The Importance of Urban Agro-Recreation in the Formation of a Sustainable Integral Rural-Urban Environment in Gaziantep City-Turkey

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1. Introduction

Gaziantep is the capital city of Gaziantep Province in Turkey. It is amongst the oldest continuity inhabited cities in the world. Gaziantep is the sixth largest city in Turkey and the...
largest city in the country’s south-eastern Anatolia Region (W.P. 2011). Gaziantep is famous for its regional specialties: the copper-ware products and "Yemeni" slippers, specific to the region, are two examples. The city is an economic centre for South Eastern and Eastern Turkey. The metropolitan area has a total population of 1,341,054 (as of 2010) Address-based population survey 2008. The number of large industrial businesses established in Gaziantep, comprise four percent of Turkish industry in general, while small industries comprise six percent. Also Gaziantep has the largest organized industrial area in Turkey and holds first position in exports and imports (Trikonfex, 2011).

The global economic crisis began in 2008 has had major negative effects on the economies of all countries in the world. Turkey is also one of the very seriously affected countries by the crisis. (Aras, O.N., 2010). This crisis has affected the production industry and financial sectors in both urban and rural economies of Turkey with unexpected severity and speed. Thus, many industries had been downsizing steadily over the past five years. With the decision to stop production, it laid off many workers (EAAE, 2011), and caused some to go for early retirement (Sinan Ikinci, 2008). However, according to Suleyman Yazir (2010), the Turkish labour market has long been under the pressure of the strong supply side factors due mainly to the high fertility rates and flooding of rural population to the cities. Industrial production begun to decrease in August and this trend continued until March 2009. Capital goods experienced the highest decline and decreased by 42.2% compared to the same month of previous year (Nuray Terzi, 2010). The falling of employment rate has pressured on household disposable income and liabilities in Turkey economy.

On the basis of these circumstances, the Metropolitan Municipality of Gaziantep devoted and designed areas (Figure 1), adjacent to city parks, for retired workers/employee to practice agricultural activities (gardening) in their leisure time (Figure 1). Later on (in a short period) these areas became a source of income for those people, and consequently became attractive areas, for Gaziantep inhabitants, for cultural gathering and recreational purposes. Such project witnessed success, because most of the population of Gaziantep is rural migrants with agriculture background. Thus, Gaziantep municipality continued for the second and third phases for this project. Putting in mind that the rural milieu cannot be divorced from the urban system which is embedded in it, now new sites on the city fringe with rural sides are thought to be developed for such self-sufficient activities (Figure 1). These urban agro-recreational
activities will play important role in the formation of integral rural-urban environment especially when these activities increase in number and extend over city parks of Gaziantep. Of course these food production areas should unfold in the principles of permaculture criteria for more sustainable living.

![Figure 1: Hobby Gardens as Rural-Urban Integration in Gaziantep.](image)

Originally, these areas were not meant to create business or to make important contribution to local production of fruit and vegetables, but rather designed as Public Hobby Gardens (allotment gardens) for farm-loving retired and unemployed people. However, the per-person lots (+100 m2) were large enough to provide self-sufficient living for a family and to make minimal business as well. Later on, the site of these public hobby/allotment gardens became a leisure centre of weekend recreation and vegetables market place. The area was designed, managed and operated spontaneously by low skilled municipality employees and farmers. To avoid this spontaneous development, in future, for such areas and activities, the paper will focus on a concept that will organize and maximize both profit (as alternative economic support) and rural-urban integration in sustainable and ecological manners. However, this paper will study and evaluate Gaziantep Hobby Gardens as forms of integral rural-urban environments. It will also search for systems to make these areas more scientific, sustainable, ecological, productive, waste reducer and environmentally restored. The principles and criteria of Permaculture will be discussed as driving tools for urban agro-recreations to maintain integral rural-urban environment in Gaziantep. Furthermore, new alternatives will be presented to restructure the existing recreational city parks and vacant lands into productive urban farms that will create important contribution to local food production and economic supports for both urban and rural
2. Characteristics and Historical Background of Allotment Gardens in Europe and Hobby Gardens (Hobi Bahceleri) in Turkey

Allotment gardens of Europe are, generally, characterized by a concentration in one place of a few or up to several hundreds of land parcels that are assigned to individual families. In allotment gardens, the parcels are cultivated individually, contrary to other community garden types where the entire area is tended collectively by a group of people (MACNAIR, 2002). The individual size of a parcel, in Europe, ranges between 200 and 400m², and often the plots include a shed for tools and shelter. These plots are only used for gardening (i.e. growing vegetables, fruits and flowers), but not for residential purposes. The gardeners have to pay a small membership fee to the association, and have to abide with the corresponding constitution and by-laws (Drescher, 2001).

