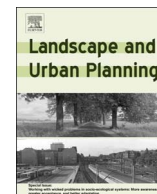




Contents lists available at ScienceDirect

## Landscape and Urban Planning

journal homepage: [www.elsevier.com/locate/landurbplan](http://www.elsevier.com/locate/landurbplan)

Research paper

## Home-grown: Gardens, practices and motivations in urban domestic vegetable production

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## ARTICLE INFO

## Keywords:

Urban agriculture  
Domestic gardens  
Sustainability  
Vegetable  
Growing  
Self-provisioning  
Food

## ABSTRACT

Food production is of symbolic and practical importance in sustainable cities. Vegetable gardening in public spaces and community gardens is better understood than the same activity on private residential property. In suburbanised western cities most vegetable production is likely to be on private blocks. To increase vegetable production in cities, we need to understand private vegetable growing. We used a questionnaire administered in person with a diverse sample of 101 gardeners in Hobart, Tasmania, Australia to determine variation in gardens, gardening practices and gardener motivations, relationships between them, and potential for planning and other interventions to increase domestic vegetable production. Vegetable gardens varied from highly species-rich to species-poor and from staple production to expressions of culinary fashion. Gardening practices varied from integrated, organic and displayed, to strongly constructed and reliant on synthetic inputs. While all respondents were motivated to grow vegetables for pleasure, many were activists who wished to promote social change, while others wished to ensure affordable access to vegetables or to improve health. Activist gardeners used integrated organic or permacultural practices and produced highly complex garden outcomes. With the exceptions of the activists and food fashionistas, garden type, gardening practice and gardener motivation were not strongly interlinked. A large majority of respondents identified family members as important sources of information and inspiration. Gardeners without family role models were either influenced by new food cultures or were on low-incomes and wanted affordable access to vegetables. This latter group could be expanded through appropriate education and incentives.

## 1. Introduction

Urban agriculture, the production of food within the boundaries of cities and towns, is gaining increasing attention as a component of a sustainable economy, food security, ecosystem service provision, public health and community development (e.g. Ghosh, 2014; Landry & Chakraborty, 2009; Larder, Lyons, & Woolcock, 2014; Opitz, Berges, Piore, & Krikser, 2016). Urban agriculture has always been central to the resilience of cities (Barthel & Isendhal, 2013). In wealthy societies, agricultural activities on land accessible to the wider community have been the focus of attention (Dobernig & Stagl, 2015; Martin, Clift, & Christie, 2016). This attention has recently extended to food production on and in buildings (Thomaier, Specht, Henckel, Dierich, Siebert, Freisinger, & Sawicka, 2015). While residential food self-provisioning in both rural and urban settings has been a focus of research in poor societies (Poulsen, McNab, Clayton, & Neff, 2015), home gardens have been neglected in discussion of urban sustainability in wealthy societies (Gray, Guzman, Glowa, & Drevno, 2014;

Taylor & Lovell 2014; Zainuddin & Mercer, 2014). As Taylor and Lovell (2014, 285) have recently argued: “While community gardens have sprouted across the landscape, home food gardens—arguably an ever-present, more durable form of urban agriculture—have been overlooked, understudied, and unsupported by non-governmental organizations, and academics.” This neglect is all the more puzzling in the context of the characteristically suburban cities of English-speaking societies in which private garden space is a major component of urban form (Ghosh, 2014; Loram, Tratalos, Warren, & Gaston, 2007), and likely to be a major component of urban agricultural production (Taylor and Lovell, 2012; Lovell, 2012, 2014).

Little is known about how many urban householders engage in food production. The limited research that has considered this question, however, indicates that this practice is widespread in many wealthy societies. For example, studies in the cities of Hobart, Australia and Barcelona, Spain indicate that 25% and 26% of households grow vegetables (Daniels & Kirkpatrick, 2006; Kirkpatrick, Daniels, & Zagorski, 2007; Padullés Cubino, Kirkpatrick, & Subirós, 2017). National studies

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in the United States (National Gardening Association, 2009) and Australia (Wise, 2014) found that 31% and 52% of households, respectively, participated in food production of some sort, findings that need to be placed in the context of the settlement histories of these suburban societies (Gaynor, 2006; Schupp & Sharp, 2012). Knowledge is also scant on the question of how much food is produced and consumed by urban households (CoDyre, Fraser, & Landman, 2015; Zainuddin & Mercer, 2014), although the potential for greatly increasing this production seems clear (Ghosh, 2014; McClintock, Cooper, & Khandeshi, 2013; Taylor, & Lovell, 2014). In Australia, a 1992 survey by the Australian Bureau of Statistics (1994) revealed that 5% of annual vegetable production was grown in domestic gardens, across all settlement types.

A wide range of potential ecological, social, economic, political, psychological and medical benefits have been linked to urban food production (Gray et al., 2014; Guitart, Pickering, & Byrne, 2012; Hawkins, Mercer, Thirlaway, & Clayton, 2013; Opitz et al., 2016). Consequently, motivations for participation in urban home food production are highly diverse (Dobernig & Stagl, 2015; Kortright & Wakefield, 2011; Larder et al., 2014; Schupp & Sharp, 2012). For example, in reviewing available literature on this question in wealthy societies, Kortright and Wakefield (2011, 40) concluded “that many gardeners, even those with precarious levels of food security, seem to value the produce they grow as much or more for its social value than for its contribution to their and their families’ subsistence.”

