Multifunctionality of the Urban Horticulture



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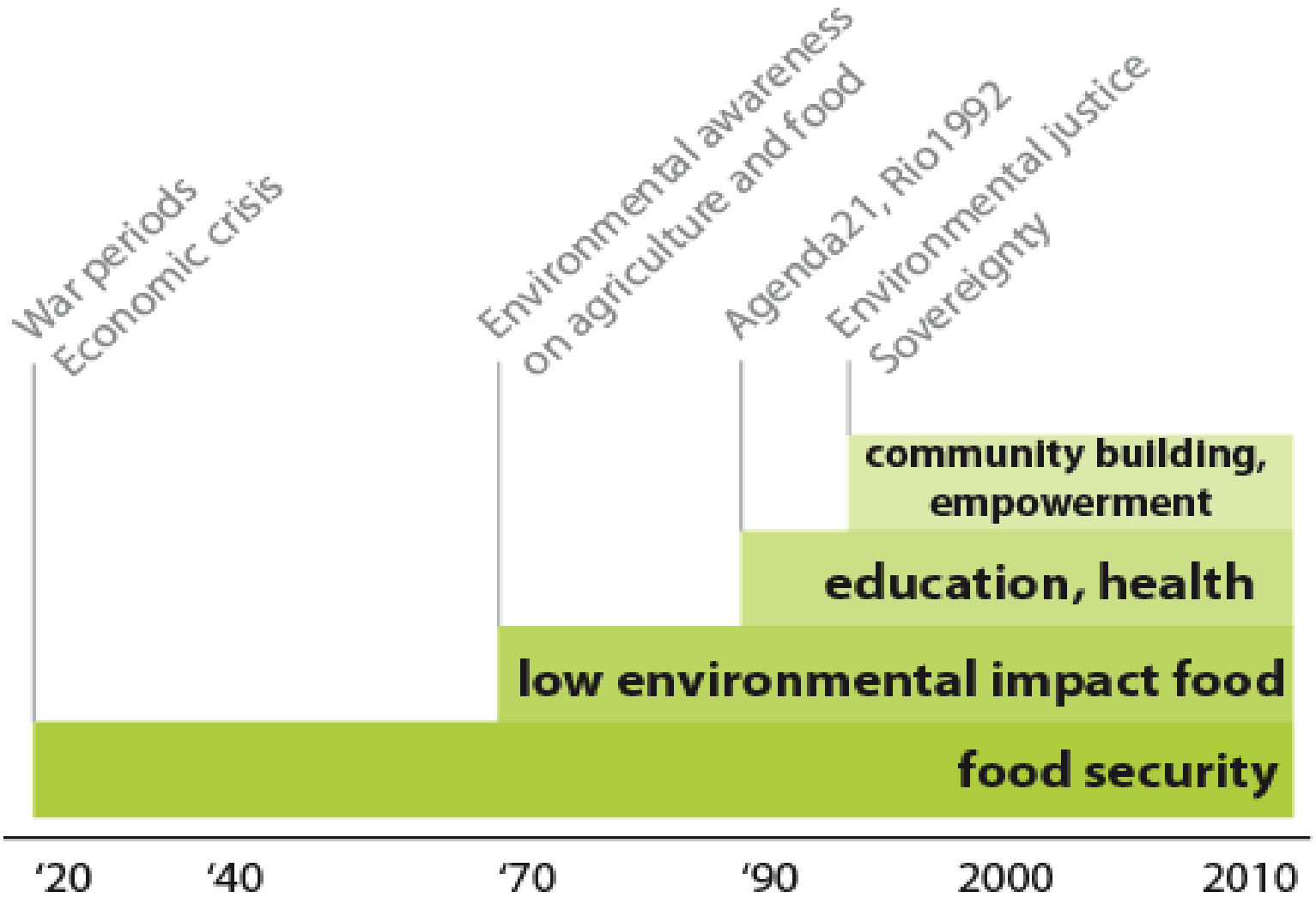
Evolution of urban horticulture



How is urban agriculture reshaping our cities?

