EE
E u r o E c o n o m i c a
Issue 3(37)/2018 *ISSN: 1582-8859*

Home Gardens – A Current Economic Approach

Matei D.[1], Chiriță V.[2]

Abstract: The past few years have shown a growing interest of the international scientific community to strengthen and intensify local food production, in an attempt to mitigate the negative effect of population growth, generalized climate change or food price volatility. Under these circumstances, researchers noted a resource that was neglected by macroeconomics over time, and that was the home gardens. No matter whether current research sees this new resource as an element of food security or an improving factor of the status of nutrition in rural communities, in Romania home gardens constitute a real rural capital that has passed the test of time and is already an integral part of the local food systems. This paper provides a theoretical approach on the notion of home gardens, insisting on the social, economic and environmental characteristics and contributions that this economic category brings to the host communities and the society as a whole.

Keywords: home gardens; rural capital; individual household; food

JEL Classification: E20

1. Introduction

One of the main reasons for the interest of researchers in home gardens is their ability to provide or supplement the required quantity and quality of food products for disadvantaged social categories, mainly rural populations in the developing countries. This is because of globalization, which brought to the attention of the international community the risks, in addition to the benefits of a food system where food is sometimes produced at great distances from the place of consumption, with all the resulting consequences: additional costs, potential supply blockage, lack of fuel and the need for further treatment of products in order to withstand transportation and maintain freshness for a longer period of time. The collapse of any link in the supply chain may affect, as a tsunami does, all levels of society. Not coincidentally, Lester Brown, president of the Earth Policy Institute, said in 2012 that "food becomes the weak link of the planet: food is the new oil and land is the new gold". Hence, the renewed interest for a system that has proven its viability over time.

The theoretical premise that supports our interest in home gardens is the fact that regional food production is enough for the population of a region, as it brings an increased sense of food security, which is more than a global food production would do.

2. The Concept of Home Gardens in Scientific Literature

The papers we examined to complete this study led us to the conclusion that home gardens are found in different forms all over the world. We classified the analysed bibliography into four documentary funds, by origin area: tropical area, temperate area, South and Southeast Asia and Africa. Most of the 1980s studies were concerned with tropical or temperate home gardens only (Ninez, 1984), but after 2000 numerous studies were published about Asia (Cai et al., 2004; Ali, 2005; Sunwar et al., 2006; Karimi et al., 2018) and Africa (Faber et al., 2002).

[1] Institute of Economic and Social Research Gh. Zane, Romania, Corresponding author: daniela_matei2004@yahoo.com.
[2] University Ștefan cel Mare, Suceava, Romania, E-mail: vnchirita@gmail.com.

As far as the reasons for approaching the topic of home gardens are concerned, studies mention either an underestimation of their contribution to the national economy (Whitmore & Turner, 2001) or a sense of symbiosis they generate between people, communities and the landscape (Irvine et al., 1999), an intangible value they have for the individual households (Kimber, 2004; Harris, 2009) or an important role in food security and nutritional diversity (Njuguna, 2013). Methodologically, home gardens are areas of land intended for the production of agricultural crops mainly for the domestic use of family members and have minor cultural differences due to their geographic location.

Although Romanian home gardens include only arable land and permanent crops (scattered fruit trees, perennial crops, strawberry farms, bush fruits etc.), Galhena et al. (2013) adds to these areas the animals that can provide the family with an additional source of food and income. The correlation between the contribution of home gardens to direct family maintenance is obvious in this case. In fact, most researchers acknowledge that there cannot be a standard definition of home gardens, given their diversity (Kumar & Nair, 2004), but rather a sort of perception that refers to a certain particular system of supplementary food production at small-scale managed by the members of the household, consisting of a variety of plant and animal species that mimic the natural ecosystem (Hoogerbrugge & Fresco, 1993), (Eyzaguirre & Linares, 2010), (Krishna, 2006).

