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Priorities for Advancing the Concept of New Ruralism

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Abstract: Civic expansion and land use migrations to urban peripheries can accelerate the conversion of agricultural land uses. Widespread trepidation concerning urban sprawl has led to innovative frameworks for conserving or enhancing farmland. New Ruralism is one such framework, linking farmland preservation with developmental plans to reduce farmland conversion and low density development. Although the concept is still evolving, recent support for New Ruralism has grown. One of the most important factors in creating a New Ruralism-based development is coherent policy for permanent agricultural preserves. These preserves require the simultaneous, careful planning of land preservation balanced with the location of future development. This paper discusses the current condition of farmland loss and reviews issues and challenges associated with farmland preservation with existing New Ruralism developments. The goal is to synthesize this information into recommendations for increasing farmland preservation opportunities in New Ruralism-based developments. A more comprehensive definition for New Ruralism is presented, accompanied by several priorities for maximizing the economic, environmental, and cultural viability of New Ruralism-based farmland preserves.

Keywords: New Ruralism; agricultural urbanization; agricultural preservation; smart growth; food systems

1. Introduction

Many U.S. communities have become dissatisfied with sprawl as a desirable form of development, [1,2] with several major U.S. cities including New Orleans, LA, Charlotte, NC and Los Angeles, CA actually increasing in compactness from 2000 to 2010 [3]. Recent approaches to sustainable urbanism and community development practices in the U.S. have amplified the popularity of regional-based, land-use management techniques promoting natural and agricultural preservation as a means to deter the negative impacts of sprawl [4–6]. The preservation of land has become a necessary ingredient for slowing the rate of sprawl and creating livable communities. Urban expansion, however, is steadily encroaching upon many desirable agricultural lands [7,8].

New Ruralism (NR) is a growth framework which grafts preserved farmland and sustainable agricultural principles into contemporary development/planning [9]. Sibella Kraus defines NR as the preservation and enhancement of urban edge, rural, agricultural areas to create a comprehensive stage for efficient and sustainable agrarian-based growth [10]. Sustainable Agriculture Education (SAGE) began collaborating with Agriculture in Metropolitan Regions (AMR), a program of the UC Berkeley Global Metropolitan Studies Center, to further develop NR and is now seeking researchers to generate publications that refine the concept [11].

There can be several challenges involved with NR-based developments, each with their own inherent issues: economic pressures for increased development for faster returns on investment, threats of over-consumption of green space and farmland due to the positive amenities provided by agricultural preservation, and instability in the long-term success of operating farms [12–14]. While the NR concept is currently quite loose in this scope, this research utilizes existing definitions, objectives and viewpoints as a foundation for a more in-depth examination of the challenges involved with NR with a focus on integrating farmland preservation more effectively. These issues are linked to NR case sites which highlight the complexities involved with balancing development and farmland preservation. The paper concludes with the presentation of a more comprehensive definition of NR and priorities for maximizing viability of NR-based farmland preservation policies.

2. Literature Review

2.1. Defining New Ruralism

NR seeks to alleviate many of the issues involved with agricultural conversion through creating carefully planned, agrarian-based rural suburbs which seek to counteract current consumerist-based sprawl [15]. William Ellis coined the term in *The Futurist*, focusing initially on adapting rural land uses to post-industrial technological change [16]. Proponents of contemporary NR adjusted the term's connotation, referring more to sustainable growth in rural areas within urbanizing influences. It intertwines ideas embedded within multiple contemporary trends: Smart Growth, Agricultural Urbanism and New Urbanism (See Table 1). For example, the preservation of agricultural lands for working rural landscapes, wildlife habitats, urban parks, recreational trails, and water supply/floodplain protection has emerged as an integral component of Smart Growth and other related sustainable growth programs [17]. An important component to creating NR development is establishing an apparatus to permanently conserve farmland as both food sources for urban regions and frameworks to appropriately locate new development [13,14].

While principles for NR have been only loosely drafted, its roles in sustainable local and regional food supplies and supporting farmland preservation are not yet fully understood. The concept's principles are in their exploratory phase and are extremely broad. There are also a minimal amount of NR-based developments currently built, as the concept was not officially designated until 2006. Two characteristics typify NR: First, any rural area under development must establish an identity rooted in the economic, ecological, and cultural systems of the surrounding agricultural environment; and second, the primary use of the land should be dedicated to farming in small-to medium-scaled agricultural plots which are integrated with areas of regional wildlife and habitat management [13]. Development-based objectives to achieve these principles include increased density, mixed-land uses and public environments that are accessible to residents and visitors from all segments of society.

New Urbanism principles do not always translate easily into NR philosophies. Rural communities experience difficulty integrating New Urbanist concepts in low-density environments [14]. While New Urbanism concentrates new development around transit-centered areas and encourages reinvestment in older, urban areas, NR concentrates on preserving lands in rural areas at risk from suburbanization, environmental degradation, and deindustrialization. Lower density development is another distinguishing factor separating NR from New Urbanism [18–20]. Each concept applies its principles at opposite ends of the rural-urban interface, unavoidably resulting in major differences. The common thread between NR and New Urbanism is the emphasis on minimizing land consumption but NR focuses on minimizing rural agricultural land consumption for non-agricultural uses. NR was originally introduced as a regional, agricultural-based framework within which New Urbanist developments could occur. Duany, a founder of New Urbanism, recanted the NR term and referred to it simply as Agricultural Urbanism to detach from the concept. [19]. Both NR and Agricultural Urbanism seek to act as vaccines against sprawl, promote land as a preserved amenity rather than a commodity for future development and integrate sustainable food and agricultural networks into community, neighborhood, and site scales to generate agricultural systems which build place around food [21].

Table 1. Comparison of the Concepts of New Ruralism, New Urbanism, Smart Growth, and Agricultural Urbanism.