The history of the allotment gardens in Europe is closely connected with the period of industrialization and urbanization in Europe during the 19th century when a large number of people migrated from the rural areas to the cities to find employment and a better life. Very often, these families were living under extremely poor conditions suffering from inappropriate housing, malnutrition and other forms of social neglect. To improve their overall situation and to allow them to grow their own food, the city administrations, the churches or their employers provided open spaces for garden purposes. These were initially called the “gardens of the poor” and were later termed as “allotment gardens”.

The aspect of food security provided by allotment gardens became particularly evident during World Wars I and II. Consequently, food production within the city, especially fruit and vegetable production in home gardens and allotment gardens, became essential for survival in 1919.

Nevertheless, the importance of allotment gardening in Germany (Figure 2) has shifted...
over the years. While in times of crisis and widespread poverty (from 1850 to 1950), allotment gardening was a part time job, and its main importance was to enhance food security and improve food supply, allotment gardens have turned into recreational areas and locations for social gatherings (Holmer and Drescher, 2005).

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Figure 2: A typical German allotment scheme from the air (Source BVGF, 2000).

The allotment gardens of Europe and Hobby Garden (Hobi Bahçeleri) in Turkey are very similar in form, content, function and concept; but they are different in the reason of their establishment/emergence. There is almost a site for Hobby gardens in every city in Turkey. The parcels are cultivated by family members (Figure 3), rather than individually as in the European case. The individual size of a cultivated plot ranges between 100-250m²; and the plots include a shed for tools and shelter. These plots, the same as in Europe, are only used for gardening mainly growing vegetables and rarely fruits and flowers (Figure 3), but not for residential purposes. The reason they were established for, differs from one city to another in Turkey. The gardens in Ankara, Istanbul, and Karaman as examples of many Turkish cities were mainly established to release the stress of the people (Figure 4) who are living in high density multi-story tenement buildings to be rented by farm-loving city dwellers, and by turn to bring revenue to municipal bodies in charge. But, in some other cities of Turkey, these gardens were established for urban dwellers to practice their leisure time in an agro-manner (Figure 5) by municipalities as active recreational areas. In some other industrial cities (Gaziantep is typical) these gardens were established for both retired and for those who went for early retirement (lost their jobs) due to economic crisis that affected the industrial sector in the region. Meanwhile, in all cases, these gardens are owned, designed and managed by municipalities for which the gardeners have to pay a monthly minimal rent fee to the municipality. By now, all of these gardens are cultivated to provide self-sufficient living and to make business as economic
supports. The gardeners, in fact, sell their cultivated products either on site or on vegetables cards at the entry or close to gardens’ site (Figure 6).

Figure 3: Involvement of family members in cultivation- mainly vegetables.

Figure 4: Stress release hobby gardens in Turkey.

Figure 5: Hobby Gardens as recreational, socializing and gathering places (GAntep & Ankara).

The gardens in all cities of Turkey take place on lands adjacent to city parks or on vacant lands in the city fringes areas (Figure 1) However, these areas (Hobby Gardens) became attractive points for city dwellers as vegetables market (Figure 6) and recreational leisure activities for all age groups (Figures 5 & 7), especially, in weekends. Furthermore, the site of
these gardens became a business site not only for urban gardeners but also for rural farmers who come frequently to sell vegetables seeds, gardening tools/materials and farming advices for urban gardeners, and to sell their products for urban recreationists in the weekends. Therefore, these areas (sites of hobby gardens) sustained and promoted a high urban-rural integration in terms of functions, contents, concept, and physical entity. Recently, some municipalities, such as the one in Bekoz-Istanbul encouraged the spread of these gardens and urban gardeners to provide natural urban farming by devoting gardens sites of 20000m² at different locations in their hinterlands, in which each garden will be of 100-200m² (Figure 8). In addition to farming, the villages in the nearby regions encourage the natural expression in farming for these gardens (Y.Celikbilek: 2011).

