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COST Action Urban Agriculture Europe: Urban Agriculture and Resilient Urban Food System in Christchurch, New Zealand

Short Scientific Report on the Reciprocal Short Term Scientific Mission

Christchurch, New Zealand 20/01-16/02/2014

COST Action Urban Agriculture Europe
Urban Agriculture and Resilient Urban Food System in Christchurch, New Zealand

Christchurch, Canterbury Region, New Zealand, 20/01-16/02/2014
University of Canterbury, New Zealand

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New Zealand
world

Introduction

This short scientific report is elaborated on the Reciprocal Short Term Scientific Mission (RSTSM) conducted in January and February 2014 at the Department of Geography of the University of Canterbury in Christchurch, New Zealand. The topic of the RSTSM research is Urban Agriculture and Resilient Urban Food System by the example of Christchurch.

The report includes descriptions of the purpose, the work carried out and the main results obtained, all in accordance with the COST Vademecum (28/06/2013). Within the description of the results, we describe more in detail the mapping of urban food system resilience on the Christchurch Case Study. We introduce and describe the six selected patterns of Urban Agriculture - 1) The Okeover Community Garden; 2) The Christchurch Farmers' Market at the Riccarton House; 3) The Agropolis Urban Farm; 4) an urban production garden; 5) large-scale agriculture around the city and 6) lifestyle blocks.

We discuss the possibilities of future co-operation with the host institution and the foreseen publications resulting from the RSTSM. The report includes also the agreement and the confirmation by the host institution of the successful execution of the RSTSM. The texts are accompanied by figures and photos which show the character, structure and atmosphere of Urban Agriculture in New Zealand.

I would like to thank the COST Office for funding and the COST Action Urban Agriculture Europe for supporting the RSTSM research and express my gratitude to colleagues from the University of Canterbury - Femke Reitsma and Stacy Rendall for an interesting, enjoyable and fruitful co-operation during my stay at the University of Canterbury.

Attila Tóth

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Canterbury Plains
New Zealand

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Purpose of the Reciprocal Short Term Scientific Mission

The aim of the Reciprocal Short Term Scientific Mission (RSTSM) was to study diverse forms and types of urban agriculture in the intra-urban and peri-urban area of Christchurch, the capitol of the Canterbury Region, South Island, New Zealand with a particular focus on the resilience of the urban food system represented by selected patterns of urban agriculture.

We have decided to use Christchurch as a case study represented by the six patterns of urban agriculture to assess the resilience of the urban agricultural system and to develop a qualitative model of resilience for urban food systems based on the data gained from field research and literature review.

The ambition of the RSTSM was to come up with an innovative tool for measuring food resilience of urban agricultural systems. With the model of food system resilience, we aim at contributing to the wider scientific society dealing with urban agriculture, food security and food systems and to the methodological and theoretical approach of the European COST Action Urban Agriculture Europe. The qualitative model of resilience might help to develop resilient urban food and agriculture systems and create new knowledge for the global research into urban agriculture and food security.

Since the start of the RSTSM, we have worked on a scientific journal paper and we are aiming to complete it as a result of our research carried out during the RSTSM at the Geography Department of the University of Canterbury (*Tóth,Attila - Rendall, Stacy - Reitsma, Femke, 2014: Resilient Food Systems: A Qualitative Tool for Measuring Food Resilience*).

This research aims to characterise the resilience of a food system through a qualitative model, which will help identify the parts of the system that need attention, that need to improve their resilience. The research has begun by reviewing existing food system definitions, followed by a discussion of the characteristics of resilient food systems which form the basis for the model that we have developed during the RSTSM. The review of existing food system models has been followed by the development of our model and its application to the local case study represented by different patterns of urban agriculture in Christchurch, New Zealand.

Christchurch
Canterbury Plains

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Description of the work carried out during the Reciprocal Short Term Scientific Mission

During the Reciprocal Short Term Scientific Mission (RSTSM), we have worked as an interdisciplinary three-member team (author, supervisor and adviser) dealing with the main issues of the RSTSM research - urban agriculture and resilient urban food systems.

The preparatory works started already weeks prior to the RSTSM in the form of literature reviews and electronic communication. The on-site work started the week preceding the official start of the RSTSM with an opening meeting, discussion and brainstorming on the objectives and methodology of the research on January 15. The co-operation was coordinated in the form of consultation meetings where all the tasks were discussed and the targets were set. There were six further consultation meetings throughout the entire duration of the RSTSM and after it, till February 21. We are aware of the importance of these meetings for a successful continuation of our research after the RSTSM and therefore, we had a Skype meeting on March 4 and scheduled another one for March 27.