Category	New Ruralism	New Urbanism	Smart Growth	Agricultural Urbanism
Definition	The preservation and enhancement of urban edge rural areas that as indispensable elements to the economic, environmental and cultural vitality of cities and metropolitan regions	A model for organizing development in cities, towns, and villages that are compact, walkable, mixed-use, and transit-friendly and contain a diverse range of housing	Development that serves the economy, the community, and the environment	A walkable urban form surrounded by large-scale food production
Etiology	The need for more sustainable development patterns at the metropolitan edge	changes in physical form are a necessary precondition for urban economic, social, and ecological change	Economic forces, consumer preferences, or misguided public policies	The need for more sustainable practices associated with local food production and better public health
Discipline Emphasis	Environmentalists	Architecture	Regionalists	Agrarianism
Goal	Sustaining rural areas	Sustaining urban areas	Sustaining regions	Sustaining regions
Environment	Agro-ecosystems	Cities	A range of neighborhoods	Urbanizing areas
Agricultural Typology	Small—medium size farms	Industrial agriculture	Mixed typologies	Large scale farm systems
Lifestyle	Rural lifestyle	Urban lifestyle	Urban or rural lifestyles	Urban lifestyle
Extension	Low density peripherals	High-density centers	Urbanizing regions	Urbanizing Regions
As Defined by Development	Increased density, suburban lots organized around agricultural preserves	Compact urban development supported by multi-modal transportation services	Large-scale planning mechanisms promoting clustered development and open space preservation	Large-scale planning emphasizing regional food systems and urban growth
Source(s)	[10,21]	[20,21]	[21]	[5]

2.2. Approaches and Limitations to Farmland Preservation Techniques

The promotion of farmland preservation policies, such as those involved with concepts such as NR, can slow sprawl, a key contribution being the creation of non-developable parcels of land. In the 1970's, population migration from urban to rural areas, new transportation subsidies for highways and upsurges in rural industries and commerce significantly threatened rural and agricultural land preservation in the U.S. [22,23] Farmland preservation and related federal programs/policies, despite dating back to the 1950s and 1960s, were then widely introduced as a response to these changes in the 1970s and then gained momentum as an offshoot of environmental conservationist ideals as a means of funneling development into desired areas and containing cities [24].

Currently, planning strategies at the state and municipal levels focus on preventing farmland conversion. Each of these strategies are all options for maximizing NR based farmland preserves, but are typically based on location. The effectiveness of these strategies vary, but most involve the readjustment of existing and future land uses. For example, Santa Clara Valley, California utilized agricultural zoning to help regulate population growth and sprawl from San Francisco and expansion into unincorporated areas of the county [25]. New agricultural zoning regulations prohibited or limited non-agricultural land uses in the new zones. Other areas such as Suffolk County, New York concentrated on using the purchase of development rights (PDRs), to regulate farmland preservation [26]. Using PDRs, a landowner such as local government or a private land trust, can buy the development rights from a parcel and a permanent deed restriction is then placed on that property, restricting land uses in perpetuity. Transfers of development rights (TDRs) can also help manage farmland preservation. In this approach, development rights can be reallocated to developers for use in other areas within the same zone planned for development or in areas outside the agricultural zone. Owners of these rights are then allowed to develop the land in transfer receiving areas at higher densities than previously allowed. Some areas apply agricultural districts, which set aside a minimum amount of acreage for agriculture purposes in developing areas [26]. Unlike zoning, if the minimum amount of farmland is met, there are no restrictions on land use.

These and other land-protection techniques (such as regulatory-based policies) help protect farmland. No single land-protection technique, however, can fully accomplish the job; yet each plays a role in achieving the desired result [27]. A combined approach of the aforementioned strategies is on the rise, especially in more progressive states such as Oregon. The synthesis of various techniques and their application overcome the fallacies inherent to each individual method. Thus, a multi-combinational approach in NR based developments should be aspired.

The ability to preserve farmland depends largely on the intensity and viability of the existing farms surrounding urban areas [28]. Leapfrog development often hinders farmland preservation, where urban growth jumps over restricted areas [29]. Daniels suggests as more people move to the fringes of cities, they bid up the price of land, isolate tracks of farmland through leapfrog development, and hasten the decline of local farming [30]. Isolated and disconnected preserved parcels are less impactful at curtailing sprawl and, because farmland preservation is commonly voluntary, the protection of large contiguous tracts of land can be difficult [31]. One major barrier to voluntarily preserving farmland is that participation in farmland conservation incentive programs is limited due to the lack of awareness about these options [32]. For example, a survey sponsored by American Farmland Trust (AFT) found that only 38 percent of agricultural landowners in Washington's Snohomish and Stillaguamish watersheds had ever participated in a conservation incentive program; 25 percent had never heard of any of the programs available [33]. Other reasons for not volunteering included lack of financial incentive, competition with development potential, and possible issues of future land uses due to multiple owners.

Surprisingly, during the recent economic downturn, many operating farms managed to survive the economy's instability as strong farm earnings helped withstand the significant downturn in residential housing markets [34]. However, since farmland is typically cheaper to develop, the availability of low interest rates on loans has lowered the total cost of purchasing agricultural land and made farmland

more attractive as an investment [35]. As a result, the process of buying up farmland and sitting on agricultural properties until the market rebounds grew rapidly during the downturn. For these and other reasons, despite the efforts of agricultural preservationists, nearly 43 million acres of rural land were developed between 1982 and 2010, 56 percent of which were agricultural lands [36]. Furthermore, only around two and a half million acres have been protected by state farmland preservation programs nationally; comparatively speaking, this is not a large proportion of the available land base for development [37]. Only 4.6 percent of the U.S. land area had been developed as of 2000 but this percentage increased to 5.6 percent by 2010 [38]. Between 1960 and 1990, urban density decreased cumulatively by 28 percent in the United States, with nearly 2.2 million acres, or about 10 percent of the nation's farmland, per year converted to urban use [39,40]. As of 2012, there was an annual conversion of over 1,236,000 acres away from food production systems; coupled with an average one percent annual population increase, this rate projects to reduce the current 1.5 acres of agricultural-based land per person by nearly 50 percent to 0.74 acres by 2050 [41].

These statistics indicate that agricultural conversion has not significantly decelerated, despite the development of policies and strategies to preserve farmland. The pace of land development doubled from 1990 to 2000, according to the U.S. Department of Agriculture [22]. The Great Recession (2007–2009) may have slowed this pattern, but more recent statistics suggest that between 2000 and 2010, urban land area in the U.S. still increased by 15 percent and the changing of land use from agricultural use to suburban and urban use is increasing [41]. Urban influenced areas are experiencing a disproportionate loss of land relative to population increase [37,41]. Urbanization affects about 17 percent of the nation's agricultural land [42,43]. A growing number of U.S. cities are expanding, driving up farmland values closer to the urban fringe, thereby increasing potential for conversion to residential or commercial use. Irwin and Bockstael found that fragmentation of land uses increased as distance from the urban center increased. Specifically, farmland parcels nearer the urban fringe were more likely to be divided into smaller pieces and surrounded by other land uses [42]. This pattern reduces agricultural production due to farmland loss and the quantity and quality of nonmonetary benefits of agricultural lands [44].

