof most are diversified (50%) and differentiated (37.5%) ones. To conduct this increasingly used concept, the farm prepares small plots with a variety of vegetables, herbs and flowers. These plots are then rented to interested people seasonally. "Rent-a-field" addresses the growing interest of urbanites in food production and is simultaneously a worthwhile element for farm businesses, especially for those with a farm shop to exploit two-sided positive synergies. Additional services named by a few farmers include

special lectures and courses, which are more qualified, elaborated, and more specific than common education/information services focusing on basic knowledge. The specialized floriculture, for instance, offers courses in floristry. Landscape-related services are mainly offered by diversified farms.

#### 4.3. Farm Marketing and Advertisement

Differentiated and diversified farmers prefer in terms of marketing a multi-channel approach, while specialized farmers and diversifiers into agriculture focus mainly on one specific marketing channel (Table 4). Three of the interviewed farmers name no marketing channel, because they do not conduct any food production and downstream marketing.

**Table 4.** Marketing and advertisement channels of interviewed farm business models.

	Total	Specialized Farms	Differentiated Farms	Diversified Farms	Diversifiers into Agriculture
Average number of marketing channels	2.38	1.0	3.25	3.25	1.29
Average number of advertisement channels	1.48	3.5	0.88	1.75	1.43

Direct marketing is an important building block of successful urban agriculture business models. Eighteen farms conduct direct marketing, whereof five focus solely on a farm shop. Apart from on-farm shops, direct marketing arrangements like delivery services, online shops, pick-your-own self-harvest fields, farmers' markets, shops in the city, and self-service automats are used. Additionally, Community Supported Agriculture and "rent-a-field"-offers can also be summed to the direct marketing approach as intermediaries of the added-value chain are excluded. Nearly half the farms, which conduct direct marketing, only focus on this marketing, while the remaining ten farms join it with marketing via wholesalers and retailers. The majority of farms focusing solely on direct marketing are diversifiers into agriculture, while the traditional urban farms mainly combine different marketing channels. The farms offering "rent-a-field" are in five of six cases merged with a farm shop, which creates positive synergies. The personal contact between farmers and renters of gardening plots often induces some additional purchase in the farm shop.

The differentiated farms, which prefer the multi-channel marketing approach, use the widest range of direct marketing channels. Within this rather small sample, it is the only business model, which uses farmers' markets, a self-service automat, and CSA. This fits well into the business model, which aims to exploit niches in production, processing, and marketing. In this interview sample, there is a tendency to an increasing number of direct marketing channels along with increasing crop diversity (coefficient of correlation: 0.39), which is highest for the traditional farms (coefficient of correlation: 0.68).

Advertisement plays a certainly larger role for the specialized farms compared to the three other business models (Table 4). As the specialized farms are limited in their number and range of products, this can be explained with their need to attract as many clients as possible for their specific product. Different advertisement ways are named, whereof websites are named most often. This is followed by word-to-mouth, newsletters, printed leaflets, regional TV, and radio media.

#### 4.4. Unique Selling Propositions

Location is the most frequently named USP. The question "what makes your products or services unique compared to other providers?" receives on average 2.5 answers per farm. It ranges from 2.1 (differentiated farms) to 3.5 (specialized and diversified farms). The number of answers to this question is worth further discussion. They can either be interpreted in a positive or in a negative way. More than one USP addresses most likely a larger number of business fields, but at the same time it