The periods between the consultation meetings were used for the actual work on the research project that consisted of two main parts - literature review and field research.

Within the literature review, we have focused on reviewing scientific papers and other literature sources on resilient urban food systems and urban agriculture available in the university library and other global scientific databases. We have compiled a literature review on global food system and defined the factors influencing the resilience of food systems which are predominantly part of a global network of production, processing, distribution and consumption. Within the definition of resilient food systems and food resilience, we have defined the difference between the concepts of food security and food resilience. We have identified the key components of a food system according to different authors and analysed the food systems, their drivers and components.

Based on the food system definitions and analyses of different concepts and approaches, we have characterised a resilient food system and defined its main attributes based on the analysed food system models. Within these characteristics, we have defined and analysed the components of a resilient food system, i.e. consumer resilience, producer resilience, food processing resilience, food distribution and retailing resilience.

In our literature review, we deal with allotments, backyards and community supported agriculture as possible assets for ensuring food security and household resilience. We came to the conclusion that the key aspect of resilience for producers is to ensure they can maintain a livelihood. We have defined factors determining the economic viability of producers and discussed the impact of global climate change and access to water as one of the key inputs in food production on the resilience of food production. We have analysed the role of supermarkets, independent shops and farmers markets for the resilience of food distribution through markets and retailing.

After analysing and evaluating the different characteristics of a resilient food system and its different components, we have reviewed existing food system models and assessment tools for these complex socio-ecological systems operating at multiple scales.

Based on the literature review process focusing on all above mentioned issues including food system definitions, characteristics, existing models and assessment tools, we have been developing a new model of a resilient food system as one in which all people can meet their nutritional requirements, regardless of any external factors or constraints upon the system like natural factors, anthropogenic factors, economic factors and social factors. To assess the resilience of food systems, we have developed a generic model, forming a framework for resilience analysis. The model is comprised of links and nodes that represent, respectively, flows of food and food system activities. The model will be introduced and explained more thoroughly and graphically in the prepared scientific paper to be submitted for publication before summer 2014.

Another crucial part of our research conducted within the RST-SM was the field research aimed at mapping urban food resilience on Christchurch as a case study. We have used this case study to show how the model can be applied. We have selected the main representative patterns of urban and peri-urban agriculture that contribute to the food system of Christchurch. Preceding the mapping of these patterns, we have conducted a review on agriculture within New Zealand, the Canterbury Region and Christchurch city. In order to cover different forms and types of agriculture within the administrative territory of Christchurch, we have selected six patterns of urban agriculture to show the diversity of food production forms within the urban structures of the city and to explain the resilient food system model through concrete examples - four of them located in the intra-urban area of the city: 1) The Okeover Community Garden; 2) The Christchurch Farmers Market at the Riccarton House and Bush; 3) The Agropolis Urban Farm; 4) an urban production garden; and two of them located in the peri-urban area of the city: 5) the large-scale agriculture around the city and 6) lifestyle blocks. These patterns will be discussed in the following paragraph and analysed more in detail in the prepared research paper.

Agriculture
Canterbury Plains

Agriculture at the city territory Christchurch

Description of the main results obtained

The main results of the RSTSM are represented by three basic parts: 1) a comprehensive literature review on resilient food systems including definitions, characteristics, existing models and assessment tools; 2) an innovative qualitative model of resilience for urban food systems that has been developed during the RSTSM and is being verified by its application to Christchurch case study consisting of six representative patterns of urban agriculture and 3) a collection of diverse forms, types and aspects of urban agriculture in Christchurch represented by six patterns of urban agriculture - four of them located in the intra-urban area of the city and two of them located in the peri-urban area of the city which introduce urban agriculture in New Zealand conditions.

We consider the scientific paper (*TÓTH, Attila - RENDALL, Stacy - REITSMA, Femke, 2014: Resilient Food Systems: A Qualitative Tool for Measuring Food Resilience*) that we have worked on and currently are aiming to complete and publish in a scientific journal to be the main outcome of the RSTSM research. Now, after the RSTSM ended, the paper is close to be completed and submitted for publication. We have elaborated a draft journal paper consisting of ca. 25 A4 pages consisting of more than 6800 words + figures. We have used 40 references which will be completely listed in the final paper.