The toughest challenge to preventing farmland conversion is that land considered ideal for farming also makes it ideal for development [43]. Good farmland is flat with minimal slope, is well drained, has low soil erodibility, and is already cleared of vegetation. These characteristics can increase the developmental potential of farmland in that development costs are reduced. Barnard found that the U.S. average value of non-urban farmland was \$640 per acre, while urban farmland was nearly three times higher at \$1880 [42]. On average, the development potential of a farm contributes about 10 percent of the total value of farmland, and this percentage increases with proximity to urban areas [44,45]. Some research suggests that over half of the variation in farmland prices is due to non-farm factors such as future developability [46,47]. Platina, *et al.*, showed that farmland prices reflect not only the current use of land, but potential uses as well. Using a cross-section of approximately three thousand U.S. counties, the results suggested that counties near urban centers had, future development rents accounting for more than half of the agricultural land values [44]. This result implies that landowners would require substantial economic compensation if the development potential was not met.

As of 2007, 922 million acres (40 percent) of the nation's land base was farmland [35]. Not all of this land base is high quality agricultural land. As of 2012, there were about 445 million acres of high-quality, productive farmland in the U.S. [39]. There is widespread uncertainty over whether this can be preserved due to land-use changes and population shifts. Some farms can adapt to the changes caused by urbanization through implementation of evolving technologies. Heimlich and Barnard found that adaptive farms that alter crops to more intense and high-quantity yields compete better in urbanizing areas than do traditional farms. In these cases, production and output have not diminished despite the loss of farmland area [48]. Continually improving technology such as hybrid seeds, irrigation advancements, and mechanical innovations continue to raise yields and limit acreage

expansion required to keep pace with demand [45]. The 1997 Farming on the Edge Study by the AFT demonstrated that the nation's highest quality farmlands coincided with high-growth areas, and some industries proved to be remarkably adaptive to new development [47]. For example, vegetable production has not significantly diminished over the past several decades and has remained relatively stable in urbanizing areas. In fact, 66 percent of the nation's vegetable production was produced in California, Texas, Florida, and Arizona—four of the nation's fastest growing states [49].

Development has also not been a major threat to national food and fiber production although it shows potential to reduce the production of specialty crops [50]. Adaptive farms typically alter their operations to emphasize common agricultural products which can sometimes result in specialty crop reductions in some regions [51]. Specialty crops are, however, an essential ingredient to the success of most local food systems [50]. Producers in urban areas such as the northeast commonly move toward high value specialty crop production because they can be more readily sold in urban markets through direct marketing channels. Consumers who value high-quality foods produced with low environmental impact are willing to pay more for food grown locally [51]. This condition amplified the economic value of agritourism. Schilling, *et al.*, found a correlation in percentage of farm income derived from direct marketing and the portion of income derived from agritourism, in the Northeastern U.S. [51]. This suggests that agritourism can be an important factor for increasing agricultural viability for farmers at the urban fringe and may provide additional protection for farmlands within urban influenced areas.

3. Methods and Results: Farmland Preservation Issues with New Ruralism-Based Developments

Regardless of the overlaps in ideas of other concepts, NR has the potential to shift planning focuses from the creation of town centers and walkable streets in urban areas to the maximization of available rural agricultural lands. Because no set of implemented NR based developments (they are currently designated by SAGE) have yet to be quantitatively assessed, existing literature evaluations are primarily interpretive, resulting in mixed findings [52–56]. One of the major challenges related to NR is that there is no coherent classification system of these developments. The case studies contained in this discussion serve as illustrative examples related to the basic challenges encountered by NR development and were listed by SAGE as typical examples of NR-based developments. The limited amount of case information is due to the lack of built NR developments. While twelve representative cases are provided by SAGE, only six of these significantly differ in location regionally. In this research, three of these cases are explored based on information provide on conflicts between development and farmland preservation.

3.1. Economic Pressures for Increased Development vs. Benefits of Farmland Preservation

The San Francisco Bay Area, California, USA, is an eight-county cooperative NR-based region which, due to agricultural/natural space preservation, enjoys significant protection from urban sprawl in some areas. In the NR influenced area of San Francisco, the pressures of increased development surrounding preserved farmland parcels, is primarily economically driven. While agricultural preservation programs can help limit urban expansion, some studies suggest they can be a double-edged sword [57–60]. While preserved lands are designated as non-developable parcels, they can act as magnets, attracting tangential developments. Some people are willing to pay more for houses near preserved farmlands due to their amenities (e.g., quality, safety, and scenic) [61]. Many of these qualities tend to cluster around preserved farmland which then attract tourists by creating scenic landscapes which contrast to their surroundings [62–64]. The resultant tourism money, in turn, can however enhance local economies.

Similarly, the AFT alludes to two related issues within the NR influenced San Francisco area: (1) the economic pressures of increasing development surrounding the preserved farmland and (2) the inability of small and medium-scale farms to compete in the non-local marketplace. NR principles in the San Francisco area are as vital as land development policies to preserve what little agricultural uses

still exist [62]. Only two percent of food consumed in the region is grown locally while real estate values for residential developments have skyrocketed since the recent real estate crash. The demand for land consumption and associated asking price of agricultural land for additional residential development outweighs the value of running a small-to medium-sized farm. Additionally, many of these farms do not generate substantial revenue from their crops, meaning that many of these farms are barely making ends meet. To address this lack of access to credit, and minimize additional agricultural land use consumption, the AFT created the Bay Area Food & Farming Fund. The main goals of this program are to fund local farms and food-related businesses as well as technical assistance for farmers to apply for credit [62].

Farmlands located near urban areas, such as San Francisco, are typically priced well above normal agricultural values and, in many cases, these farmlands sell at their potential development price rather than their agricultural value [63]. Nickerson and Lynch tested the effects of development restrictions imposed by permanent easements on farmland prices, finding that while land values increased around preserved parcels, the preserved parcels tended to have lower values [61]. This fact was attributed to farmland included in a preservation program has little to no development potential other than what is permitted for agriculture. Other economic incentives such as agritourism have provided monetary support in areas with high amounts of preserved agricultural parcels. While local markets for agritourism are increasing in economic prowess, small and medium scaled farms struggle to compete in the global marketplace, such is the case in San Francisco [65]. These industries are the sources of food for the agritourism industry and much of the local food system. Furthermore, keeping these farms active is highly dependent on farm location, the development value of each parcel, and the ability to retain development restrictions on preserved parcels.

