



Attitudes of a farming community towards urban growth and rural fragmentation—An Auckland case study



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ARTICLE INFO

Article history:

Received 1 February 2016

Received in revised form 17 July 2016

Accepted 27 July 2016

Keywords:

Rural farming values

Rural fragmentation

Urbanisation

Policy response

New Zealand

ABSTRACT

As the global population continues to increase, rural areas are expected to accommodate future growth at the same time as continuing to feed growing populations. This tension is greatest on those who farm land that is earmarked for future urban growth. Yet, little is known about the attitudes and values of the affected rural farming communities or farmers' perceptions of the challenges and opportunities that population growth presents. This paper presents the results from a survey of outdoor vegetable growers in Pukekohe, an area under increasing pressure from urban growth, located in Auckland, New Zealand's fastest growing city. An analysis of rural fragmentation is also provided to demonstrate the extent of land use change to help contextualise growers' responses. Survey results showed that economic discourses fail to fully capture the symbolic meaning the land has for growers; many participants were deeply connected to the land, with the desire for the farming legacy to continue, while also recognising its highly productive capability. Participating growers identified numerous challenges and opportunities as a consequence of urban growth. Key challenges included: reverse sensitivity associated with development pressures; achieving sustainable productivity and profits; and perceptions of an increasingly bureaucratic legislative environment. Key opportunities included: occupation of a unique vegetable growing environment; capitalising on the area's close proximity to city markets; and for a minority of participants, possible financial gains through residential housing development. Geospatial analysis demonstrated a large degree of rural fragmentation that can lead to adverse cumulative effects without the intervention of policy.

Future research needs to focus on determining the consequences of continuous development pressures onto versatile land in relation to a country's, current and future, food-growing capacity. This will be imperative as the population continues to grow. It will not only inform the environmental impacts of these land use decisions but also the socio-economic consequences that will aid with fully informed planning, policy and decision-making that account for a multiplicity of needs.

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1. Introduction

As the world's population continues to increase, additional land is needed to accommodate a potential global population of 9.6 billion by 2050 (UNESA, 2012). Land, as a consequence, is expected not only to provide sufficient food for this growing population, but also to provide places to live. While the majority of the global population now reside in urban areas (Pickett et al., 2011), urban centres are increasingly encroaching into rural areas to accommodate growth (Curran-Cournane et al., 2014; Jjiang et al., 2013; Tóth, 2012). These

rural areas are also experiencing additional pressures to intensify and increase global food production by an estimated 70% by 2050 (FAO, 2010), without impacting on the environment (Tilman et al., 2010; Howden et al., 2013).

Competition for land is not restricted to the traditional urban versus rural land debate e.g. Condon et al. (2010). Competition for rural versus rural land use activities are also becoming more prevalent. The latter is in relation to the fragmentation of rural land that is typically associated with the expansion of rural lifestyle blocks that are becoming increasingly common at both national (Andrew and Dymond, 2012; Hart et al., 2014) and international scales e.g. Inostroza et al. (2013). For example, in New Zealand it was reported in 2011 that 175,000 lifestyle blocks occupy 873,000 ha of land, over 40% of which had been established since 1998 (Andrew and Dymond, 2012). Key drivers of rural fragmentation include the

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demand for lifestyle block living and the financial gains associated with rural subdivision. Although rural residential development is not necessarily a negative process, uncontrolled, ad-hoc or sporadic rural subdivision can have adverse cumulative environmental, social and economic repercussions (Hart et al., 2013; Hart et al., 2014).

The impacts of land use change associated with the development and urbanisation of land that has traditionally been used for food production have been well documented (Curran-Cournane et al., 2014); as have the biotic (Cardwell et al., 1997; Oerke, 2005) and abiotic (Funk and Brown, 2009; Fereres et al., 2011; Mu and Khan, 2009) factors affecting food production, an important consideration given the growing global population. However, little is known about how communities value agricultural land that is earmarked for future development or the opinions and attitudes of those directly affected by land use change.

1.1. Background studies into local resident perceptions of rural land use change

Gibson et al. (2005) conducted community research to capture local resident perspectives of farmland protection in light of future residential development throughout the Northern Rivers region, New South Wales, Australia. Local town, village and rural residents were surveyed and the authors reported that the majority of the respondents supported the sentiment that there was 'too much urban development occurring on good agricultural land'. Furthermore, when attempting to qualify the latter statement of pro-farmland protection the reasons that ranked the highest included the values associated with the provision of good local fresh food, job creation and the productive use of good farmland (Gibson et al., 2005). Cultural values such as regional identity and visual landscape were of lesser importance.