The model of a resilient food system we have been developing should be resilient in short and long term against a range of natural, anthropogenic, economic and social factors. It forms a framework for resilience analysis and is comprised of links and nodes that represent, respectively, flows of food and food system activities. The nodes of the food system model refer to activities (Growers, Processing, Distribution, Market, Consumers), not individual examples, while the links represent the different paths possible within the model. The potential food system paths (links) vary according to different situations and scales: 1) the food system paths of modern supply chain on local, regional or international scale go through all nodes of the model, i.e. from growers, through processing, distribution, market and finally to consumers; while some food system models on local or regional scale might relate to 2) food which goes from growers, through processing and market to consumers, i.e. food processed direct to market or 3) food which goes from growers directly to market and then to consumers, i.e. the food is produced directly for the market; 4) at the smallest level, on the local scale, there are diverse forms of informal economies like home gardening. In all described situations, the food system changes in nodes involved and links between them. These situations will be more thoroughly and graphically described in the journal paper.

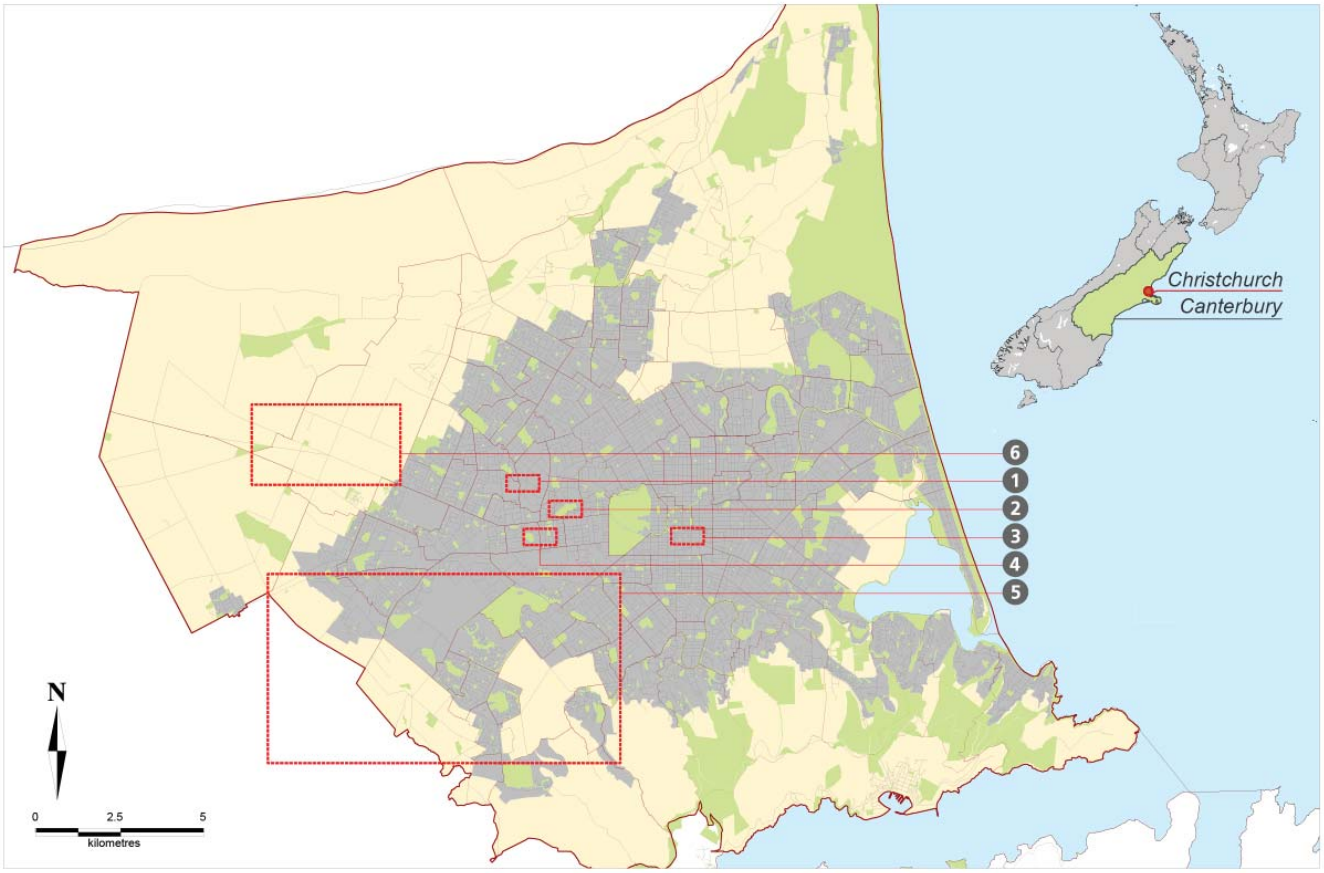
Both, the food system link resilience and the food system node resilience depend on different attributes and factors. The resilience attributes of the food system links are 1) length - dependent on cost, time and transport energy; 2) fragility - dependent on redundancy and 3) capacity. The resilience attributes of the food system nodes are for example 1) for producers: diversity, inputs (e.g. energy, fertiliser), capacity, adaptability and knowledge; 2) for the market: availability and 3) for consumers: physical ability, food knowledge and purchasing ability. We have came up with an equation for calculating the overall food system resilience according to paths and their utilisation; links and their resilience; nodes and their resilience. We will introduce this equation in the journal paper.