Urban Agriculture as functional component within the urban fabric

Food security

(food production & food safety)

Food production

Case study

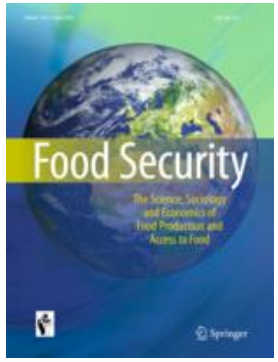
Potential impact of RoofTop Gardens (RTGs) on Food Security and other Ecosystem Services in the city of Bologna, Italy

Food Sec. (2014) 6:781–792
DOI 10.1007/s12571-014-0389-6

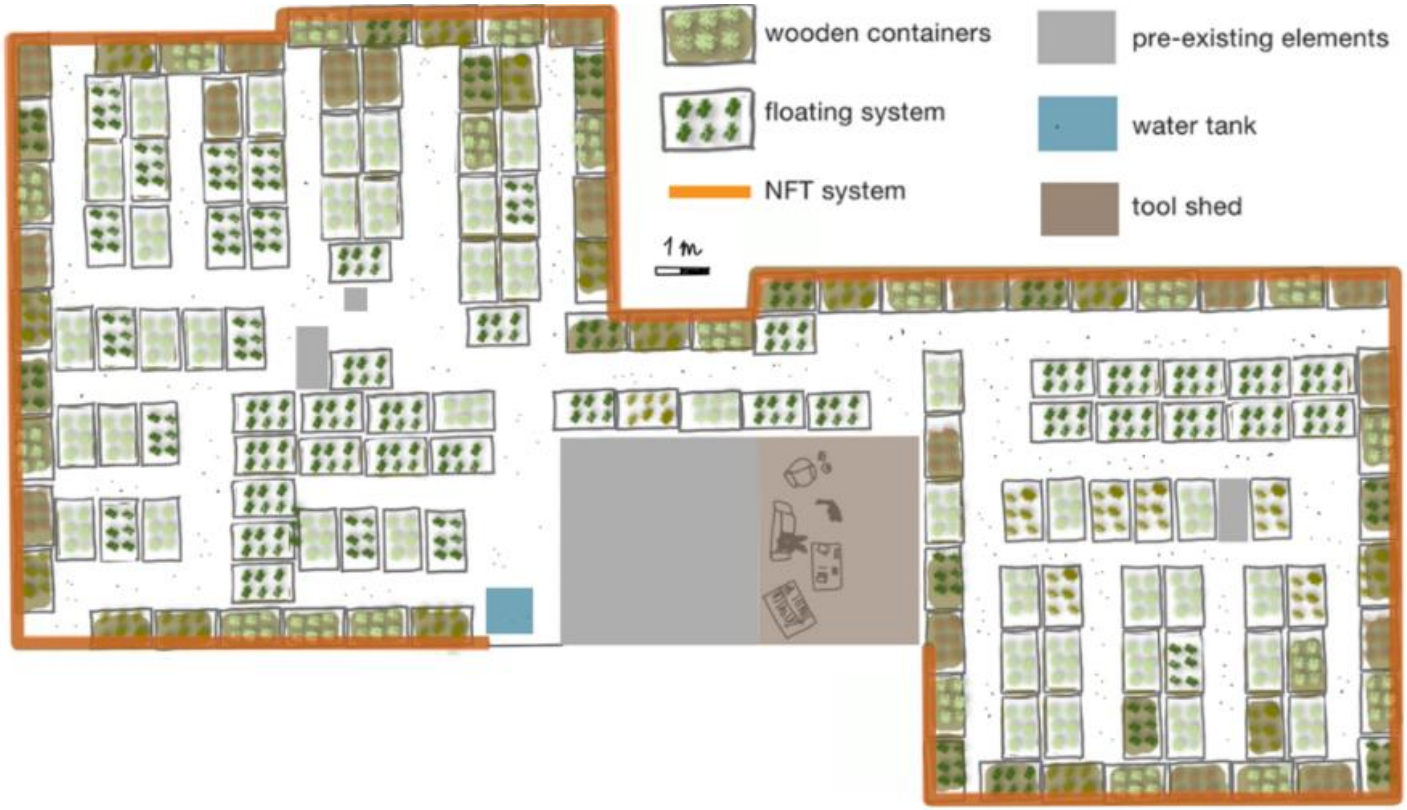
CASE STUDY

Exploring the production capacity of rooftop gardens (RTGs) in urban agriculture: the potential impact on food and nutrition security, biodiversity and other ecosystem services in the city of Bologna

Francesco Orsini · Daniela Gasperi · Livia Marchetti · Chiara Piovene · Stefano Draghetti · Solange Ramazzotti · Giovanni Bazzocchi · Giorgio Gianquinto



Mean vegetable yield = 41.7 g m^{-2} d^{-1}



Graphical representation of the garden to be implemented in study case rooftop according to optimal growing system ratios.