2.1. Characteristics of Home Gardens

Regardless of how they are defined, home gardens display a series of characteristics that transcend the methodological dispute and the different geographical meridian, climate area or culture (Mitchell & Hanstad, 2004):

• they are located near the residence;

• they include various agricultural crops, a high diversity of plants;

• production is mainly a source for family consumption and rarely an income;

• they occupy a small area;

• they use a production system accessible to those without or on low income (Marsh, 1998).

Other important characteristics are dynamism and adaptability (Eyzaguirre & Linares, 2010), Sthapit et al., 2004), since decisions on crop selection, seed or animal feed acquisition, harvesting or risk taking are determined, first of all, by the family's consumption needs or the pressure on its cash flow (Ali, 2005), (Galhena et al., 2012). In fact, the researchers noted that structure and intensity of home garden cultivation are directly related to the socio-economic status of the household (Wiersum, 2006), (Matei, 2018). This signifies that the structure of crops evolves from subsistence vegetable species to horticulture and/ or animal farming when families become economically stable and exceed a certain income level. We could say that, in such situations, a home garden functions as an anthropological pole of the individual’s or a family’s relationships with space, time, culture and socio-economic conditions in which they live or gain access (Guyon, 2008, Burkitbaveva & Swinnen, 2018). Each of the mentioned elements has a different weight factor, depending on the socio-cultural context in which the gardens operate but, among them, education, economic resources and practical experience mostly regulate the purpose of a garden as an exclusive production area, leisure area or a combination of the two, and gives it utilitarian or ornamental functions.

Given that Romania has a great number of home gardens and the vast majority of them are subsistence gardens, we will focus hereinafter mainly on the quality of their food production systems for the households to which they belong. Thus, the lower or higher shares of some of the following characteristics (Table 1) in the household economy tell the difference between the subsistence home gardens and those that have exceeded that level.

Table 6. Particularities of home gardens.

Feature	General practice
Density of cultivated species	high
Production target	household consumption
Source of work	family (women, children, elderly)
Occupancy	part – time
Harvest frequency	daily, seasonal
Use of space	horizontal or vertical
Location	near the house
Harvesting structure	irregular
Technology	simple hand tools
Inputs costs	low
Areal	rural and urban
Experience	horticultural and gardening skills
Specialized assistance	minimal or non-existent
Capital invested	low or very low

Adaptation after Niñez VK, 1985, quoted in Galhena et all, 2013

Any upward change of these listed characteristics leads to a home garden generating income and small amounts of incorporated capital that can lead to entrepreneurial activities over time.

2.2. Benefits of Home Gardens

Although home gardens are designed to produce nutritional prime-necessity food for family consumption, they also provide a variety of other multi-use products such as herbs and health remedies, various types of alternative fuel, livestock manure or animal feed. Chris Landon-Lane (2011) provides an overview of the benefits of family gardens (Table 2).

Table 2. Benefits of home gardens

- improve food security
- food diversity and better nutritional intake in the diet
- extra income
- employment outside productive seasons
- decreased risk through diversification
- environmental benefits resulting from the recycling of water and waste
- supporting local biodiversity

The same author describes home gardens as a "place for innovation", with the potential to improve the livelihoods of peri-urban and rural communities. Given that the benefits listed above have been approached in different manners by the authors whose works we have consulted, we will share the benefits of home gardens on three levels: social, economic and environmental benefits. *Social benefits* regard the direct contribution of home gardens to household food security by increasing the availability, accessibility, and use of fresh food products in a continuum that adds energy and nutrition to the diet of the families that own them (Marsh, 1998) (Winkler, 2002).

This category also includes the access to a variety of plants and food of animal origin that lead to a global increase in food consumption and stimulate the absorption of essential nutrients. Our documentation has also identified situations where home gardens have been an element of national policy to remedy some vitamin deficiencies. In the 2000s, Bangladesh was able to increase the availability and consumption of high-vitamin A foods by supporting national gardening programs (Talukder et al., 2000). In addition, the integration of animals and poultry into this type of households strengthens and secures families through safe and sometimes unique sources of animal protein derived from milk, eggs and meat (Cerda & Mukul, 2008).