For example, a NR-based study assessing local food markets in Sacramento, California found that a key challenge facing the success of these markets was labor issues. Farmers in Sacramento faced a shortage of adequately skilled labor necessary to manage local farms, negatively effecting agritourism operations [62]. In particular, smaller farms were having difficulty retaining labor because larger farms could guarantee more work. Given the size of these farms, they simply could not compete for the number of laborers required for larger agricultural uses in the region. The yield for these smaller farms can vary from year to year, but the larger farms consistently require labor, making larger farms more attractive to laborers. Unlike most other NR based-developments, because these farms have no residential component, the financial viability of the crops can be largely tied to the crop yield. NR, therefore, may generate additional revenue for existing agriculture uses to preserve some of the benefit of agriculture uses at the cost of some development. This outcome, from an agricultural standpoint, is better than the complete destruction of the farm for large-scale, non-agricultural development.

3.2. Threats of Over-Consumption of Farmland and Green Space

The numerous ecological benefits lost when farmland is converted cannot be readily measured monetarily [64]. Farmland provides a number of ecological amenities such as open spaces and habitat patches and lines of mobility for wildlife [64]. Partnerships of agricultural preservationists and ecologists to form networks of biodiversity have been practiced since the early 1980s [23]. Many national parks have now adopted this practice under federal, state, and local programs. Noted earlier, the idea of federal farmland protection policies (federal agencies did not get actively involved until the 1990's) surfaced partly as part of the larger environmental movement in the 1970s [24]. General concerns for ecological land-use patterns stemmed from worries about soil erosion, land-consuming effects of suburban sprawl and destruction of land and animal habitats due to development.

One NR-based development in Florida, owned by The St. Joe Company, falls short of its environmental objectives and has had issues with land consumption. It sells vast landholdings to retirees and promises rural values such as river camps, white fences, ranches, and large scenic lands surrounding each property within the rural landscape outside of Tallahassee. Farmlands and forests provide most of the scenic quality and serve as buffers between neighbors. Initially, much of

the undeveloped land slated for future development consisted largely of forests which formed an open space network [66]. NR-based developments seek to create an equilibrium between developed area and preserved space which can increase the ecological viability of rural environments. The development has been since been criticized for a few reasons: (1) its land-consumptive nature; and (2) the rural amenities promised to buyers were allegedly disregarded while privatization and social seclusion were promoted over social interactivity and inhabitant mixing [66]. Due to several financial issues at the corporate level in 2013, the company also sold off 382,834 acres of timberland and rural areas to AgReserves, Inc. for \$565 million [41]. Despite the company's original intent to adhere to NR principles, the lack of deed restrictions means that the new property owners could harvest all the remaining timber and build developments that did not adhere to the original NR objectives. The St. Joe Company example shows that without a concise definition, developers may be able to easily wave the NR flag simply as a marketing label for a project to seek endorsement by the local planning commission or the market preferences of area buyers.

The over consumption of farmland sometimes replaces large scaled agricultural preserves with smaller, more individual based farms, or hobby farms [41]. The proliferation of hobby farms is a threat and can intrude upon NR success. Hobby farms, or small-scale farms which are worked simply for pleasure and not for a career, can be considered preserved farms but compete for the same lands as commercial farming operations, thus threatening the long-term viability of these operations. Homesteads are built on preserved farms, but only minimal produce is generated from the land, generally only special crops to be consumed by the owners. Because hobby farmers obtain nearly all of their income away from the farm, the land is viewed as a commodity, enabling owners to enjoy a rural lifestyle while still retaining the benefits of nondevelopable surroundings. Changing ownership patterns and high land prices imposed by the proprietors of these farms negatively impact the viability of commercial farming and its contributions to regional economic stability.

3.3. Possible Instability of Operating Farms

Farmland preservation is a land-use issue and is therefore influenced strongly by cultural traditions [67]. Cultural benefits of preserved farmland include connections for recreational amenities, aesthetic enjoyment, cultural and historical contexts, varied terrain, and environmental quality [15]. Agricultural plots are the historical context of the built environment [68,69]. To increase the cultural viability of new developments, NR-based developments must create clustered developments in rural areas to allow higher levels of preserved agricultural lands. As parcels adjacent to preserved farmland become more attractive to development, preserving the financial viability of farmland ownership can prevent further conversion of rural land for non-rural us [38].

Montaluce in Dahlenega, Georgia is an example of a NR development taking advantage of the cultural attributes provided by preserved farmlands. Upscale Tuscan-style cottages connected loosely by outdoor active and passive recreational systems characterize the planned development, which preserves 60 percent of land as green space or agricultural land [70]. Newer properties are up to three-acres in size but have been highly criticized due to: (1) losses in the cultural amenities provided by farmland preservation due to the allowance of extremely low-density development; and (2) an increased competition to develop on operating farms, threatening the long-term cultural transfer of farmland knowledge [70].

Despite these criticisms, the development has managed to adhere to some aspects of NR. The focal point of the entire development is the Montaluce Winery, making it one of the first NR developments designed around a winery and vineyard. Part of the reason for low-density development revolves around building homes with minimal disruption of the existing landscape, as opposed to intensely grading the topography. Similar to the St. Joe developments in Florida, Montaluce is located in a region experiencing an influx of retirees who desire the location away from the congestion of Atlanta while embracing the NR-based layout. The downside of the success of Montaluce is the likely impact on wineries and vineyards in Georgia's wine country engaging in mimicry to duplicate Montaluce

with similar residential developments. This scenario is likely based on the claim that this region of Georgia has been named one of the top ten areas for retirees [70].

The high percentage of retirees create issues based on the demographics of farmland ownership. This can have a direct influence on a farm's cultural viability, with two key trends in land ownership meriting consideration: the purchasers of the land and the aging landowner population. Farmers are typically the purchasers of farmland and most farmers do not sell their working farms to non-family personnel; in fact, nationally most farms are corporate-owned, not family [71]. However, due to these new types of developments, there has been an increase in institutional purchasing of farmlands [72,73]. As of 2012, about 40 percent of U.S. farmland had been rented over the previous 25 years, and nearly 30 percent of farmlands rented as of 2007—nearly one-third of all U.S. farms [35]. This continual transfer of land ownership can limit the transfer of value and knowledge about farming and farmland between generations, threatening the current stability of farmland ownership and perhaps leading to instability in ownership in coming years in many NR developments. Luckily, in many states, working farmland is typically bought by neighboring working farms and generally the two farms are consolidated into one. Preserving workable farmlands preserves the traditions and customs which come with working them. The technical and financial skills related to agricultural uses are not easily passed down generationally, putting the stability of continued agricultural uses at risk. The maintenance of traditional lifestyles, the provision of locally grown food are conserved through agricultural preservation and so is the unique cultural icon that is the farmer [74]. The passing of farmland to a new generation with different values from its predecessors can exacerbate the rate at which farmland is developed. As of 2007, 78 percent of families that preserved their farms did so primarily not for tax incentives or economic motives, but to keep them in the family [71,75].