Available surface for RTGs

Identification of flat rooftops on GoogleEarth® (A, B), and consistently on urban city maps (C), and calculation of available surfaces through Autocad® (D).

3500 available rooftops 82 ha

RTGs implementation

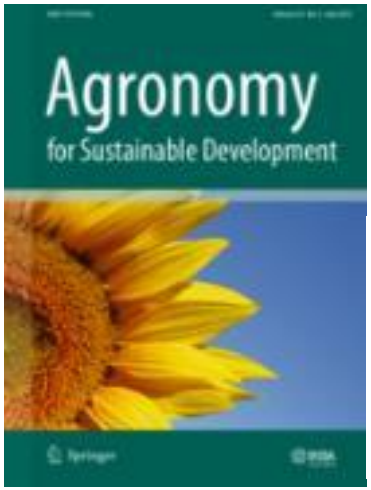
41.7 g m^{-2} d^{-1}
820’000 m^2

34’233 kg d^{-1}
12’495 Mg y^{-1}

77% of city needs

Food safety

Is it safe to grow vegetables in urban gardens?



Heavy metal accumulation in vegetables grown in urban gardens

Livia Vittori Antisari[1] · Francesco Orsini[1] · Livia Marchetti[1] · Gilmo Vianello[1] · Giorgio Gianquinto[1]

Soilless system on peat reduce trace metals in urban-grown food: unexpected evidence for a soil origin of plant contamination