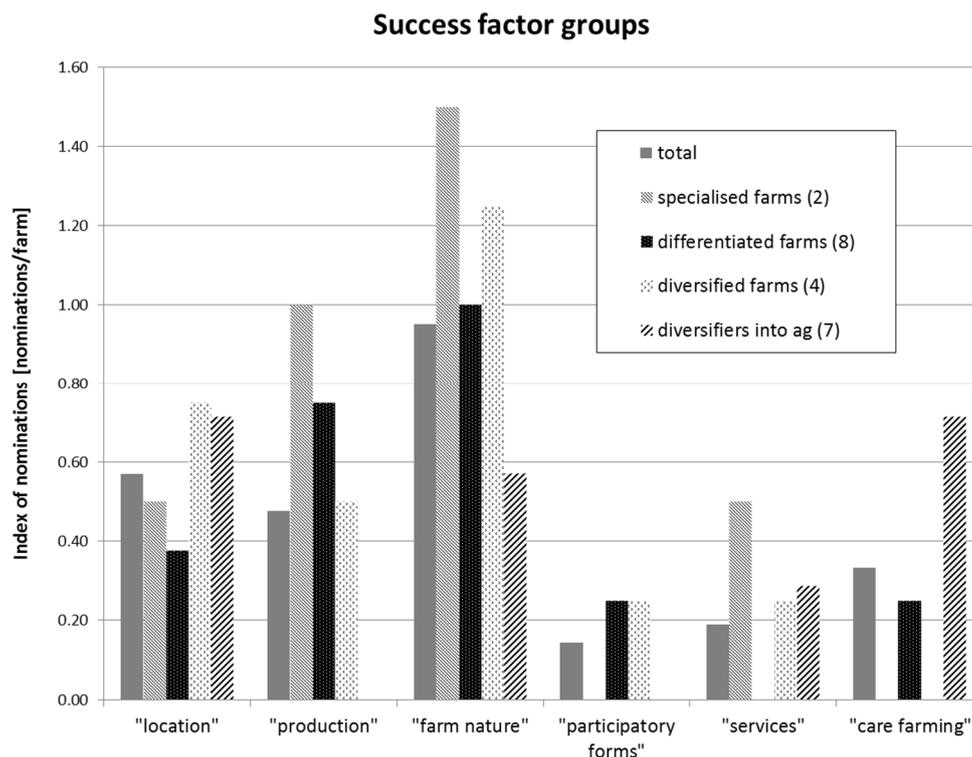
can be interpreted in a way that these farms do not have a clear and precise strategy. The four business models have to be discussed differently. Therefore, it is comprehensible that diversified farmers and diversifiers into agriculture name more than one USP with regard to their intertwined business fields.

A closer look to the mentioned USPs shows, that the location is named most often (33%) followed by care farming, which is boosted by the diversifiers into agriculture. It seems that most interviewed farmers see the urban location as a huge advantage, although some urban influences might challenge the farm business. Furthermore, additional spatial aspects wedded with the location (“the *only one in the region*”, “*beautiful location/environment*”) are highlighted. Food- and product-related USPs (“*product diversity*”, “*organic food*”, “*food quality*”, “*seasonal/fresh food from here*”) are also addressed here to a certain extent. Additionally, a smaller number of interviewees name “*transparency*” and “*connection to consumers*” as unique farm features. The specialized farmers emphasize spatial as well as food- and product-related USPs. The differentiated farmers name the location less often than the other three business model farmers, while product and marketing aspects (“*organic food*”, “*unique marketing*”, “*rent-a-field*”) are highlighted by them.

#### 4.5. Success Factors and Problems

The location is accentuated as the most important success factor of interviewed urban farmers. In total, 22 different success factors are named, whereof “*farm location*” is named by 57% followed by “*sociability*”/“*personal contact to clients*” (33%). All other mentioned success factors have nomination rates of less than 20%. On average, the farmers name between 2.5 and 3.5 success factors dependent on the business model. Only three farmers—all differentiated farms—name one success factor, all others name more. This strengthens the assumption that differentiated farms have a clearer focus on how to make profit with a precise farm differentiation strategy. Generally, the number of success factors is independent from farm size (coefficient of correlation:  $-0.0$ ) and number of farm offers (coefficient of correlation:  $-0.01$ ).

For a better overview of named success factors, Figure 3 groups answers into six categories: location, production, farm nature, participatory forms, services, and care farming. The success factor location is strongly emphasized by diversified farmers and diversifiers into agriculture both with nomination rates of more than 70%. The category location consists only of one success factor, while the remaining five categories cover several nominations. Eleven of the 12 farmers name location in combination with success factors from the group “*farm nature*”, like “*sociability*”, “*personal contact to clients*”, “*tradition*”, and “*family-owned farming*”. This means that urban environments offer advantageous locations in case the farms make use of the proximity to a huge consumer market through positive loaded farm attributes and personal producer-consumer contacts.