4. Discussion: Adjusting the Concept of New Ruralism

Any development concept in its testing stage creates doubts concerning whether it will be successful. The current looseness of NR's definition and the challenges associated with its implementation necessitate a re-examination of its purposes. The primary goal of any NR development must be the creation of permanent agricultural preserves. Three mechanisms have important implications for retaining and accruing these preserves: concentrated development in carefully selected areas, coordination of infrastructure to support sustainable future growth in designated non-agricultural areas and viability of the preserved farmland itself [76].

Tasks for achieving these mechanisms still remain unclear. Development of these tasks must be based on existing agendas for maximizing agricultural preservation and their viability. Neither the food produced nor other public benefits such as scenic beauty, environmental value and ability to provide habitat for wildlife, its historic character and/or its ability to combat urban sprawl can be guaranteed unless agriculture itself remains viable [75]. Hellerstein, *et al.*, listed five major legislative intents of farmland retention: orderly development, food security, local economy, environmental services, and protection of rural amenities [74]. Of these intents, support for agricultural preservation is primarily determined by economic forces such as farm performance, market competition, market condition, and governmental financial support [77]. Simultaneously, the cultural and ecological values of preserving farmland are typically interpreted usually through an economic lens (specifically land value, tourism revenue and produce yield).

Perhaps a more refined and comprehensive definition of New Ruralism should read, "clustered, small-to medium-scaled suburban style development occurring in rural areas under urban influence characterized by large ratios of viable preserved farmland which contribute to local and regional food systems and help contain/sustain metropolitan regions." While the primary goal remains creating permanent agricultural preserves, objectives for achieving this goal should address the aforementioned challenges: (1) Secure multiple economic opportunities (such as agritourism) other than developmental pursuits to increase working farm viability; (2) maximize areas of preserved farmland and green space

to form open space networks; and (3) take measures to ensure a stability and adaptability of existing working farms.

Because the most common type of farmland preservation today is direct regulation through zoning, NR must first work with local planning agencies to create proper ordinances for it to be a successful framework. The uses permitted within these zones can vary, but are limited to agricultural activities. Of the four types of agricultural zoning, two types create a ratio of dwelling units per acre, while the other two deal with conflicts between land uses. Large-lot zones and area-based allocation zones would be the best starting point for NR in that they both allow for a certain number of residential units per acre of farmland. Large-lot zones require a minimum acreage of farmlands to be preserved and permit one dwelling unit per 10 to 200 acres, while area-based allocation zones allow for a number of permitted residences based on the size of the preserved parcel. Exclusive agricultural zones, only farming activities and associated uses are permitted and conditional-use zones only permit other uses if it can be proven that they will not conflict with the agricultural uses. So neither would not be an ideal match for NR developments. In many cases, however, agricultural zones become depositories to preserve land only until a local government considers the time right for desired residential and commercial developments. In such instances they are generally only short-term answers put in place until other zones can be shifted around to make way for a proposed development.

5. Conclusions: Priorities and Recommendations for Future Research, Policy and Practice

This paper reviewed challenges and issues associated with NR-based developments, linking these to existing literature and NR case sites. Based on this review, several priorities advanced the concept's emphasis on achieving long-term viable agricultural preserves. When protecting rural farmlands, policymakers must balance farmers' interests against housing demands of urban populations. Large-scale farmland preservation can limit new housing to large tracts, lead to higher commuting and infrastructure costs and create an inability to effectively locate affordable housing [77]. Simultaneously, nuisance claims from neighboring properties can create conflicts in areas with right-to-farm laws which favor agricultural land uses above all others [76]. The battle between the preservation and development of land is a struggle which NR can mediate by delineating the scale of development in the context of farmland preservation. It is therefore important that a standard for development density is met that creates a balance between economic return and non-economic agricultural services.

With only 5.6 percent of the American landscape developed, a tremendous land area exists consisting of open, undeveloped lands in rural and peri-urban areas [36]. This large land area affords the possibility for advocates of NR philosophies to identify and delineate the remaining high-quality farmlands for preservation. As America continues to urbanize, these lands should be linked to existing and future conserved natural lands as the foundation for NR-based developments and food systems. Covariate spatial viability models for farmland delineation integrating economic, biodiversity, population changes, and land use needs are already being applied at the macro level; results indicate that increased flexibility from the multi-criteria approach assists in the development and implementation of adaptive management techniques have long term success [78].

NR developments are small or medium-scaled in size, but if a larger-scale vision is not in place to organize these developments, the creation of a food system will not be achieved. It is important for NR to determine a target acreage range of preserved farmland for planned developments. Once this is appropriated, other target areas with similar sizes can be determined and linked to create a regional system. A series of local food networks can then be linked to form an overall regional food system which is comprised of multiple NR developments, resulting in NR rural regions. Considering its reliance on the success of existing and new local food systems, NR projects must take measures to ensure the viability of working farms through greater local food yields, increased farmers' markets, agritourism and increasing emphasis on specialty crops. This can be pursued by increasing opportunities for the sale of local products, local support of farmers markets, creative

mobile distribution and branding, monetary incentives for local food purchasing, community gardens, educational opportunities and programs, and facilitating connections of specialty crop/food system advocates within communities. Expanding local food systems increases employment and income for communities, but the prices of yields can be higher, especially for specialty crops. The local food systems created must also be capable of improving access to healthy foods to underserved communities and upper and middle-class populations.