Figure 6: Hobby Gardens as mean for economic support and self-sufficient living-Gaziantep.

Figure 7: Playground within Gaziantep hobby gardens site.

Under the same perspective of Beykoz municipality, Ankara municipality went further in establishing such hobby gardens for every city inhabitant to provide more job opportunities for rural farmers to engage management and consultant issues in these gardens to preserve the sustainable natural/organic farming and to contribute in the green food supply for Ankara inhabitants. However, many vacant lands at both Ankara city-fringe or inside the city are now
designated for hobby gardens (each plot is 120-204m²) and restructuring of existing parks became new phenomenon to maximize the number of these gardens for the purposes mentioned above (Figure 8). Karaman municipalities established these gardens for stress release, and feeling of achievement, productivity and peaceful living of the inhabitants. As in Karaman and other cities these gardens are so called “Serenity Gardens” (Huzur Bahceleri) now take place at the fringe and inside these cities (Figure 9).

![Figure 8: Restructured park for urban agriculture in Ankara, and hobby plots in Beykoz.](image)

![Figure 9: Serenity gardens (Huzur Bahceleri) in Karaman, Turkey (left picture).](image)

![Figure 10: Hobby Gardens Entrance Gaziantep (right picture).](image)

Each Hobi Bahce in Turkey, often, includes playgrounds, building for management & services, car parking, WC-shower cabinets, and first aid. The site of Gaziantep Hobby Gardens in Gaziantep is protected by a surrounding fence and welcoming entrance (Figure 10). The gardens are subdivided into plots defined by fence or pathway of stepping-stones, where all main roads are signed by indicators (Figure 7). Each garden plot has a shed for gardening tools and living area in which neighbour gardeners and visitors socialize and also customers are welcomed for shopping activities (Figures 6 & 5). These gardens produce only fresh vegetables (Figure 16) for city dwellers. Gardeners sell their vegetables in the nearby road intersections or
on site in their gardens (Figure 6). These gardens provide green connection between the built up area of Gaziantep city and its rural areas and open nature spaces (Figure 11). All Hobby Gardens in Turkey, including Gaziantep, lack every kind of animal husbandry. With introducing such activities both income and integration between rural-urban environments will increase.

![Figure 11: Hobby gardens at Gaziantep as integral form of rural-urban environments.](image)

3. The Role of Gaziantep's Hobby Gardens in the Formation of Urban-Rural Integration

The distinction between “rural” and “urban” is probably inescapable for descriptive purposes; however, it often implies a dichotomy which encompasses both spatial and sectoral dimensions. In censuses and other similar statistical exercises, rural and urban populations are usually defined by residence in settlements above or below a certain size; agriculture is assumed to be the principal activity of rural populations whereas urban dwellers are thought to engage primarily in industrial production and services (Cecilia Tacoli, 1998: 147). If we consider Tacoli’s distinction as an ultimate truth, then “what about if urban population is engaged in agriculture as principal activity?” is this population a urban-rural?, and what about if the rural population is primarily engaged in industrial production and services? (as in the case of many cities). Now is the rural population a rural-urban? To bring an end to this controversial discussion, we go back to our Gaziantep case in which we see both populations play contradictory role. If this discussion explains anything, it explains the degree of which the Gaziantep has reached in its integration with rural areas.
Effective rural development policy remains elusive in most developed countries in spite of efforts on a number of fronts, most often through agriculture portfolios. This comes into being by providing rural activities in urban Gaziantep areas in which the rural population can contribute in the realization of its economics. Thus, rural-urban integration will be realized in the interaction of functions and activities between rural and urban realms in Gaziantep. Increased rural-urban integration, in the form of out-commuting from rural areas, holds promise as a means for (some) rural areas to capture positive spatial spillovers of urban-based economic growth. However, embracing a proposal focused on urban linkages will require a major shift in policy focus.

Growing interdependence between rural areas and urban Gaziantep and the importance of regional networks is consistent with improved transportation, communication, and information flows. Such flow of information is very clearly understood in the relationship between rural integration with Gaziantep hobby gardens in terms of functioning and supporting issues (Figure 1). Integration with Gaziantep and regional economies is essential for the growth and vitality of rural communities in the nearby regions. Though forms of integration vary, the relationship with Gaziantep urban centre is the primary avenue for accessing the benefits of urban-based economic growth (Figure 1). However, the interlocked relationship between Hobby Gardens (in Gaziantep) and the nearby rural inhabitants is a new phenomenon for such integration. Thus, this integration, probably, can be realized by providing commuting facilities/system between the nearby rural areas and urban Gaziantep hobby gardens while both urban and rural lives and locations can be maintained in the in a region like Gaziantep.