**Figure 3.** Success factor groups of urban farming's business models.

The specific success factors summarized under the category farm nature are "tradition", "family-owned farm", "personal motivation", "sociability"/"personal contact to customers", "authenticity", "no 'large-scale farming'", "innovative and economic thinking", "low costs for land lease", and "good and reliable workers". Many farm attributes named here are soft factors, which are able to support marketing of products and services. These success factors are obviously more important for the three traditional farm business models compared to the diversifiers into agriculture. No production- and food-related aspects (regional, seasonal, fresh, diverse, and high quality food) are mentioned by diversifiers into agriculture. For this success factor group, an increasing tendency is visible from diversified over differentiated to specialized farms. Specialized and also differentiated farms are largely dependent on one or a few products. This means that these farms have to pay accurate attention to their offered products.

A wide range of problems is also named by the interviewed farmers, although in sum less problems than success factors are named. The interviewed diversified farmers name more problems than the other business models. The called problems can be grouped into the six classes: farm management, production, services, urbanization, consumer/market, and natural influences. Farm management problems are named most often followed by problems in the field of services, urbanization, and consumer/market. Problems in farm management are especially emphasized by diversified farmers, which has to be explained with the overall farm complexity and attached challenges. Specific aspects named here are inter alia "social responsibility for employees", "personnel management" in general, "interest conflicts in diversified farms between the business elements", and "logistics". Problems in production cover for instance "uncertainty in cultivating niche products" caused by knowledge gaps in this field as well as "one-year lasting leasing contracts", which hamper the mid- and long-term business planning. These production-related problems are mostly named from differentiated farmers, while the service-related problems are highlighted by diversifiers into agriculture, like "resource-consuming inclusion in care farming practice". Problems specified under urbanization are "urban sprawl", "external investors buying farmland", "vandalism", and "robbery". "Urban sprawl" is named from two differentiated and two diversified farmers. These two business models are characterized by and

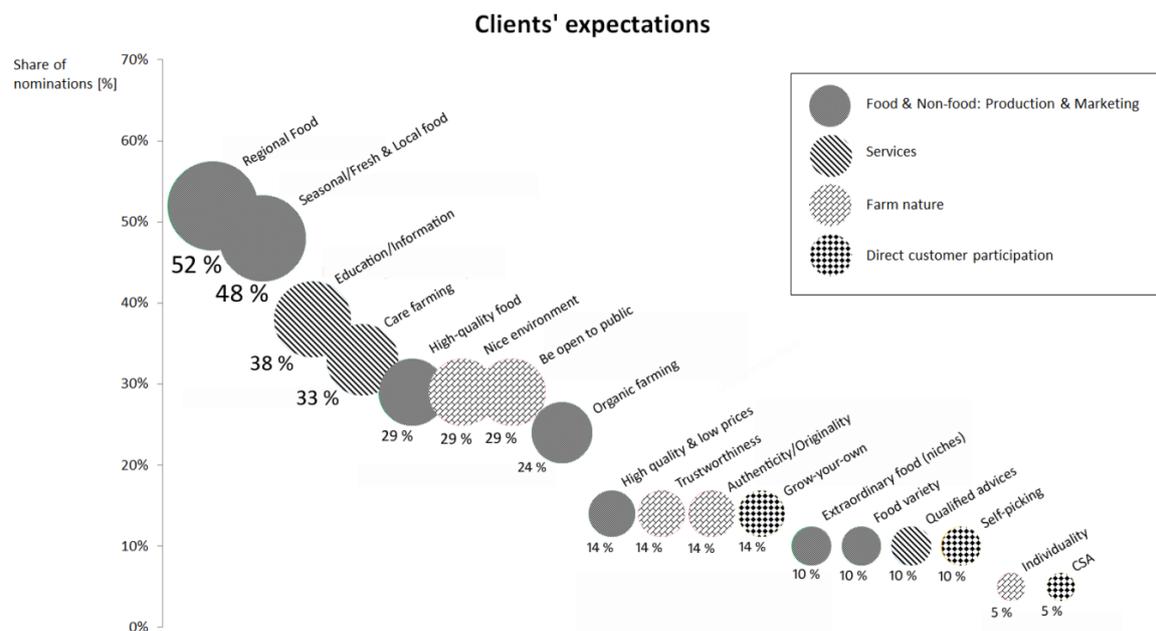
dependent on comparable large farm sizes (s. Table 1), which makes continuous loss of farmland more dangerous for them to stay profitable. Differentiated and diversified farms are stronger bound to farmland than specialized farms and diversifiers into agriculture. The two latter named business models are able to maintain their farm concept on limited farmland resources, while differentiated and diversified farms are mainly dependent on larger areas of farmland to offer either differentiated goods or a huge variety of agrarian products. Three of the four farmers naming “urban sprawl” as a problem highlight at the same time location as a success factor. Here, two different levels have to be considered: The overall farm locations within urban and peri-urban environments are seen positively in terms of consumer and market access, while “urban sprawl” threatens the continuity of the particularly farmland-bound business models differentiation and diversification. Problems belonging to the consumer/market group include inter alia the designations “low food prices”, “low purchasing power in the neighborhood”, and “customers’ high expectations”.