Finally, NR developments must include policies and provisions to prevent overflow development on agricultural preserves. To help alleviate this condition, some farms must become adaptive. How can it be assured that the amenities promised by NR will not encourage tangential developments if they are under-supplied by surrounding real estate markets? Also, if the farms remain active, new development surrounding them may increase the amount of nuisance claims already plaguing operational farmlands. It is important to note that creation of these networks can still have associated negative impacts including limitations on affordable housing and conflicts between neighbors and working farms related to byproduct water runoff and being downwind from concentrated animal feeding operations [79,80]. The influx of populations into areas tangent to farmlands has resulted in an increase in the number of lawsuits filed against farmers due to farming operations. Newcomers to the fringe want to settle near farms for the scenic qualities but do not wish to deal with the operational consequences, such as noise, dust, odors, and chemical spraying. These conflicts have given rise to right-to-farm laws, which protect farmers from nuisance suits if they follow standard farming practices that do not violate state or local laws. Right-to-farm laws have actually been enacted in every state in an attempt to limit the liability of farmers to nuisance claims [31]. Some of these laws predate neighboring nonfarm uses, while others are subject to the adherence to best management practices. As long as these agricultural uses adhere to existing legal guidelines, the claims have little to no merit due to these farms being grandfathered by law to operate as agricultural uses. Preserving amenities by preserving farmland is not synonymous with eliminating all development, but it must restrict development in some parcels to retain these amenities over time.

Fortunately, a new rural development is emerging; it is multifaceted and connects the practices of landscape management, agritourism and organic and/or sustainable farming [81]. Increasing the economic viability of farms will help maintain its long-term ecological and cultural viability. Simultaneously, the emphasis on local farming can create community self-development, where communities rely on local resources and/or assets to improve their economic well-being [82]. The U.S. began as an agrarian economy, and NR is an important approach to ensure that this rich agrarian history is preserved for future generations while still enabling cities to accommodate sustainable future development.

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References

1. Chen, D. The science of smart growth. *Sci. Am.* **2000**, *283*, 84–91. [[CrossRef](#)] [[PubMed](#)]
2. Ewing, R.; Hamidi, S. Compactness *versus* sprawl: A review of recent evidence from the United States. *J. Plan. Lit* **2015**. [[CrossRef](#)]
3. Hamidi, S.; Ewing, R. A longitudinal study of changes in urban sprawl between 2000 and 2010 in the United States. *Landsc. Urban Plan.* **2014**, *128*, 72–82. [[CrossRef](#)]
4. Smit, J.; Nasr, J. Urban agriculture for sustainable cities: Using wastes and idle land and water bodies as resources. *Environ. Urban.* **1992**, *4*, 141–152. [[CrossRef](#)]

5. De La Salle, J.; Holland, M. *Agricultural Urbanism*; Independent Publishers Group: Chicago, IL, USA, 2010; p. 22.
6. Bausch, J.C.; Eakin, H.; Smith-Heisters, S.; York, A.M.; White, D.D.; Rubiños, C.; Aggarwal, R.M. Development pathways at the agriculture–urban interface: The case of Central Arizona. *Agric. Hum. Values* **2015**, *32*, 743–759. [[CrossRef](#)]
7. Daniels, T.; Lapping, M. Land preservation: An essential ingredient in smart growth. *J. Plan. Lit.* **2007**, *19*, 316–329. [[CrossRef](#)]
8. Chen, A.; Scott, S. Rural development strategies and government roles in the development of farmers' cooperatives in China. *J. Agric. Food Syst. Community Dev.* **2014**, *4*, 35–55. [[CrossRef](#)]
9. Fanning, O. The New Ruralism. In *The Many Facets of Human Settlements: Papers Prepared for AAAS Activities in Connection with HABITAT: The UN Conference on Human Settlements*; Elsevier: Philadelphia, PA, USA, 2014; p. 235.
10. Kraus, S. *A Call for New Ruralism. Frameworks*; Institute of Urban & Regional Development New Ruralism Initiative, 2006; pp. 26–29. Available online: http://www.farmlandinfo.org/sites/default/files/new-ruralism_1.pdf (accessed on 12 February 2015).
11. Sustainable Agriculture Education (SAGE). New Ruralism: Food Shed and ag Planning. Available online: <http://www.sagecenter.org/publications/new-ruralism-and-other-urban-rural-sustainability-strategies/> (accessed on 12 June 2015).
12. American Farmland Trust (AFT). Fresh Food Grown on the Urban Fringe. Available online www.farmland.org/programs/localfood/fresh-food-grown-on-the-urban-fringe.asp (accessed on 12 February 2015).
13. Moffat, D. New ruralism: Agriculture at the metropolitan edge. *Places* **2006**, *18*, 72–75.
14. Stratton, E. New Ruralism. Available online: <http://digitalcommons.law.uga.edu/landuse/18> (accessed on 3 March 2015).
15. Newman, G. *An Exogenous Approach to Circumventing Demolition by Neglect: The Impact of Agricultural Preservation on Rural Colonial Towns*; ProQuest/UMI Dissertation Publishing: Clemson, SC, USA, 2010; pp. 1–286.
16. Ellis, W. The new ruralism: The post industrial age is upon us. *Futurist* **1975**, *10*, 202–204.
17. Berke, P.; Newman, G.; Lee, J.; Combs, T.; Kolosna, C.; Salvensen, D. Assessing networks of plans and vulnerability to coastal hazards and climate change. *J. Am. Plan. Assoc.* **2015**. [[CrossRef](#)]
18. Wartzman, R. Can the City Save the Farm? New Ruralism—An eclectic outgrowth of farmers and urban planners—wants to remarry town and country. Available online: <http://alumni.berkeley.edu/california-magazine/may-june-2007-new-food-and-farming/can-city-save-farm> (accessed on 20 April 2015).
19. Duany Plater-Zyberk; Company, LLC. *Agricultural Urbanism*. 2009. Available online: <http://www.lindroth.cc/pdf/QuickReadAgf.pdf> (accessed on 10 April 2015).
20. Azadi, H.; Van Acker, V.; Zarafshani, K.; Witlox, F. Food systems: New-Ruralism versus New-Urbanism. *J. Sci. Food Agric.* **2012**, *92*, 2224–2226. [[CrossRef](#)] [[PubMed](#)]
21. Knaap, G.; Talen, E. New urbanism and smart growth: a few words from the academy. *Int. Reg. Sci. Rev.* **2005**, *28*, 107–118. [[CrossRef](#)]
22. U.S. Department of Agriculture President's Council on Environmental Quality. Available online: http://www.farmlandinfo.org/sites/default/files/NAL_Executive_Summary_1.pdf (accessed on 15 January 2015).
23. Lehman, T. Public values, private lands: Origins and ironies of farmland preservation in Congress. *Agric. Hist.* **1992**, *66*, 257–272.
24. Roberts, E.F. *The Law and the Preservation of Agricultural Lands*; Northeast Regional Center for Rural Development: New York, NY, USA, 1982; p. 88.
25. Daniels, T.; Bowers, D. *Holding Our Ground: Protecting America's Farms and Farmland*; Island Press: Washington, DC, USA, 1997; p. 56.
26. Olson, R.; Lyson, T. *Under the Blade: The Conversion of Agricultural Landscapes*; Westview Press: Boulder, CO, USA, 1999; p. 92.
27. Board of Directors for the Center for Rural Pennsylvania. *Zoning for Farming: A Guidebook for Pennsylvania Municipalities on How to Protect Valuable Agricultural Lands*; The Center for Rural Pennsylvania: Harrisburg, PA, USA, 1995; p. 11.