To verify the elaborated food system model, we have applied it to two different worked examples: 1) Household: Local Consumer and 2) Household: Typical in order to compare their food resilience calculated using the mentioned equation. The results have shown a significant difference in the resilience of these differently acting households. The results of both worked examples will be more thoroughly described in the journal paper.

Mapping Urban Food System Resilience: The Christchurch Case Study

To show how the model can be applied, the main patterns of urban and peri-urban agriculture that contribute to the food system of Christchurch, New Zealand, are presented. The dominant characteristic of New Zealand's food system is large scale agricultural systems and large scale modes of processing and distribution. Historically agriculture within New Zealand was motivated to provide for the industrialising mother country, under British colonial rule (Rosin 2013). This ethos of large scale production has continued, and is evident in the landscape of intensive agriculture that covers 43.2 % of New Zealand (World Bank, state 2011). Christchurch, is the third largest city in New Zealand, with 341,469 inhabitants (Statistics New Zealand, 2013 Census of Population and Dwellings), and is situated at the edge of one of the largest agricultural areas in New Zealand, the Canterbury Plains. Agricultural area covers more than 60 % of the Canterbury Region (2,801,462 ha), where the highest shares are covered by grasslands (41 %) and pastures (40 %). Grain, seed and crop lands have a significantly lower share (9 %) and the rest 10 % is covered by other agricultural land uses (Statistics New Zealand, June 30 2012).

The agricultural production is predominantly (according to Statistics New Zealand, as at June 30 2012) livestock in numbers, grain, seed and crops in tons and hectares harvested) sheep (5,348,010); dairy cattle (1,200,293); beef cattle (470,000); grain, seed and crop land (240,656 ha; 1,070,533 t). According to numbers, sheep are the predominant livestock, however, in the last 10 years there has been a large number of sheep and mixed cropping farms converted to dairying, with an increased area under irrigation (Dynes et al., 2010).



Location of the Canterbury Region and Christchurch within New Zealand, location of the selected patterns of urban agriculture in relation to the urban area of the city

We have selected 6 patterns of urban agriculture in Christchurch to show both the diversity of food production forms within the urban structures of the city and to explain the resilient food system model through concrete examples. These patterns, which will be discussed in detail below, are:

1. The Okeover Community Garden

2. The Christchurch Farmers´ Market at the Riccarton House

3. The Agropolis Urban Farm

4. An urban production garden

5. Large-scale agriculture around the city

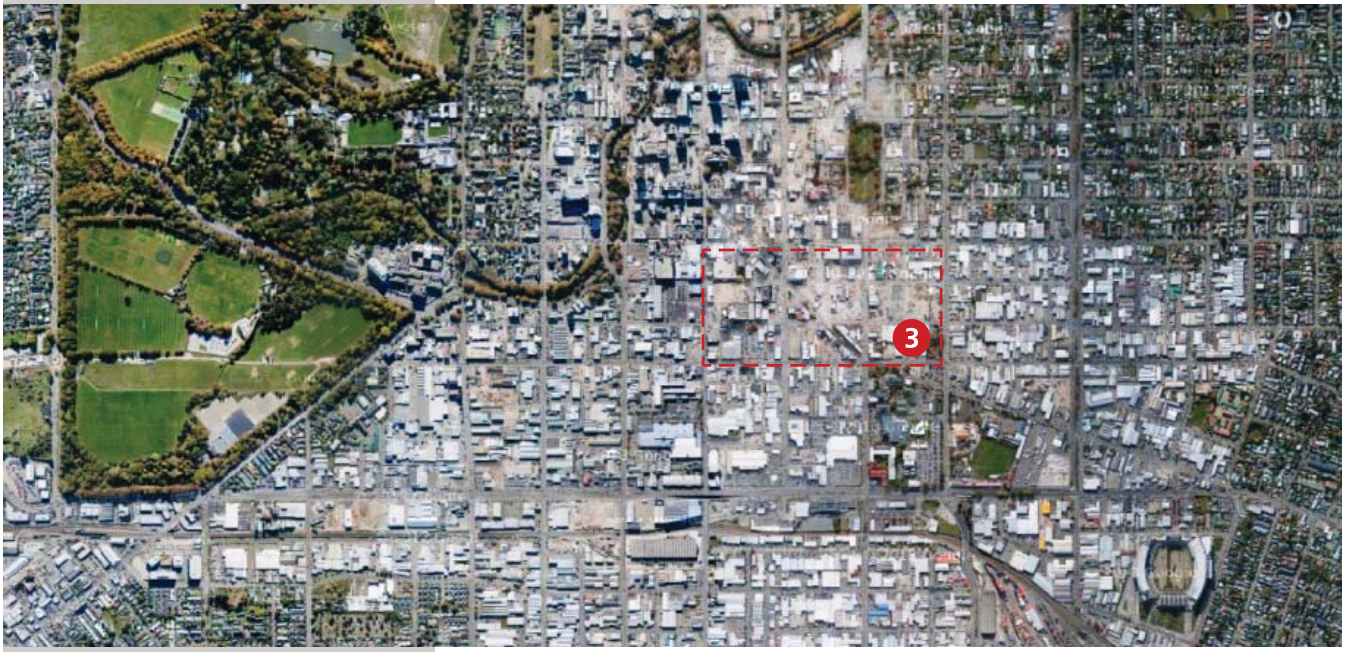
6. Lifestyle blocks

Spatial Situation of the Selected Patterns of Urban Agriculture in Relation to the Urban Area of the City

Intra-Urban Patterns

The community garden, farmers´ market and urban production garden are all located in the intra-urban area of the city

500 m



The Agropolis Urban Farm located in the post-earthquake city centre

Spatial Situation of the Selected Patterns of Urban Agriculture in Relation to the Urban Area of the City

Peri-Urban Patterns

Agriculture is a part of the administrative city territory and farmlands border directly on the urban area

500 m

Lifestyle blocks represent a specific form of suburbanization and urban sprawl on high-quality farmlands around the urban area of the city

Atmosphere, products, inner structure, on-site information system, greenhouse and relaxation in the calm and intimate community garden space.

Selected Patterns of Urban Agriculture in Christchurch

1 The Okeover Community Garden

The Okeover Community Garden has been established at the University of Canterbury in 2002. It aims at being a creative and relaxing place on the university campus providing a space for free time out from work and study. The garden links two main functions: food production with social issues like education, community interaction, strengthening the sense of community and other social benefits. Permaculture and organic growing methods are applied in the garden, using no pesticides or chemical fertilisers. The emphasis of growing methods is put on creating a self-supporting ecosystem, using natural processes. The community garden is mainly used by students, but also by university staff and neighbouring residents. The community garden is also open to anyone, who wants to wander through the garden and there is a possibility of getting more involved through gardening or meeting other users and learning new things about gardening. Volunteers get to take home their share of the fresh produce collected that day. This form of urban farming does not require any previous gardening experience as the focus is more on social issues (University of Canterbury, 2014). The community garden is situated within the university campus and thus the urban fabric of the city. However, the garden space is framed by higher woody vegetation which encloses the garden and the urban context is less perceptible, see following figure.

View of the community garden inner structure

Concerning the food system model, the community garden provides a direct link between growers and consumers, i.e. the users grow for self-supply and the garden provides a space for social interaction.

2 The Christchurch Farmers´Market at the Riccarton House

Farmers´ markets represent a common form of retail markets in New Zealand where producers sell their products directly to consumers. Recently, they have experienced a rapid growth and diffusion in many parts of the world, including New Zealand, becoming popular sites of small retail trade and local cultural exchange (Murphy, 2011). At these markets, the social dimension is at least as significant as the primary economic function of food supply. Farmers´ markets are an important component of urban inhabitants´ lifestyle as they provide direct social interaction between food producers and consumers. Consumers know, where their food comes from. A farmers´ market stands for an attractive saturday morning social event with a unique atmosphere, life music, fresh products and with the opportunity to get know local growers and farmers, bakers, winemakers and brewers and to gain more information about their products. Farmers´ markets provide also a gathering space or meeting point for local residents. An important factor of the attractiveness of farmers´ markets for consumers is also a lower average price than in supermarkets. According to Murphy (2011) the product quality is the key motivation factor for customers preferring farmers´ markets, while prices do not appear to be significant barriers to purchase or visits at farmers´ markets. The following figure shows the atmosphere of the Christchurch Farmers´ Market on a saturday morning, when the historic site of the Riccarton House converts to a more vivid and busy space hosting the farmers´ market as a local social event.