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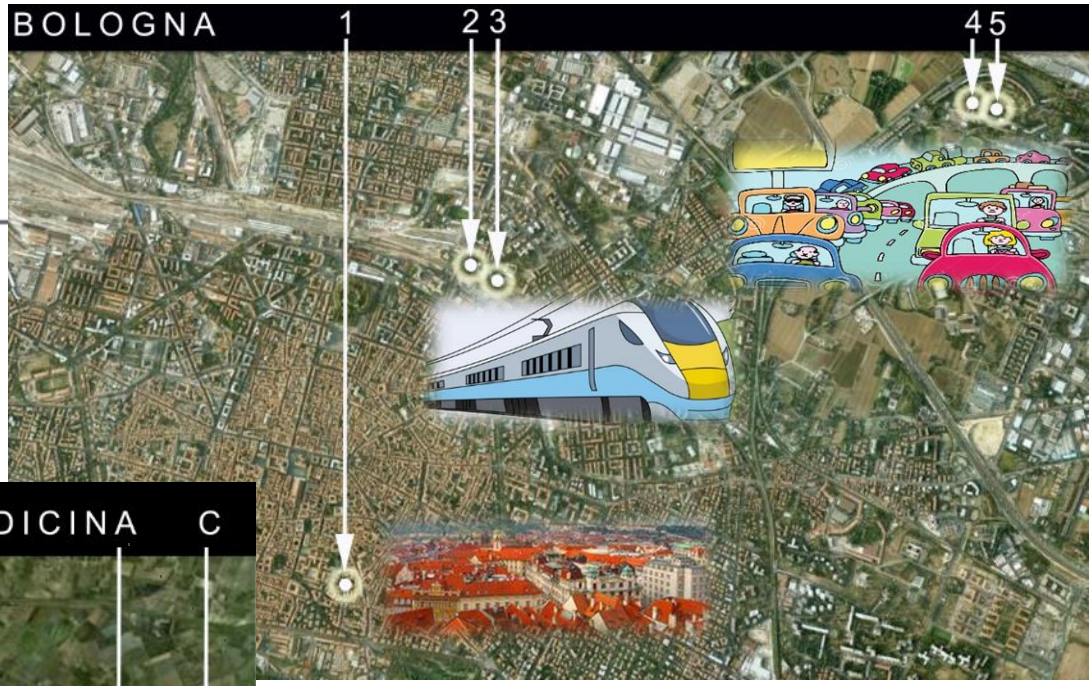
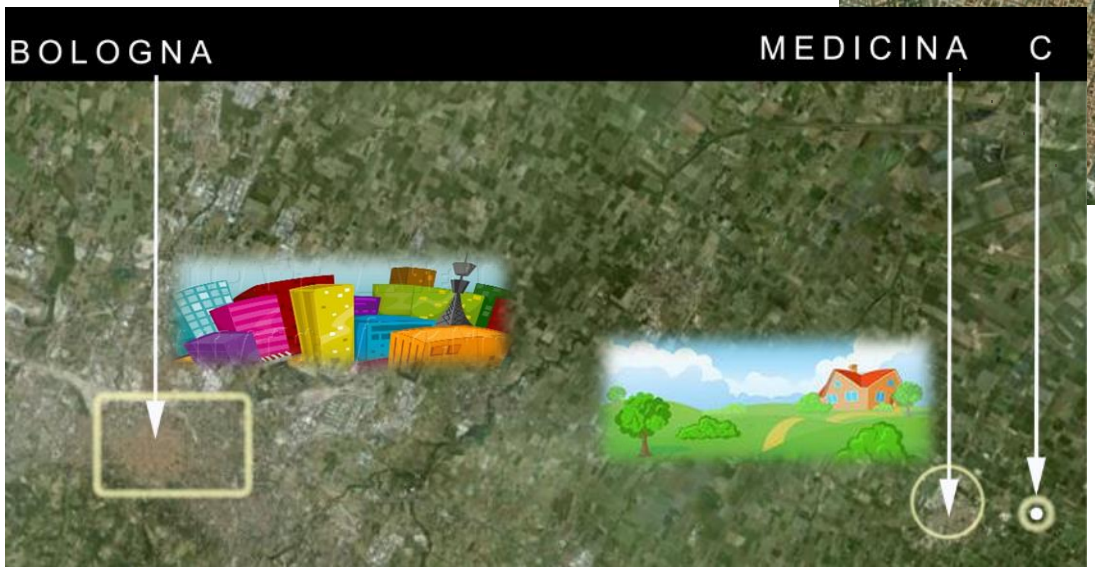
Materials and Methods

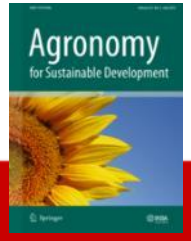
A range of experiments was conducted between 2011 and 2013 in several sites within and nearby the city of Bologna





(1) CENTRE: An ancient traditional garden in old city centre **(coord. 44°29'16'' N, 11°20'51'' E)**
(2) SOIL, (3) SOILLESS: Soil and **Soilless** gardens nearby the main **RAILWAY (coord. 44°30'17'' N, 11°21'28'' E)**
(4) ROAD/10, (5) ROAD/60: Garden nearby a main road of the city, **10 m (4)** and **60 m (5)** from the **road (coord. 44°30'54'' N, 11°23'29'' E)**

(C) CONTROL/RURAL. Rural control located nearby the small town of Medicina **(coord. 44°28'33'' N, 11°40'45'' E)**



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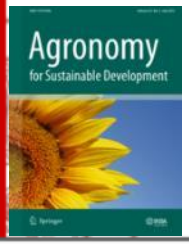