The value-laden significance of food production is related to an often polarised and public debate on conventional versus alternative agri-food systems (Goodman, 2003; Jarosz, 2000). Distinctions between industrial and organic agriculture, global and local food chains, commodity and craft food production, corporate and community ownership of food resources, and scientific and traditional food practices are common (Carolan, 2011, 2016; Paarlberg, 2013). These debates, which have become less polarised and more complex over the past fifteen years (Hinrichs, 2014), particularly in light of climate change (Vermeulen, Campbell, & Ingram, 2012), form a key element of wider debates about global capitalism and sustainable development (Gibson-Graham, 1996, 2006). In this context, urban agriculture, including domestic food production, is associated with an extraordinary array of environmental, social, cultural, economic and political concerns and aspirations.

Although domestic food production has not been widely studied, domestic gardens have attracted growing social (Bhatti & Church 2001; Freeman, Dickinson, Porter, & van Heezik, 2012; Head & Muir, 2007; Pearce, Davison, & Kirkpatrick, 2015) and biophysical (Loram et al., 2007; Thompson et al., 2003; Zagorski, Kirkpatrick, & Stratford, 2004) research over the past two decades. This research indicates that urban gardens and gardening practices are highly variegated. In Hobart, Tasmania, Kirkpatrick et al. (2007) identified 13 distinct floristic garden types, including two relating strongly to vegetable production, and a type lacking any cultivated plants they labelled as the ‘non-garden’. The relationship between social values and garden type is yet to be fully investigated. In Toronto, Canada, Kortright and Wakefield (2011) made a start by linking garden type with gardener motivation, using qualitative interviews. They identified the following 5 types-motives: 1) *cook’s*, where the gardener wanted high quality fresh produce; 2) *teaching*, where the gardener initiated their young into the mysteries of the earth; 3) *environmental*, where the gardener wished to help save the planet; 4) *hobby*, where the gardener was motivated by the pleasure of growing food, rather than the outcome; and, 5) *aesthetic*, where the gardeners valued vegetables that they perceived as beautiful.

It cannot be assumed that expressed gardening motivation always relates to garden outcomes. For example, in the removal and planting of urban trees in Australia expressed motives are often poor indicators of behaviour (Kirkpatrick, Davison, & Daniels, 2012). We were curious to learn whether vegetable gardens, gardening practices and gardener motivations related to each other, and how these relationships may in

turn relate to socio-demographic characteristics. If domestic urban food production is to be part of a planned solution to any problem, it seems prudent to understand variation in gardens and gardeners, allowing any proposed incentives and regulations to be tailored to the diverse reality of food production in any urban context. We present findings from a social survey of 101 domestic vegetable gardeners in Hobart, capital city of Tasmania, Australia, to discriminate floristic vegetable garden types, practice syndromes and motivation sets. Tasmania has long been a site of polarised debate about environmental issues and was an origin point for contemporary ‘green’ politics (Rainbow, 1992). Tasmanian environmental debate encompasses issues of food production and alternative agri-food systems, with the Organic Gardening and Farming Society of Tasmania, formed in 1972, having “some claim to be Australia’s most successful organics advocacy society” (Paull, 2013, 55). It was in Tasmania in the 1970s also that the permaculture movement was founded (Mollison, 1988). Permaculture has become a powerful framework for articulating and expressing alternatives to conventional modes of food production around the world (Ferguson & Lovell, 2015). In this context, we explore where nodes of variation in domestic vegetable gardening sit on the continuum from radical to conservative social values, and determine the degree to which intent is expressed in behaviour and outcome. We seek indications of the groups of individuals who might be motivated to grow food in cities, and the nature of their motivations. We wished to gain this understanding to inform planning and other action that might be directed to increasing or maintaining food production on private urban land, to address the lack of knowledge about domestic food production in urban agriculture research, and to enrich academic and public discussion about sustainable food futures.

## 2. Methods

All methods were approved by the Tasmanian Social Science Human Ethics Committee (H15367). Conditions of approval included maintaining the anonymity of respondents.

A printed questionnaire was developed to document vegetable varieties grown in the last five years, practices used to grow them, motivations and attitudes of the growers, extent, cost, time input and productivity of vegetable gardens as a proportion of household vegetable consumption, number of people in the household and the number gardening, use of different media to access gardening information, social and demographic characteristics of the gardeners, and altitude, soil texture, slope and aspect of the vegetable garden. The questions on vegetable varieties, practices, motivations and use of media were yes/no. These questions are recorded in abbreviated form in Tables 1–3. Some yes/no questions, such as that asking whether vegetable gardening was done ‘as an obsession’ or ‘for spiritual well-being’, enabled respondents to interpret multivalent concepts on their own terms. Most of the remaining variables were either class, as in the cases of household income (< \$25,000 \$25-50,000 \$50,000-75,000 \$75-125,000 \$125-175,000 \$175-250,000 > \$250,000), age (20 30 40 50 60 70 80 90 100 years) and aspect (8 compass sectors filled in by interviewer), or continuous, as in the case of the percentage of household vegetable consumption produced in the garden, and the amount of time (hours) spent on vegetable gardening each month (both self-attributed by respondents). These questions are recorded in abbreviated form in Tables 1–3 below.

Two questions asked the respondent to write the name of any particular method of vegetable growing or any particular dietary practice with which they identified. Three questions asked for short qualitative responses (one sentence), describing each of the personal benefits, societal benefits and main challenges of vegetable gardening. A copy of the questionnaire can be provided on request to the authors.

The survey questionnaire was administered between December 2015 and February 2016 in person, enabling the researchers to record information, elaborate on questions, assist participants from non-

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