Dependant on the main purpose of ensuring family food security, some home gardens are involved in the cultivation of mushrooms or in beekeeping but also small fish ponds can occupy the garden space in an effort to diversify family food (Ali, 2005). In all the cases we studied, the role of women in the cultivation and management of the food obtained, as well as the use of some health improving

products (spices, medicinal plants) (Peyre et al., 2006), (Michon & Mary, 1994) has also been emphasized. The cultural role of home gardens in preserving the traditional knowledge of culture, storage and food preparation cannot be neglected either (Mitchell & Hanstad, 2004).

Scientific literature also highlights the important role that Cuba has given to home gardens in the recovery from the 2008 economic crisis, where home gardens were used as a national strategy to successfully overcome the economic crisis and political isolation of the moment (Buchmann, 2009). This has emphasized the importance of a local supply system in case of disaster, and provided confidence to the communities that relied on them to overcome difficult times when the state could not help. Starting from the example of Cuba, we have identified other situations (Syria, Sri Lanka) where home gardens were viable choices for food and nutritional security in case of disasters, conflicts or post-crisis situations (Marsh, 1998), (Galhena et al., 2012, Wanasundera, 2006) when classic food production and supply systems are totally or partially disabled.

In order to highlight the *economic benefits* that home gardens produce for those who own and manage them, we have found that, first of all, they generate income, they improve the living conditions and the economic well-being of households, and they also promote entrepreneurship and rural development (Trinh et al., 2003), (Calvet et al., 2012). By reviewing a number of case studies, Mitchell and Hanstad (2004) state that family gardens contribute to the economic well-being of households in several ways:

• their products can be sold to earn extra income (Eyzaguirre & Linares, 2010) (Ninez, 1985);

• the gardening activities can be used in tourism;

• the savings a household makes by consuming its own products can be targeted for other family-friendly purposes.

We have even identified studies that calculated the percentage of home garden revenue out of the total household income. Thus, Vietnamese mountain families earned more than 22% of their income through gardening activities (Trinh et al., 2003). Also, a study on a South-East Nigerian region reported that home gardens products (vegetables, fruits and animals) accounted for more than 60% of the household income (Okigbo, 1990). This signifies that the sale of products improved the financial situation of the family bringing by means of additional income, while improving at the same time its social and cultural status. On the other hand, the fact that the production is small leads to fewer inputs and investments, which is an extremely important saving for poor families with limited access to production inputs.

There is an early form of risk protection of home gardens given by the presence, in many cases, of a small number of animals, which reduces the risk caused by the eventual loss of crops, while providing goods to the family. The presence of animals also provides a buffer fund in difficult cases, which allows the family to exit the crisis by selling the animals (Devendra & Thomas, 2002; Grunert, 2005).

As far as the *environmental implications* are concerned, home gardens are regarded as primary agricultural production units that conserve biodiversity and the natural resources. Through the diversity of cultivated plants and animal species, home gardens promote long-term sustainable farming practices and generate many environmental benefits (Blanckaert et al., 2004), (Albuquerque et al., 2005).

A paper on gardens in Germany (Watson & Eyzaguirre, 2002) mentions that home gardens contain a broad spectrum of plant species, some of which are rare or endangered. Cultivation of such species transforms the home gardens into true laboratories for in situ conservation of biodiversity and genetic material (Trinh et al., 2003), (Gajaseni & Gajaseni, 1990). The large number of hosted ecosystems, nutrient recycling, low soil erosion or improved pollination are other benefits reported by the scientific literature (Pushpakumara et al., 2010).