Heavy metal accumulation in vegetables grown in urban gardens

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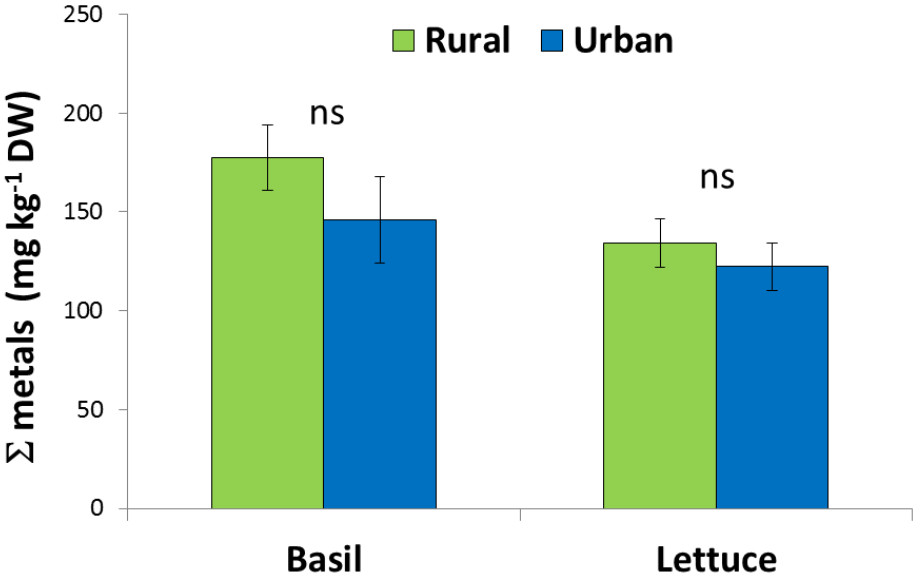
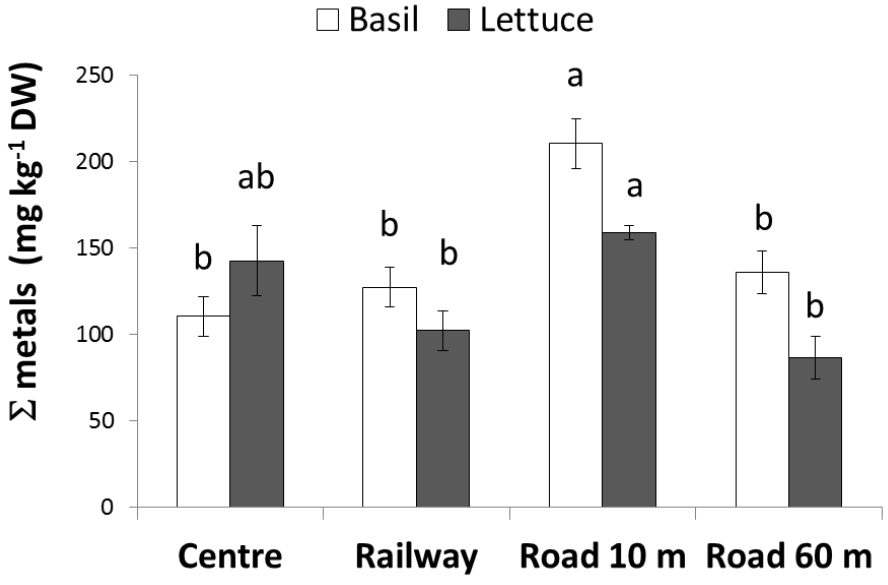
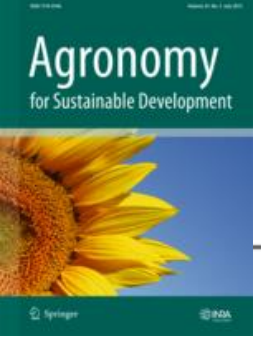
Peak in Cd concentration in CONTROL/RURAL (0.4-1.2 mg kg^{-1} DW), probably due to long-term fertilization (Tella et al. 2013).





In city, maximum accumulation was detected in the urban garden nearby ROAD. (Vittori Antisari et al. 2012).



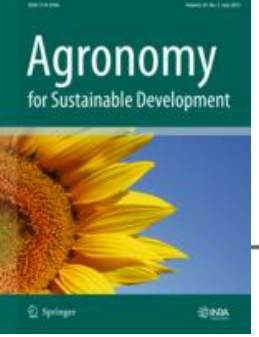
Soilless system on peat reduce trace metals in urban-grown food: unexpected evidence for a soil origin of plant contamination

Giuseppina Pennisi[1] · Francesco Orsini[1] · Daniela Gasperi[1] · Silvia Mancarella[1] · Rabab Sanoubar[1] · Livia Vittori Antisari[1] · Gilmo Vianello[1] · Giorgio Gianquinto[1]

Is it the soil or the atmosphere nearby roads to induce pollution risks?