#### 4.6. Societal Frameworks

##### 4.6.1. Clients’ Expectations

Diversified farmers name more clients’ expectations (5.25) than the three remaining business models (3.5). This can be explained with the manifold approaches of diversified farms, which are creating more expectations likewise. The two expectations named most often are “regional food” (52%) and the more detailed combination of “seasonal/fresh and local” (48%) food production (Figure 4). The second-placed expectation precisely emphasizes the freshness of regional products. These two expectations are named by more than half of the specialized, differentiated, and diversified farmers, while it is named considerably less by diversifiers into agriculture. The two following expectations are “education/information” (38%) and “care farming” (33%), while all other expectations are named by less than 30%. Beyond these summarizing expectations, this question reveals some clients’ expectations, which are characteristic for specific business models. The specialized farms name expectations linked to individuality and quality, like “extraordinary food (specialties)”, “individuality”, “high quality food”, and “qualified advices”, while the differentiated farms emphasize non-mainstream production and marketing concepts as well as closer and participatory producer-consumer interactions: “organic farming”, “high quality food”, “grow-your-own”, and “harvest-your-own”. In contrast to the answers of the specialized and differentiated farms, the diversified farmers name also some clients’ expectations not related to production and marketing. The farm’s appearance and nature seem to be more important for diversified farmers than for specialized and differentiated ones. The mentioned expectations fitting to this finding are “authenticity/originality”, “nice environment to stay”, and “trustworthiness”. Clients’ expectations named by the diversifiers into agriculture are partly overlapping with the previously mentioned nominations of diversified farms related to the farm appearance and nature. “Nice environment to stay” and “being open to public” are highlighted by three of the seven diversifiers into agriculture, but an even stronger focus is set to “care farming” and “education/information”.

All the farms naming “good food for low prices” as a clients’ expectation do not call any other food-related criterion, like regional, seasonal, fresh, quality, and organic. Fourteen of the 21 farms naming food-related criteria combine more than just one single food-related criterion. This leads to the suggestion that clients expect more than just one food-related aspect, for instance regional combined with organic, quality combined with seasonal, etc. Furthermore, it seems not to be sufficient to just focus on regional product marketing. All farms naming regional food as clients’ expectation link it to additional food-related criteria, most often with seasonal/fresh food.