At the same time, the high density of plants in home gardens provides the ideal environment for wild species: birds, small mammals, reptiles and insects (Christanty, 1990), and Calvet-Mir et al. (2012)

highlights another category of ecosystem services: the production of quality food, land maintenance, cultural services or pest control, which distinguishes this small-scale farming from the commercial agriculture. Another potential benefit of home gardens is the reduction of soil erosion and the land preservation (Soemarwoto, 1987), (Terra, 1954).

4. Conclusion

No matter where in Europe or in the world, the small-scale agriculture approach of home gardens in rural areas and, more recently, in urban areas, is a viable solution to the global changes (climate, social or political) that have already appeared.

The main reason for the eligibility of home gardens alongside small households, found in large numbers throughout the world, is to obtain food security by locally producing food. Another important reason is the influence of home gardens on the organization of space and the shaping of relationships between individuals and families and the environment, society and time.

Their impact on individual (family) or collective economic issues should not be ignored, irrespective of the level – locally, at society or at food system level, given that nowadays the economic vision subordinates all the manifestations of social life.

5. References

Albuquerque, U.P.; Andrade, L.H.C. & Caballero, J. (2005). Structure and floristics of homegardens in Northeastern Brazil. *Journal Arid Environment*, 62, pp. 491–506.

Ali, A.M.S. (2005). Home gardens in smallholder farming systems: Examples from Bangladesh. *Human Ecology*, 33, pp 245–270.

Blanckaert, I.; Swennen, R.L.; Paredes Flores, M.; Rosas López, R. & Lira, S.R. (2004). Floristic composition, plant uses and management practices in homegardens of San Rafael Coxcatlán. Valle de Tehuacán-Cuicatlán, México. *Journal Arid Environment*, 57, pp. 39–62.

Buchmann, C. (2009). Cuban home gardens and their role in social-ecological resilience. *Human Ecology*, 37, pp. 705–721.

Burkitbaveva, S. & Swinnen, J. (2018). Smallholder agriculture in transition economies. *Journal of Agrarian Change*, vol. 18, issue 4, pp. 882-892, https://doi.org/10.1111/joac.12284.

Cai, C.T.; Luo, L.S. & Nan, Y.Z. (2004). Energy and economic flow in home gardens in subtropical Yunnan, SW China: a case study on Sanjia village. *International Journal Sustainable Development World Ecology*, pp. 199–204.

Calvet-Mir, L.; Gómez-Bagetthun, E. & Reyes-García, V. (2012). Beyond food production: Home gardens ecosystem services. A case study in Vall Fosca, Catalan Pyrenees, north-eastern Spain. *Ecological Economics*, 74, pp. 153–160.

Cerda, H.E.C. & Mukul R.R.G. (2008). Homegarden production and productivity in a Mayan community of Yucatan. *Human Ecology*, 36, pp. 423–433.

Christanty, L. (1990). *Home Gardens in Tropical Asia, with Special Reference to Indonesia.* In *Tropical Home Gardens*. Edited by Landauer K, Brazil M. Tokyo, Japan: United Nations University Press.

Devendra, C. & Thomas, D. (2002). Smallholder farming systems in Asia. *Agricultural Systems*, 71, pp. 17–25.

Eyzaguirre, P.B. & Linares, O.F. (2010). *Introduction In Homegardens and Agrobiodiversity*. Edited by Eyzaguirre PB, Linares OF. Washington DC, USA, Smithsonian Books, pp. 1–28.

Faber, M.; Venter, S.L. & Benade, A.S. (2002). Increased vitamin A intake in children aged 2–5 years through targeted home-gardens in a rural South African community. *Public Health Nutrition Journal*. 5(1), pp. 11–16.

Gajaseni, J. & Gajaseni, N. (1999). Ecological rationalities of the traditional homegarden system in the Chao Phraya Basin, Thailand. *Agroforestry Systems*, 46, pp. 3–23.

Galhena, D.H., Mikunthan, G., Maredia, K.M. (2012). Home Gardens for Enhancing Food Security in Sri Lanka. *Farming Matters*, 28(2), p. 12.