The farmers market in the historic garden at the Riccarton House

Atmosphere and local products on a Saturday farmers´ market at the Riccarton House and Bush.

Concerning the food system model, the farmers market links growers and consumers through the market, i.e. there is a direct link between the growers and the market.

The spatial situation and atmosphere at the Agropolis Urban Farm near the C-ONE-ESPRESSO in the city centre.

3 The Agropolis Urban Farm

The Agropolis is a scalable transitional urban farm situated within the inner city of Christchurch and run by the Garden City 2.0 social enterprise which focuses on growing a more resilient local food system by developing food initiatives. The farm involves composting organic waste from inner city hospitality businesses as well as the ground preparation, sowing and planting, harvesting, cooking and distribution of the produce. It also tests questions about the city's food resilience, land use, food production and distribution in relation to the planning of the city. In the context of the long process of rebuilding the central city of Christchurch, the farm aims at testing the potential for urban agriculture as a significant component of the urban landscape and local food systems. Agropolis is part of a wider movement within Christchurch dedicated to empowering the wider community to address food security via accessible and sustainable food production and distribution. As a transitional project, it desires to harness the community's craving to be involved in growing their own food and also helping advance the sustainability their city. Agropolis is a collaborative community project driven by a steering committee whose members include representatives from different organisations (Garden City 2.0, 2014). The following figure shows the spatial atmosphere of the urban farm in the context of the post-earthquake urban structure of the city using vacant land for agricultural production in small vegetable plots.

Intra-urban public vegetable plots of the Agropolis Urban Farm reviving a post-earthquake empty space in the city centre.

Concerning the food system model, the urban farm links growers and consumers directly. The farm provides a public space for social interaction and serves as an urban design and revival tool dealing with a post-earthquake intra-urban empty space situation.

4 An Urban Production Garden

In order to present the smallest scale of urban agriculture and to apply the food system to the local level, we have selected and analysed an urban production garden in Christchurch. Production gardens at family houses in the urban structure of the city stand for basic components of a resilient urban food system as they provide a direct link between the first and the last node of the food system - the Growers and the Consumers. Therefore, private production gardens have a great potential to contribute to building food resilience in sustainable urban environments.

The presented urban garden provides a range of diverse products for the growers/consumers. These products range from seasonal vegetable grown around the house and in the backyard, through vine grown on the fence up to diverse fruit tree and shrub species all over the garden. Besides food growing, there is an interesting approach to improve the household's resilience by growing own fuel wood in the peripheral parts of the garden along the fences which intensifies the utilisation of the garden space and provides besides own food also non-food resources. In the central parts of the backyard, there are lawns which can be understood as a reserve land to intensify the food production in case of need. The household applies on-site composting to recycle the bio waste from the garden. The garden products improve the self-reliance of the household and lower food costs.

The backyard of a family house with lawns in the central parts and fruit trees, vegetabale plots and trees for fuel wood in the peripheral parts and along the land boundaries.

Fruit trees, vine and vegetable plots in the backyard of an urban family house

Concerning the food system model, the urban production backyard provides a direct link between the growers and consumers as nodes of the food system.

Agriculture in the peri-urban area of Christchurch

5 Large-scale agriculture around the city

The large-scale agriculture around the city of Christchurch is dominated mainly by livestock farming on grasslands and grazing lands, while arable land covers a significantly lower share of the overall agricultural areas. The majority of the agriculturally used land is situated to the west and north of the urban area. These agricultural areas within the administrative territory of the city represent a transition from the urban area to the open agricultural land on the Canterbury Plains. At the Christchurch City territorial authority, there are 93 140 hectares of agricultural land. From these, grasslands cover the largest area (58 %), followed by grazing lands (19 %). Grain, seed and fodder crop land covers only 3 % and horticultural land only 0.9 % (Statistics New Zealand, June 30 2012). The following figure shows the spatial organisation of a typical livestock farm within the administrative territory of Christchurch, usually consisting of extensive grasslands or grazing lands, spatially divided by shelterbelts. Concerning the high share of grasslands and grazing lands and the number of livestock farms, these are significant features of the cultural landscape character at the capital of the Canterbury Region. Large-scale agriculture usually includes all nodes of the food system from Growers through Procssing, Distribution and Market up to Consumers. Within Processing and Distribution there might be also multiple internal links which make the food system more complex and depending on many factors, nodes and links which lowers the overall resilience of the system.