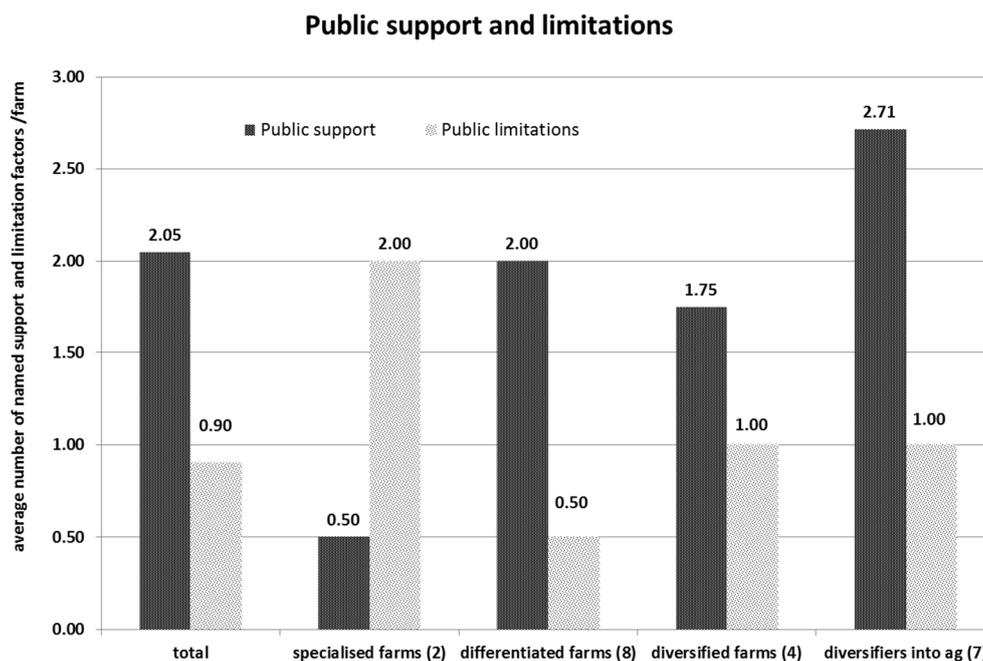


**Figure 4.** Clients' expectations—attributions of interviewed farmers.

#### 4.6.2. Public Support and Limitations

Public support contributions are mentioned more than twice as often as public limitations (Figure 5). This relation fits to the three business models of differentiation and diversification, while the two specialized farms name more limitations than supportive aspects. The named public supports are all focusing on financial issues, while public limitations cover a wider range of topics. All supportive arguments are limited to public payments into the farming sector. CAP direct payments are named most often (71%) and with the highest proportions for differentiated and diversified farms. Additional public payments for certified organic production and social work are also named comparable often. Regarding public support, the diversifiers into agriculture name the most aspects followed by differentiated and diversified farmers. Two of the 21 farmers name no public support, which means that these two farms disregard the direct payments they receive from European's Common Agricultural Policy (CAP).

Farms are rather reluctant to name public influences, which affect farm businesses negatively. Eight farms do not name any public limitation. It is likely that farms are reluctant to specify public limitations, as the businesses are noticeably dependent on public money. This is especially the case for diversifiers into agriculture, which build their businesses to a large extent on public payments for care taking arrangements. Furthermore, some differentiated and diversified farms do also not reveal any public limitations. The replies regarding this issue are mainly farm-specific. Examples are "one-year lasting leasing contracts of municipalities" and the "control-system for processed food". The most often emphasized limitations are regarding building-bound permissions. This covers mainly the aspect of converting buildings dedicated for livestock keeping into other uses; often for services. Not building-bound permissions are also named, for example to enlarge areas of land to be used for sport activities (equestrian sport, golf, etc.). A smaller number of farms name also "bureaucracy" and the "on-going loss of farmland" as relevant public limitations.