Galhena, D.H.; Russell, F. & Karim, M. (2013). Home gardens: a promising approach to enhance household food security and wellbeing, *Agriculture & Food Security*, 2:8, pp. 1-13.

Guyon, F. (2008). Les jardins familiaux aujourd'hui : des espaces socialement modulés, *Espaces et sociétés*, n° 134. pp. 131-147.

Grunert, K.G. (2005). Food quality and safety: consumer perception and demand, *European Review of Agricultural Economics*, Volume 32, Issue 3, pp. 369–391, https://doi.org/10.1093/eurrag/jbi011.

Harris, E. (2009). The role of community gardens in creating healthy communities. *Australian Planner*, vol. 46, no. 2.

Hoogerbrugge, I.D. & Fresco, L.O. (1993). Homegarden Systems: Agricultural Characteristics and challenge. *International Institute for Environment and Development*. London, UK, *Gatekeeper series*, no. 39.

Irvine, S.; Johnson, P. & Peters, K. (1999). Community gardens and sustainable land use planning: A case-study of the Alex Wilson community garden. *Local Environment*, vol. 4, no. 1.

Karimi, V.; Karami, E. & Keshavarz, M. (2018). Climate change and agriculture. Impacts and adaptive responses in Iran. *Journal of Integrative Agriculture*, 17(1), pp. 1-15.

Kimber, K.T. (2004). Gardens and dwelling: People in vernacular gardens. *The Geographical Review*, vol. 94, no. 3.

Krishna, G.C. (2006). Home Gardening as a Household Nutrient Garden. Pokhara, Nepal. Paper presented at Home Gardens in Nepal: *Proceeding of a workshop on Enhancing the contribution of home garden to on-farm management of plant genetic resources and to improve the livelihoods of Nepalese farmers: Lessons learned and policy implications*.

Kumar, B.M. & Nair, P.K.R. (2004). The enigma of tropical homegardens. *Agroforest Systems*, 61, pp. 35–152.

Landon-Lane, C. (2011). *Livelihoods Grow in Gardens - Diversifying Rural Income Through Home Garden*, Volume 2. Rome, Italy: Food and Agriculture Organization of the United Nations.

Marsh, R. (1998). Building on traditional gardening to improve household food security. *Journal of Food, Nutrition and Agricultural*, 22, pp. 4–14.

Matei, D. (2018). Grădinile familiale – un capital rural viabil. *Economia agroalimentară și dezvoltarea rurală din perspectiva integrării europene*. coord. Alexandri C. ș.a.. Editura Academiei Române, București, pp. 157-167.

Michon, G. & Mary, F. (1994). Conversion of traditional village gardens and new economic strategies of rural households in the area of Bogor, Indonesia. *Agroforest Systems*, 25, pp. 31–58.

Mitchell, R. & Hanstad, T. (2004). Small Homegarden Plots and Sustainable Livelihoods for the Poor. Rome, Italy: *LSP Working Paper*.

Marsh, R. Building on traditional gardening to improve household food security. (1998). *Journal of Food, Nutrition and Agricultural*, 22, pp. 4–14.

Niñez, V.K. (1984). *Household Gardens: Theoretical Considerations on an Old Survival Strategy*. Peru, Lima: International Potato Center.

Niñez, V.K. (1985). Working at half-potential: constructive analysis of homegarden programme in the Lima slums with suggestions for an alternative approach. *Food and Nutrition Bulletin*, 7(3), pp. 6–13.

Njuguna, J.M. (2013). The role of kitchen gardens in food security and nutritional diversity: a case study of workers at James Finlay Kenya - Kericho, *chss.uonbi.ac.ke/.../Kitchen%20Garden%20Research%20JFK%20Hard%20Cover.doc*, accesat 28.09.2018.

Okigbo, B. (1990). *Home Gardens in Tropical Africa. In Tropical Home Gardens*. Edited by Landauer K, Brazil M. Tokyo, Japan: United Nations University Press.