Cattle breeding at the Christchurch city area. The farmland consists of large grazing areas subdivided and surrounded by shelterbelts

6 Lifestyle blocks

In terms of food resilience, lifestyle blocks can be considered as a negative example representing an expansion of housing development onto the high-class arable land. The Land Information New Zealand (LINZ, 2010) defines lifestyle blocks as a land generally in a rural area with a predominant residential use. The area of these blocks is variable, although it must be larger than an ordinary allotment. Their principal use is non-economic compared to traditional farming and the land price exceeds the price of a comparable farmland. According to Andrew and Dymond (2012), there are 175,000 lifestyle blocks (small rural properties with an area around 4 ha) in New Zealand covering 873,000 ha which means approximately 10% of high-class land and an increase by 75,000 since 1998. Lifestyle blocks and other forms of urban sprawl cause a significant consumption of current or future farmland. The number of lifestyle properties (with an area below 40 ha) has since 1998 to 2011 increased from just over 100,000 to about 175,000. Approximately 32 % of New Zealandian lifestyle-block parcels are in the South Island covering 328,000 ha. Lifestyle blocks cover an approximately four times larger area than urban areas (Terralink, state 2011), i.e. that they represent a significant form of urban sprawl consuming valuable arable lands around the city, which thereby lose their productivity. Swaffield (2012) defines three types of urbanization in the peri-urban area: rural subdivision into smallholdings; expansion of small townships; and development of private subdivisions. He states that the average farm size has decreased. Smallholdings (from 1 to 10 ha) have changed the landscape character and dominate the peri-urban area of Christchurch. The following figure shows a typical example of a lifestyle block at the peri-urban fringe of the city, on a former farmland, where there is no agricultural production and the largest part of the land is covered by lawn.

A typical lifestyle block with a relatively large family seat surrounded by ornamental plants and an extensive lawn. The high-quality land is not used for growing own food or other farming activities at all.

A lifestyle block with an extensive lawn with no farming activity

Lifestyle blocks are often hidden behind high hedges

Farmland consumption for lifestyle blocks in the peri-urban area of Christchurch as a result of urban sprawl (©2014 Google, MapData Sciences Pty Ltd, PSMA)

Agriculture at the city territory Christchurch

Future Collaboration with the Host Institution

The co-operation with the host institution did not end with the RSTSM. It will continue in the future as we aim at further developing, analysing and interpretation of the RSTSM research results.

As the supervisor and the author of the RSTSM are both involved in the WG4 of the COST-Action UAE, the co-operation will continue within this research project as well.

There is a mutual interest to keep the scientific contact between our institutions which might result in common publications, scientific exchange or co-operation within future international research projects on urban agriculture and resilient urban food systems.

Farm in the peri-urban area Christchurch

Foreseen publications/articles resulting from the Reciprocal Short Term Scientific Mission

The main foreseen publication resulting from the RSTSM research will be in the form of a scientific journal paper (*TÓTH, Attila - RENDALL, Stacy - REITSMA, Femke, 2014: Resilient Food Systems: A Qualitative Tool for Measuring Food Resilience*) which is planned to be submitted for publication before summer 2014.

The RSTSM results are planned to be presented at the Working Group Meeting in Warsaw (April 2 – 4 2014). After this presentation, an article in the Documentation of the 4th WG Meeting should follow.

The RSTSM results will be presented also at the "Youth Science" international scientific conference in Krakow (May 21-24 2014). The conference paper on *Agricultural Landscapes in the Intra-Urban and Peri-Urban Area of Christchurch, New Zealand* will be published in peer-reviewed scientific proceedings.

According to future possibilities or interest in the RSTSM results, further publications or articles could possibly result from the RSTSM.There is a mutual positive assumption that the RSTSM was a start of a scientific co-operation with the host institution which might result in further publications in the furture.

An interesting contribution to the COST Action UAE and the global research into Urban Agriculture would be a comparative publication on the Barcelona (Giacchè-Tóth, 2013: STSM) and Christchurch (Tóth, 2014: RSTSM) case studies (Giulia Giacchè, Attila Tóth, Luis Maldonado, Femke Reitsma, Stacy Rendall).

Orchard in the peri-urban area Christchurch

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Note: This is a list of references used in this report. The complete list of references used for the RSTSM research will appear in the scientific journal paper.