**Figure 5.** Number of nominations for public support and limitations by business model.

#### 4.6.3. Policy: Farmers' Expectations and Wishes

A wide range of policy expectations and wishes is raised by the interviewed farmers. Six farmers do not name any expectations or wishes, whereof three are diversifiers into agriculture. As mentioned before regarding the public limitations, it seems that the farms, which are strongly dependent on public payments, are reluctant to disclose disagreements with public and policy behaviors. Generally, farms cultivating public land name more expectations and wishes (1.54) than farms without public land lease (1.25). This tendency can be explained with closer contacts and interactions of these farms with public and policy representatives. Most expectations and wishes are farm-specific and rather individual. Most often named are “less bureaucracy” and “minimizing obstacles” for farming. Furthermore, better public administration—including the citations “faster”, “more flexible”, and “farm-adjusted” –, the necessity to have public staff with a background in agriculture, and a better exchange between public and agricultural practice in general are named. One interviewee wishes special financial support for urban agriculture to maintain the societal benefits it “offers for free to the cities and their inhabitants”. The diversified farmers name the most expectations and wishes followed by differentiated farms. There is a tendency that the more complex the farm business is organized, the more policy expectations and wishes are named (coefficient of correlation: 0.44).

#### 4.7. Summarizing Discussion of Study's Findings

The survey's findings add data and knowledge to characterize urban farming's business models. Farm sizes differ strongly between the business models. Thus, general statements are not possible defining required farmland resources for viable urban farming. In this study, diversified and differentiated farms, which require most land resources, are comparably strong integrated in the urban sphere—for example by direct marketing as well as on- and off-farm services—and provision of multiple positive externalities for the urban society and environment. This leads to the assumption that much appreciated business models are strongest threatened by the on-going loss of farmland [26–30]. This is of value for adjusted urban planning and policy, which increasingly intend to maintain viable urban farming in and around agglomerations [12,16].

As literature on business model-specific marketing and advertisement of urban farms is missing, this study contributes to the collection of data in this field stating that differentiated and diversified

farms prefer multi-channel marketing approaches. Herein, the differentiated farms seek to fill (direct) marketing niches. Specialized farms, which focus on one or very few value propositions, use the most advertisement channels to attract as many clients as possible. On the other hand, the other three business models do not put lots of effort in advertisement, which can be explained with existing personal producer (farmer)–consumer (citizen) contacts, which are important to be successful [9,20,28].

Location is the most often mentioned USP and success factor. Regarding this, it has to be considered that the herein interviewed farmers serve as good-practices and successful representatives for the business models. Apart from the advantageous nearby consumer market [23,28], the location is in many cases an obstacle for agriculture, especially without city-adjustments via specialization, differentiation or diversification [26–32]. City-adjustments for the purpose of profitability apply for all interviewed farmers. This contributes to the high nomination rate for the USP and success factor location. In order to be successful, farms in and around cities have to make use of the location by adding positive loaded farm attributes, for example sociability, tradition, and personal producer-consumer contacts. In literature, urban farming's difficulties primarily focus on land-related constraints, e.g. land fragmentation, on-going loss of farmland, and short-term lease of land [7,26–33]. However, the conducted interviews reveal a wide range of problems occurring in practical urban farming. Farm management-related aspects are named most often, like personnel management, logistics, and interest conflicts in highly diversified farm businesses. Further named problems focus on production and services, urban and land-related, consumer and market, and natural influences.

Clients' expectations emphasize on the food-specific attributes regional, seasonal/fresh, and high-quality, which is strongest pronounced by traditional farms. Further relevant expectations embrace social services (education, information, care farming) and farm nature attributes, like a nice environment and openness to the public. Regarding the business models, different foci are detectable: The specialized farms stress features linked to individuality and quality, which can be added to urban farming's high value-added production characteristics explained by Lovell [7], Heimlich and Barnard [10], Mougeot [13], Zasada *et al.* [19], and Gardner [33]. Differentiated farms concentrate on non-mainstream value propositions and direct producer-consumer relationships. This correlates with rather general statements of the differentiated farm activities direct marketing and organic farming [9,20,28]. Diversified farms see a stronger focus of clients' expectations towards farm's appearance and nature. These attract people to use services offered by urban farms, especially recreational and social services [9,10,18,19]. Diversified farms require these amenities to successfully offer services for urbanites. A recent study highlights that multifunctional urban agriculture combining commercial, social, and ecological goals reaches the highest level of consumer acceptance [65].