Accessible Gaziantep urban centre also serves as markets for rural goods and services, as well as for rural recreation. Evidence suggests that a large share of rural areas experiencing job and population growth is near Gaziantep city (say within 60 km). Thus, explicitly, considering rural-urban interdependence can be provided by increasing the number of both sharing and complimentary activities between Gaziantep urban areas and its nearby rural areas. Among the best examples of this urban-rural interdependency is the existing of hobby gardens in urban Gaziantep. A better understanding of these relationships is essential to designing a rural development strategy within the city of Gaziantep, which will, by turn create rural jobs in the accessible hobby gardens of Gaziantep. Therefore, out-commuting from rural-to-urban gives rural workers access to urban agglomeration economies, while permitting a rural residential
location. Thus, the strategic key is an understanding of the determinants of rural-urban integration signified by rural out-commuting to hobby gardens of Gaziantep city.

4. A Practical and Productive System for Gaziantep Urban-Rural Synergy

The current economic crisis and unemployment leading to poverty and hunger are triggering a return to nature. Other factors such as reducing transportation distance to lower fossil fuel dependency and resource consumption, and procurement of organic produce at a reasonable price are important to many. The biggest crisis is embedded in finding job and by the end feeding the low-income communities in the city. Urban agriculture work is one of the most powerful solutions, because it brings food directly into the communities. Thus, people want to grow their own vegetables to increase food security, which is leading to an equitable distribution of access to food. Urban Agriculture is an industry that should take place within or on the fringe of a town which grows or raises, processes and distributes a diversity of food and non-food products, re-using largely human and material resources, products and services found in and around Gaziantep, and in turn supplying human and material resources, products and services largely to its urban area.

The Urban Planning and Design department at Gaziantep municipality is now searching for a system to control the spread of hobby gardens and the increasing demand for urban farming in the city of Gaziantep. They are looking for a concept to manage this demand in a very systematic and healthy way. They need a practical concept which must establish highly productive environment and can be applied in the city of Gaziantep as a system. For more sustainable issues, the system which can be proposed here must sound ecologically, must be economically viable, and must be sustainable in the long term. In searching for such sustainable system, therefore, it must be a development that meets the needs of the presents without compromising the ability of the future generations to meet their own needs. The system must easily provide accessible solutions that allow us to live in balance with ourselves and surrounding nature in which sustainability must exist as a culture in the city of Gaziantep. In these perspectives all needs draw our attention to the concept of Permaculture. It is an approach to designing human settlements (sustainable land use design) and agricultural systems that are modelled on the relationships found in natural ecology. According to Mason (2003),
Permaculture aims to create stable, productive systems that provide for human needs, harmoniously integrating the land with its inhabitants. The elements of this system must be viewed in relationship to other elements, where the outputs of one element become the inputs of another. Within a Permaculture system, Mason (2003) states that work is minimized, "wastes" become resources, productivity and yields increase, and environments are restored. Permaculture principles can be applied to any environment, at any scale from dense urban settlements to individual homes, from farms to entire regions.

For further definitions and characteristics of Permaculture that can be applied in Gaziantep are: i) the designing of human habitat with food production system in urban Gaziantep; ii) its land-use planning and community building criteria that provide harmonious integration of human dwellings, microclimate, annual and perennial plants, animals, soil, and water into stable productive communities iii) to maximize symbiotic and synergistic relationship between site components iv) undertake priority action area system in the master plan; and v) establish projects at the neighbourhood scale.

There are some other concepts within permaculture system that can be applicable to develop the existing Hobby Gardens, and can be as criteria for new Gardens in the city of Gaziantep among which is the Perma-community gardens. These community gardens can be placed where people grow food, with a seating area, tool shed and compost bin. This is what exactly similar to the Hobby gardens at Gaziantep. Among the criteria and elements (related to perma-community gardens) that Gaziantep Hobby Gardens lack are the arbour, greenhouse, composite facilities chicken coop, potting space storage barn, solar greenhouse, and butterfly garden.