28. Coisson, T.; Oueslati, W.; Salanié, J. Urban sprawl occurrence under spatially varying agricultural amenities. *Reg. Sci. Urban Econ.* **2014**, *44*, 38–49. [[CrossRef](#)]
29. Vyn, R.J. Examining for evidence of the leapfrog effect in the context of strict agricultural zoning. *Land Econ.* **2012**, *88*, 457–477. [[CrossRef](#)]
30. Daniels, T. *When City and Country Collide: Managing Growth in the Metropolitan Fringe*; Island Press: Washington, DC, USA, 1999; p. 71.
31. Paolisso, M.; Weeks, P.; Packard, J. A cultural and applied analysis of land conservation. *Hum. Organ.* **2013**, *74*, 12–22. [[CrossRef](#)]
32. Plantinga, A.J. The effect of agricultural policies on land use and environmental quality. *Am. J. Agric. Econ.* **1996**, *78*, 1082–1091. [[CrossRef](#)]
33. Trivers, L. New Survey Uncovers Barriers that Prevent Farmers and Ranchers from Participating in Conservation Programs. Available online: <https://www.farmland.org/press-releases/new-survey-uncovers-barriers-that-prevent-farmers-and-ranchers-from-participating-in-conservation-programs> (accessed on 15 May 2015).
34. Nickerson, C.; Morehart, M.; Kuethe, T.; Beckman, J.; Ifft, J.; Williams, R. *Trends in U.S. Farmland Values and Ownership. Economic Information Bulletin (No. 92)*; United States Department of Agriculture: Economic Research Service: Washington, DC, USA, 2012; pp. 1–48.
35. U.S. Department of Agriculture. Summary Report: 2010 National Resources Inventory, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. 2013. Available online: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1167354.pdf (accessed on 27 April 2015).
36. Berger, A. *Drosscape*; Princeton Architectural Press: New York, NY, USA, 2006; p. 7.
37. Nickerson, C.; Hellerstein, D. Farmland preservation programs: Another tool for managing urban growth? Available online: <http://ageconsearch.umn.edu/bitstream/125547/2/Farmland.pdf> (accessed on 27 April 2015).
38. Francis, C.A.; Hansen, T.E.; Fox, A.A.; Hesje, P.J.; Nelson, H.E.; Lawseth, A.E.; English, A. Farmland conversion to non-agricultural uses in the US and Canada: Current impacts and concerns for the future. *Int. J. Agric. Sustain.* **2012**, *10*, 8–24. [[CrossRef](#)]
39. Center for Sustainable Systems. *U.S. Cities Factsheet*; Center for Sustainable Systems: Ann Arbor, MI, USA, 2014; pp. 1–2.
40. Lockeretz, W.H. *Sustaining Agriculture near Cities: An Introduction*; Soil and Water Conservation Society: Boston, MA, USA, 1987; pp. 63–76.
41. Barnard, C. Urbanization affects a large share of farmland. *Rural Cond. Trends* **2000**, *10*, 57–63.
42. Irwin, E.G.; Bockstael, N.E. The evolution of urban sprawl: Evidence of spatial heterogeneity and increasing land fragmentation. *Proc. Natl. Acad. Sci. USA* **2007**, *104*, 20672–20677. [[CrossRef](#)] [[PubMed](#)]
43. Machado, E.; Stoms, D.; Davis, F. *A Systematic Framework for Prioritizing Farmland Preservation*; National Center for Ecological Analysis and Synthesis: Santa Barbara, CA, USA, 2003; pp. 1–52.
44. Plantinga, A.J.; Lubowski, R.N.; Stavins, R.N. The effects of potential land development on agricultural land prices. *J. Urban Econ.* **2002**, *52*, 561–581. [[CrossRef](#)]
45. Barnard, C.; Lucier, G. *Urban Influences on the U.S. Vegetable Industry (Vegetables and Specialties: Situation and Outlook Report. VGS-276)*; United States Department of Agriculture Economic Research Service: Washington, DC, USA, 1998; pp. 32–40.
46. Freedgood, J. *Saving American Farmland: What Works*; American Farmland Trust: Northampton, MA, USA, 1997; p. 2.
47. Heimlich, R.E.; Anderson, W.D. *Development at the Urban Fringe and Beyond (Agricultural Economic Report No.803)*; United States Department of Agriculture: Economic Research Service: Washington, DC, USA, 2001; pp. 1–80.
48. Heimlich, R.E.; Barnard, C.H. Agricultural adaptation to urbanization: Farm types in northeast metropolitan areas. *Northeast. J. Agric. Resour. Econ.* **1992**, *21*, 50–60.
49. U.S. Department of Agriculture Agricultural Marketing Service. Local Food and Research Development. 2015. Available online: <https://www.ams.usda.gov/services/local-regional> (accessed on 30 April 2015).
50. Feenstra, G.W. Local food systems and sustainable communities. *Am. J. Altern. Agric.* **1997**, *12*, 28–36. [[CrossRef](#)]