Knowledge of public supports and limitations regarding urban farming's business models is scarce. This study contributes to this field: Differentiated and diversified farmers name more supportive than limiting public influences, while specialized farms stress mainly public limitations. The supportive arguments solely cover payments to farms. Public limitations include a wider range, including bureaucracy, one-year lasting leasing contracts, control-systems, and loss of farmland. This leads to the assumption that a better farming-public-exchange is required to guide farms towards promising farm activities and business models, and to help public to provide suitable preconditions for viable urban farming.

## 5. Conclusions

The derived conclusions on similarities and differences of farm structures, success factors, obstacles, clients' expectations, and policy wishes between urban farming's main business models are limited to 21 farm interviews and not representative. Nonetheless, this survey reveals tendencies by comparing low-cost specialization, differentiation, and diversification. The survey's findings add data and knowledge into scientific discussions to characterize urban farming's main business models. Additionally, the agricultural sector and public entities are able to make use of it by providing suitable preconditions for viable urban farming.

Farm sizes differ strongly between the interviewed business model representatives, which are largest for the diversified and differentiated farms. Farm diversity, which covers crop and livestock products as well as services, is at the maximum for diversified and minimum for specialized farms. This confirms the key difference between these two converse business models of broadening concepts on one side and keenly focused concepts on the other side. Diversifiers into agriculture as well as diversified farms often have a stronger (economic) focus on services than on production, while the other two business models of low-cost specialization and differentiation focus primarily on production and its added-values. Education, information, care farming, and agro-tourism services are highlighted as most important service offers.

While specialized farms and diversifiers into agriculture primarily focus on a single-channel marketing approach, the differentiated and diversified farms exploit several paths in a multi-channel way. Most interviewed farmers use direct marketing to sell their products off the global market. The surveyed farms name often more than one specific USP. This raises the question, whether the interviewed farmers have a clear business goal or attempt to detect manifold business fields under challenging and unsteady urban conditions. Thus, it can be interpreted in a positive as well as in a negative way. Especially the diversified farms exploit different business fields to stay competitive. The “guesswork” of urban farms shows the flexibility as well as innovative and creative thinking to scout worthwhile business fields outside mainstream agriculture. This spreading of diversified farms is at the same time bringing forth complexity to run and manage the farm efficiently. Location is the most often mentioned USP and success factor. The highlighted advantage of urban locations is mainly merged with additional positive loaded farm attributes suitable to boost on-farm direct marketing and service provision. Detected clients’ expectations emphasize on the food-specific attributes regional, seasonal/fresh, and high-quality, which is strongest pronounced by the traditional farms. Further relevant expectations include social services and farm nature attributes. “Regional food tends to be not sufficient, but has to be connected with additional characteristics, like seasonal, fresh, organic or special. Public support attributions are mentioned more than twice as often as public limitations by interviewed farmers. All supportive ones focus on public payments, while the public limitations as well as policy expectations and wishes are broader and often farm-specific.

Urban farming’s main features, advantages, and disadvantages identified in former studies can be confirmed for this study. Herein, the business models frequently used by farms adjusted to urban environments differ in terms of key aspects. The non-representative, but in-depth results from this study are worth to be investigated among a considerable larger farm sample to verify, falsify, and adjust findings and hypotheses originating from this study. Economic viable urban farms are able to contribute to internal sustainability in terms of farm profitability. City-adjusted and successful business models provide also manifold external social, cultural, ecological, and environmental functions and services. This multifunctionality of urban farming is able to contribute to higher levels of sustainability within urban areas and beyond.

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## Abbreviations

The following abbreviations are used in this manuscript:

CAP	Common Agricultural Policy
COST	European Cooperation in Science and Technology
CSA	Community Supported Agriculture
EU	European Union
NRW	North Rhine-Westphalia (German Federal State “Nordrhein-Westfalen”)
ha	hectare
UA	Urban Agriculture
UK	United Kingdom
USP	Unique Selling Proposition
WP	Work Package

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