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Agreement of the Host Institution for the Reciprocal Short Term Scientific Mission

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August 9th, 2013

To whom it may concern,

Re: Agreement for Reciprocal Short Term Scientific Mission (RSTSM)

On behalf of the University of Canterbury in Christchurch, New Zealand, I would like to invite **Attila Tóth** to undertake a RSTSM in New Zealand. Attila is a PhD Student at the Slovak University of Agriculture in Nitra, Slovakia and Early Stage Researcher involved in the COST Action Urban Agriculture Europe. The RSTSM is proposed to have a duration of one month - from January 20th to February 16th 2014, in order to enhance the impact of global networking and foster knowledge creation and exchange between the COST Action Urban Agriculture Europe and the University of Canterbury.

The task of the RSTSM in New Zealand is to study diverse forms and typologies of urban agriculture at different scales, with a particular focus on the Canterbury Region and Christchurch City. This RSTSM aims at a global approach in urban agriculture research and a methodological and theoretical contribution to the COST Action Urban Agriculture Europe.

Kind regards,

Femke Reitsma

Femke Reitsma

Confirmation by the Host Institution of the Successful Execution of the Reciprocal Short Term Scientific Mission

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

March 3rd 2014

Re: visit to Canterbury University by Attila Tóth

Dear COST UAE Chair:

Attila Tóth undertook a RSTSM in New Zealand for one month from late January to late February 2014. I thoroughly enjoyed working with Attila during his visit. Along with a Canterbury University postdoc, we worked towards developing a qualitative model of resilience for urban food systems. We are aiming to complete a journal paper as a result of the research.

Sincerely,

Dr. Femke Reitsma
Senior Lecturer in Geographical Information Systems
Department of Geography, Canterbury University
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Christchurch, New Zealand
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Research Team

Attila Tóth, Ing.

Slovak University of Agriculture in Nitra, Slovakia
Landscape Architect, PhD Student_Early Stage Researcher

General research interest:
Green Infrastructure; Urban Agriculture;
Planning and design of rural and historic landscapes;
Contemporary landscape architecture.
COST Action UAE: Working Group 4: Spatial visions for Urban Agriculture

Contact: at.attilatoth@gmail.com

Femke Reitsma, Dr.

University of Canterbury, New Zealand
Geographer, Senior Lecturer

General research interest:
Sustainable food systems; GIS for urban sustainability;
Advanced spatial and spatio-temporal data, Information and knowledge models.
COST Action UAE: Working Group 4: Spatial visions for Urban Agriculture

Contact: femke.reitsma@canterbury.ac.nz

Stacy Rendall, Dr.

University of Canterbury, New Zealand
Energy Systems Engineer, Postdoctoral Research Fellow

General research interest:
Resilient systems;
Transport energy vulnerability in urban forms;
GIS modelling of systems for resilience and sustainability.

Contact: stacy.rendall@canterbury.ac.nz

COST- the acronym for European **CO**operation in the field of **S**cientific and **T**echnical Research- is the oldest and widest European intergovernmental network for cooperation in research. Established by the Ministerial Conference in November 1971, COST is presently used by the scientific communities of 35 European countries to cooperate in common research projects supported by national funds.

The funds provided by COST - less than 1% of the total value of the projects - support the COST cooperation networks (COST Actions) through which, with EUR 30 million per year, more than 30.000 European scientists are involved in research having a total value which exceeds EUR 2 billion per year. This is the financial worth of the European added value which COST achieves.

A "bottom up approach" (the initiative of launching a COST Action comes from the European scientists themselves), "à la carte participation" (only countries interested in the Action participate), "equality of access" (participation is open also to the scientific communities of countries not belonging to the European Union) and "flexible structure" (easy implementation and light management of the research initiatives) are the main characteristics of COST.

As precursor of advanced multidisciplinary research COST has a very important role for the realisation of the European Research Area (ERA) anticipating and complementing the activities of the Framework Programmes, constituting a "bridge" towards the scientific communities of emerging countries, increasing the mobility of researchers across Europe and fostering the establishment of "Networks of Excellence" in many key scientific domains such as: Biomedicine and Molecular Biosciences; Food and Agriculture; Forests, their Products and Services; Materials, Physical and Nanosciences; Chemistry and Molecular Sciences and Technologies; Earth System Science and Environmental Management; Information and Communication Technologies; Transport and Urban Development; Individuals, Societies, Cultures and Health. It covers basic and more applied research and also addresses issues of pre-normative nature or of societal importance.