Peyre, A.; Guidal, A.; Wiersum, K.F. & Bongers, F. (2006). Dynamics of homegarden structure and functions in Kerala, India. *Agroforest Systems*, 66, pp. 101–115.

Pushpakumara, D.K.N.G.; Wijesekara, A. & Hunter, D.G. (2010). *Kandyan homegardens: A promising land management system in Sri Lanka. In Sustainable use of Biological Diversity in Socio-ecological Production Landscapes. Background to the Satoyama Initiative for the Benefit of Biodiversity and Human Well-being*. Edited by Bélair C, Ichikawa K, Wong BYL, Mulongoy KJ. Montreal, Canada.

Soemarwoto, O. (1987). *Homegardens: a traditional agroforestry system with a promising future. In Agroforestry: A Decade of Development*. Edited by Steppler H, Nair PKR. Nairobi, Kenya: International Council for Research in Agroforestry.

Sunwar, S.; Thornstrom, C.G.; Subedi, A. & Bystrom, M. (2006), Home gardens in western Nepal: opportunities and challenges for on-farm management of agrobiodiversity. *Biodiversity and Conservation*, 15, pp. 4211–4238.

Sthapit, B.R.; Rana, R.B.; Hue, N.N. & Rijal, D.R. (2004). *The diversity of taro and sponge gourds in traditional home gardens in Nepal and Vietnam. In Home Gardens and Agrobiodiversity*. Edited by Eyzaguirre P.B., Linares, O.F., Eashington DC, USA: Smithsonian Book, pp. 234-254.

Talukder, A.; Kiess, L.; Huq, N.; Pee, S.; Darnton-Hill, I. & Bloem, M.W. (2000). Increasing the production and consumption of vitamin A–rich fruits and vegetables: lessons learned in taking the Bangladesh homestead gardening programme to a national scale. *Food and Nutrition Bulletin*, 21(2), pp. 165–172.

Terra, G.J.A. (1954). Mixed-garden horticulture in Java. *The Malayan Journal of Tropical Geography*, 3, pp. 33–43.

Thompson, J.L.; Gebauer, J.; Hammer, K. & Buerkert, A. (2010). The structure of urban and peri-urban gardens in Khartoum, Sudan. *Genetic Resources and Crop Evolution*, 57, pp. 487–500.

Trinh, L.N.; Watson, J.W.; Hue, N.N.; Minh, N.V.; Chu, P.; Sthapit, B.R. & Eyzaguirre, P.B. (2003). Agrobiodiversity conservation and development in Vietnamese home gardens. *Agricultural Ecosystem Environmental*, 97, pp. 317–344.

Torquebiau, E. (1992). Are tropical agroforestry gardens sustainable? *Agricultural Ecosystem Environmental*, 41, pp. 189–207.

Wanasundera, L. (2006). *Rural Women in Sri Lanka's Post-Conflict Rural Economy*. Colombo, Sri Lanka: International Labor Office. RAP Publication 13.

Watson, J.W. & Eyzaguirre, P.B. (2002). *Homegardens and in-situ Conservation of Plant Genetic Resources in Farming Systems. Witzenhausen, Germany*: Paper presented at 2nd International Homegarden Workshop.

Whitmore, T.M. & Turner, B.L. (2001). *Cultivated Landscapes of Middle America on the Eve of Conquest*. Oxford: Oxford University Press.

Wiersum, K.F. (2006). *Diversity and change in homegarden cultivation in Indonesia. In Tropical Homegardens: A Time-Tested Example of Sustainable Agroforestry*. Vol 3. Edited by Nair BMKPKR. Dordrecht, the Netherlands: Springer Science.

WinklerPrins, A.M.G.A. (2002). House-lot gardens in Santarém, Para, Brazil: linking rural with urban. *Urban Ecosystems*, 6(1&2), pp. 43–65.