51. Schilling, B.; Sullivan, K.; Komar, S. Examining the economic benefits of agritourism: The case of New Jersey. *J. Agric. Food Syst. Community Dev.* **2012**, *3*, 199–214. [[CrossRef](#)]
52. Choi, C. New ruralism, or topography of hometown memories: Sangha farm village. *Space* **2011**, *528*, 110–115.
53. City of Montaluce Real Estate Site Plan. Available online: <http://www.montaluce.com/siteplan.html> (accessed on 10 February 2015).
54. Louw, M.P. The New Urbanism and New Ruralism Frameworks as Potential Tools for Sustainable Rural Development in South Africa. Ph. D. Thesis, Stellenbosch University, Stellenbosch, South Africa, 2012; pp. 1–143.
55. The St. Joe Company. Defining the New Ruralism. 2005. Available online: <http://ir.joe.com/releasedetail.cfm?releaseid=194025> (accessed on 13 February 2015).
56. You, Z. Study on New Ruralism and Rural Ecotourism Development—A Case Study of “Green Homeland, Prosperous Countryside Project in Lin’an City, Zhejiang ProvVogince of China”. *J. Landsc. Res.* **2012**, *4*, 17.
57. Roe, B.; Irwin, E.; Morrow-Jones, H. The effects of farmland preservation and other neighborhood amenities on housing values and residential growth. *Land Econ.* **2004**, *80*, 55–75. [[CrossRef](#)]
58. Shi, J.Y.; Phipps, T. Agricultural land values under urbanizing influences. *Land Econ.* **1997**, *73*, 90–100. [[CrossRef](#)]
59. Bromley, D.W.; Hodge, I. Private property rights and presumptive policy entitlements: Reconsidering the premises of rural policy. *Eur. Rev. Agric. Econ.* **1990**, *17*, 197–214. [[CrossRef](#)]
60. Duke, J.M.; Lynch, L. Gauging support for innovative farmland preservation techniques. *Policy Sci.* **2007**, *40*, 123–155. [[CrossRef](#)]
61. Nickerson, C.; Lynch, L. The effect of farmland preservation programs on farmland prices. *Am. J. Agric. Econ.* **2001**, *83*, 341–351. [[CrossRef](#)]
62. Sacramento Region Local Market Assessment. Available online: http://www.sagecenter.org/wp-content/uploads/2013/06/Sacramento-Region-Assessment_SASGE_2008.pdf (accessed on 15 February 2015).
63. Nickerson, C.; Barnard, C. Farmland protection programs—Agricultural resources and environmental indicators. In *Economic Information Bulletin (EIB-16)*; Wiebe, K., Gollehon, N., Eds.; United States Department of Agriculture Economic Research Service: Washington, DC, USA, 2006; pp. 1–47.
64. Heimlich, R.E.; Wiebe, K.D.; Claassen, R.; Gadsby, D.M.; House, R.M. *Wetlands and Agriculture: Private Interests and Public Benefits (No. 34043)*; United States Department of Agriculture Economic Research Service: Washington, DC, USA, 1998; pp. 1–94.
65. Sustaining our agricultural bounty: An assessment of the current state of farming and ranching in the San Francisco Bay Area. Available online: http://www.sagecenter.org/wp-content/uploads/2009/05/sustaining-our-agricultural-bounty-an-assessment-of-agriculture-in-the-sf-bay-area_march-20111.pdf (accessed on 20 February 2015).
66. The St. Joe Company St. Joe Announces an Agreement to Sell 382,834 Acres. 2013. Available online: <http://ir.joe.com/releasedetail.cfm?ReleaseID=805262> (accessed on 25 February 2015).
67. Newman, G. A conceptual model for measuring neglect in historic districts. *J. Preserv. Educ. Res.* **2013**, *6*, 41–58.
68. Newman, G.; Saginor, J. Four imperatives for preventing demolition by neglect. *J. Urban Des.* **2014**, *19*, 622–637. [[CrossRef](#)]
69. Newman, G. The Eidos of Urban Form: A Framework for Heritage-based Place Making. *J. Urban. Int. Res. Placemaking Urban Sustain.* **2015**. [[CrossRef](#)]
70. Montaluce Electronic Press Kit for Montaluce Estates, M Vineyards and Le Vigne Ristorante. Available online: <http://www.montalucewine.com/documents/ElectronicPressKit.pdf> (accessed on 12 February 2015).
71. Duffy, M. *2010 Iowa Land Value Survey*; Iowa State University Extension: Ames, IA, USA, 2011; pp. 1–28.
72. Schnitkey, G. *Rapidly Increasing Farmland Prices, 2011*; Illinois Farmland Values and Lease Trends; Illinois Society of Professional Farm Managers and Rural Appraisers: Chicago, IL, USA, 2011; pp. 1–28.
73. Nickerson, C. *Smart Growth: Implications for Agriculture in Urban Fringe Areas*; United States Department of Agriculture Economic Research Service: Washington, DC, USA, 2001.
74. Hellerstein, D.; Nickerson, C.; Cooper, J.; Feather, P.; Gadsby, D.; Mullarkey, D.; Tegene, A.; Barnard, C. *Agricultural Economic Report No. 815*; United States Department of Agriculture Economic Research Service: Washington, DC, USA, 2002; pp. 1–36.

75. Gardner, B.D. The economics of agricultural land preservation. *Am. J. Agric. Econ.* **1977**, *59*, 1027–1036. [[CrossRef](#)]
76. Ferguson, C.A.; Khan, M.A. Protecting farm land near cities: Trade-offs with affordable housing in Hawaii. *Land Use Policy* **1992**, *9*, 259–271. [[CrossRef](#)]
77. Lapping, M.; Leutwiler, N. Agriculture in conflict: right-to-farm laws and the peri-urban milieu for farming. In *Sustaining Agriculture near Cities*; Soil and Water Conservation Society: Boston, MA, USA, 1987; pp. 209–218.
78. Mouysset, L.; Doyen, L.; Jiguet, F. From population viability analysis to coviability of farmland biodiversity and agriculture. *Conserv. Biol.* **2014**, *28*, 187–201. [[CrossRef](#)] [[PubMed](#)]
79. Kilpatrick, J. Concentrated animal feeding operations and proximate property values. *Apprais. J.* **2001**, *7*, 301–306.
80. Simons, R.; Saginor, J. A meta-analysis of the effect of environmental contamination and positive amenities on residential real estate values. *J. Real Estate Res.* **2006**, *28*, 71–104.
81. Stockwell, B.R.; Bradley, E.; Davis, D.; Smith, J. Peri-Urban Food Futures: Opportunities and Challenges to Reconfiguring Sustainable Local Agri-food Value Chains on the Sunshine Coast, Australia. *J. Agric. Food Syst. Community Dev.* **2013**, *4*, 123–140. [[CrossRef](#)]
82. Sharp, J.S.; Jackson-Smith, D.; Smith, L. Agricultural economic development at the rural-urban interface: Community organization, policy, and agricultural change. *J. Agric. Food Syst. Community Dev.* **2011**, *1*, 189–204. [[CrossRef](#)]



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