The problem of Gaziantep is a little bit similar to the early hard times of Cuba after the collapse of the socialist bloc which led to 85% drop in total external economic relations, after which migration to Cuban main urban centres and unemployment reached a dramatic percentage (Rosset, 1994). As a result, an alternative urban agricultural model was designed to stem the increasing unemployment in urban areas and the flood of migrants…. However, the Cuban urban permaculture model created 8000 city farms in Havana, in 1995, and there were 26600 farm parcels through the urban districts of Havana; and 541000 tons of foods were produced in 1998 and some 60000 people found work (Murphy, 1999). Cuba now has one of
the most successful urban agriculture programs in the world (IFDP. 2010). Denmark, also, had a successful urban farming program where a new law about community farms was enacted for all garden areas owned by the government will become permanent agriculture before Nov. 2001.

According to Gaziantep Municipal Council, the population of the city is expected to grow to 200,000 by the year 2015. Much of this growth is planned for the City Centre, where there is a shortage of green space and parks. While the increase in population will result in a greater demand for food and jobs, the farming process in Gaziantep region is aging, and the rate of replacement is low. Gaziantep needs more locally grown food. Therefore, these small hobby gardens will not be enough to answer Gaziantep needs of food and employment. To counteract these issues, it is proposed that the area known as vacant lands must be kept in the Agricultural Land Reserve and must be developed as a Sustainable Food Systems Park “Productive Green Engines”. This land must be used to produce food and should provide a number of services and job opportunities to the community living in-and-around Gaziantep. The benefits of these green engines lands would be:

i) It would shorten the distance between food production and consumption, improve the local micro-climate, increase environmental biodiversity, and use urban waste (solid organic waste used for compost).

ii) It would improve the appearance of the neighbourhood, organize local citizens and improve access to fresh, nutritious food.

iii) It would create outdoor gathering and serene spaces

iv) It would provide greater percentage of the value of the food grown in Gaziantep city and then consumed locally would remain in the community. The agricultural park would attract tourists from abroad and provide access to income-generating opportunities for unemployment people.

v) Community groups and hobby growers who want to make the step into commercial production will be able to access large size plots and acreages.

vi) It would be increasing to begin thinking of featuring urban agriculture instead of the passive urban scenery landscape.

The paper is by now bringing the attention to reinvent parks as laboratories of innovation that operate across boundaries of environmental, social, economic, and aesthetic agendas;
synthesizing nature and artifice, utility and recreation; and for most fruitful results, to find jobs for Gaziantep inhabitants. Furthermore, it is seeking to propose layered functionality into Gaziantep parks water utility and food production projects.

5. Conclusion and Recommendation Guidelines

The food and agricultural system illustrates the complexities of urban-rural connections and the ways such complexities challenge attempts to divide policy actions into separate “rural” and “urban” spheres. But, rural farmers, for instance, sell their products at both rural and city markets. Urban farmers raise and sell fruits, vegetables, and livestock. Rural dwellers complement farm income with proceeds from industries such as handicrafts or food processing. Agricultural production itself has benefited from more direct connections with urban-based agribusinesses. With a rural-urban “lens,” we see that the agricultural system will in fact be important to the livelihoods of both urban and rural dwellers of Gaziantep for some time to come. Furthermore, this lens illustrates how the income of the agricultural sector is important to both rural and urban dwellers. Individuals can earn income directly from agricultural production or indirectly by participating in various jobs in the system that agricultural production supports in urban and rural areas. These connections/integrations are not new, but they do seem to be increasingly important. Unfortunately, perceptions and policies do not seem to be keeping up. The mixtures of “urban” with “rural” activities are not anomalies but the reality of livelihoods in rural and urban areas today. Separating rural and urban or setting them against one another overlooks connections and potential development synergies.

Urban agriculture is an ecological farming that occurs in the city. It allows growing food for local consumption, managed by local authority, renting land from municipality for private use or for commercial purposes. However, urban agriculture will never be self-sufficient to sustain food needs to the city, because ecologically footprint of the city is always much bigger, and there will always be the need for food imports. Despite this fact, urban agriculture allows a social interaction, educate new generations and provide jobs opportunities.