In contrast, the protection of rural character was strongly supported by local residents in rural Massachusetts (Lokocz et al., 2011). The authors noted that there was significant attachment associated with a variety of places and landscapes with the highest levels of place attachment for natural areas followed by agricultural landscapes with less emphasis placed on local cultural features. Similarly, preference for landscapes with water related features was identified as most important by residents in rural Ireland (Howley, 2011). Whereas the latter studies emphasised place attachment, rural character and landscape values, Ives and Kendal (2013) went beyond these specific values and highlighted the need for a multifunctional value approach that recognises a range of factors (such as culture, education, aesthetics, food and the environment) not typically included in land use policies. However, the study findings by Ives and Kendal (2013) only considered the values and attitudes of the urban public and perspectives from residents living within a rural community were excluded.

While academically applied studies on public opinion of urban growth that encompass, either collectively or specifically, urban and rural resident views are rare, studies of the views and values of a farming community towards the encroachment of urban areas into rural areas are far more scarce. The objective of this study was to positively contribute towards filling this knowledge gap. Understanding the potential impacts of land use change from the perspectives of those who farm the land, and who will therefore be directly affected, is of importance because how they respond to increased urban growth could potentially impact a region's resilience as a self-sufficient food producing region.

1.2. Growth and change in Auckland

Auckland is New Zealand's largest city and is subject to substantial on-going population growth, driven by both natural increase

and migration. Population projections indicate that Auckland's population may increase from 1.5 million in 2013–2.5 million by 2040 (produced from a custom built order by Statistics New Zealand (2006)). It is estimated that an additional 400,000 new dwellings will be required to accommodate this projected future growth (Auckland Council, 2012). While the majority of growth will occur within the current urban limit, additional rural greenfield areas will be required to accommodate some of this projected future growth. However, as Curran-Cournane et al. (2014) notes, Auckland's urban development disproportionately encroaches on the region's ever-declining highly productive versatile land, such as in Pukekohe, and future growth indicates that these trends will continue.

Within the Auckland Plan (a 30 year strategic spatial plan for Auckland up to 2040), Pukekohe has been identified as one of two satellite towns in Auckland earmarked for up to 50,000 new dwellings (Auckland Council, 2012). The Pukekohe township is situated in the middle of a larger vegetable growing area. This area is a nationally well-known outdoor vegetable growing area situated just outside of the current Auckland urban limits, about 50 km south of the central business district. It is a major contributor to Auckland's vegetable production—while only representing 2% of New Zealand's land mass, the Auckland region has been reported to contribute over 20% of the nation's outdoor potato, onion, lettuce, broccoli, cabbage and cauliflower production (Aitken and Hewett, 2014). This is largely attributed to the Pukekohe area which offers excellent conditions for growing outdoor vegetables as it has some of the best soils in New Zealand (MAF, 1975), and has a relatively frost-free climate (Coleman, 1967; Hunt, 1959).

The primary objective of the study was to examine the values and attitudes of a commercial vegetable growing farming community towards urban growth. To supplement the survey responses, geospatial analysis was also carried out to determine changes in the rate and extent of land use associated with rural fragmentation over the last 17 years in this area, using available datasets for periods 1998 and 2015. Rural fragmentation has, to date, received little attention in Auckland or more generally in New Zealand. This study provides key insights into two things: how changes in land use (encompassing both urban growth and rural fragmentation pressures) can directly affect the livelihoods of those who farm the land; which can provide useful information for consideration when making planning and policy decisions about the area's future development with potential national and international applicability.

2. Methodology

This study used a mix of an online survey and geospatial analysis to examine the values and attitudes of a commercial vegetable growing farming community towards urban growth and assess the level of fragmentation in the Pukekohe area.

2.1. Survey design and study area

The broad objective of the survey was to better understand how members of the Pukekohe commercial vegetable growing community felt about local land use changing from a rural to more urban dominated use. An online quantitative and open-ended questionnaire was designed to capture participants' thoughts, perceptions and attitudes towards urban growth and rural fragmentation (e.g. lifestyle block expansion) (Fig. 1).

The survey comprised questions about the commercial vegetable growers' growing operations, demographic profile, history with the land, farm succession plans, and the opportunities and challenges confronting growers in light of anticipated urban growth and development. The survey was pre-tested by several vegetable

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