Urban parks, green open areas or any uncertain spaces in the city (empty vacant spaces, Brownfields, spaces left aside of urbanization) have the potential to become productive landscape that provide food and resources to the close neighbourhood, self-maintained by communal organizations which means job opportunity.
From this perspective, it becomes ever more imperative today to understand the changing dynamics of the rural-urban interactions and to address the rising challenges that prevent an equitable development of both cities and rural areas. This calls for a new approach to planning our cities and re-examining how different cities can best manage the flow of people, capital, commodities, and information. It also calls for creative solutions for interacting with the rural areas in ways that help them survive the changes our world is undergoing.

Rural and urban areas have traditionally enjoyed a relationship of interdependence: livelihoods were made by rural residents who sold farm produce to their urban counterparts, while the resources and demand from rural areas contributed to the prosperity of cities, and so on. However, several factors are altering the rural-urban integration/relationship today. For one thing, the rapid expansion of cities has resulted in an unsustainable consumption of land and natural resources that is placing a considerable burden on rural areas. Concurrently, recommendations guidelines for planning issues (as supplementary to the proposal) can be presented for Gaziantep municipal agenda to maintain and promote rural-urban integration as follows:

- Urban agriculture has to be considered in a number of recent comprehensive plans and neighbourhood plans.
- Sustainability plans addressing urban agriculture/food issues must be considered in the land-use plan of Gaziantep.
- Municipality and other institutions should donate or lease vacant land to land trusts that organize community gardens.
- Planners interested in urban agriculture can do valuable work by reviewing and redesigning ordinances related to urban agriculture.
- Zoning could be used to legitimize urban agricultural activities. Adding an urban agricultural zoning designation, for instance, may protect urban farms or community gardens from rapid development when land tenure is otherwise unsteady.
- It will be helpful for planners to think of agriculture while preparing the Master/comprehensive Plan of Gaziantep considering: intensive agriculture (includes rural and peri-urban farming and associated activities); intensive urban agriculture (describes urban farms and farmer markets); less intensive urban agriculture (applies to backyards and community gardens); and little urban activities (home gardening).
• Planners will want to make sure that at least some agricultural uses are permitted in districts encompassing large areas of the city.
• Permissive districts that allow many types and scales of cultivation, animal husbandry, agriculture-related structures, and some farm-related commercial activity must be denoted in the comprehensive plan of Gaziantep.
• It may be helpful for planners to consider the following questions:
  • What are the possible urban agriculture activities for Gaziantep city?
  • What can be allowed in a widespread way with little controversy?
  • What can be allowed, but controlled?
  • What can be allowed, but only in some places?
  • Are there some places where specific activities should be particularly encouraged?
  • Who are the likely participants and how can positive relationships be fostered?

Planners at the municipality of Gaziantep can play an important role in promoting urban agriculture and shaping the direction it takes. By no means is zoning the only way to promote urban agriculture. A city like Gaziantep, which has ambitions to rapidly expand urban agricultural opportunities, it may be necessary to make land and funding available. In many cases, the demand for urban agriculture, such as Hobby Gardens or community garden plots, is not nearly being met. Partnering with nongovernmental organizations such as community groups, businesses, and land trusts can be an effective way of directing resources toward urban agriculture without having to devote significant resources to management or oversight.

Urban agriculture presents our society with a range of opportunities. These have been detailed above and include health, the conservation and building of regional identity based on production, the subsequent potential for geographic and regional indicator status and the future for agriculture that these opportunities might deliver for current and future generations. These opportunities present us in geographic and regional assets of urban-rural integration within the urban contexts.

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7. References


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S.F. (2011). San Francisco Parks Trust http://www.sfpt.org/OurPrograms/StrawberryHill/tabid/473/Default.aspx is dedicated to civic engagement and philanthropy to enhance and protect the parks, open spaces, and recreational activities that are vital to the health and well being of our City’s residents. http://www.sfpt.org/OurPrograms/CommunityGreening/tabid/86/Default.aspx


For Permaculture: http://www.attra.org/attra-pub/perma.html The Permaculture movement was founded in the late 1970s by two Australians, Bill Mollison and David Holmgren. The most widely accepted definition of permaculture is "a design system for creating sustainable human environments" (Mollison, B. 1997). The word "permaculture" is a contraction of "permanent" and "culture." Read more in http://en.wikipedia.org/wiki/Permaculture

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