Pennisi et al. 2016. Soilless system on peat reduce trace metals in urban-grown food: unexpected evidence for a soil origin of plant contamination. Agronomy for Sustainable Development, 36: 56

SOILLESS vs SOIL



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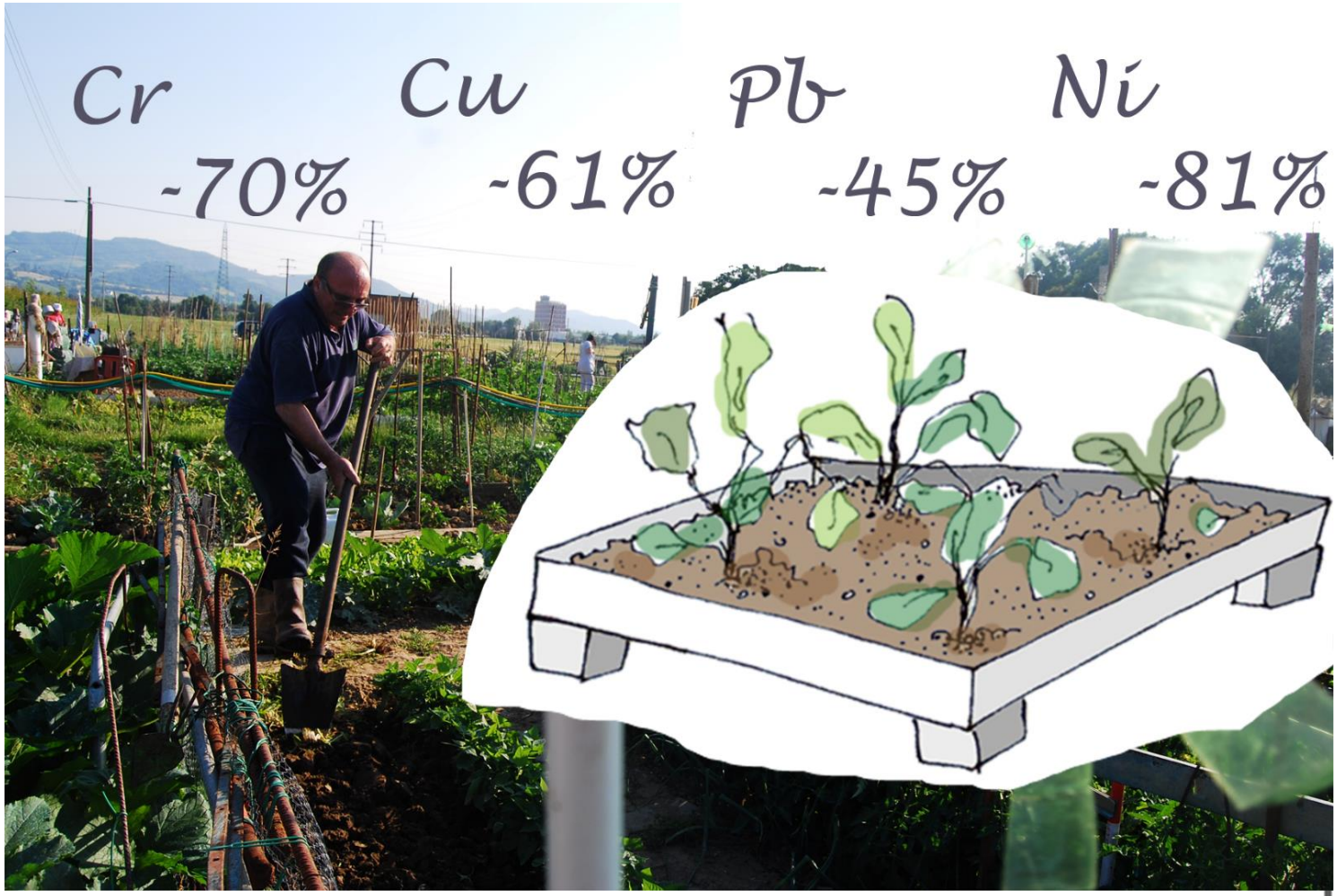
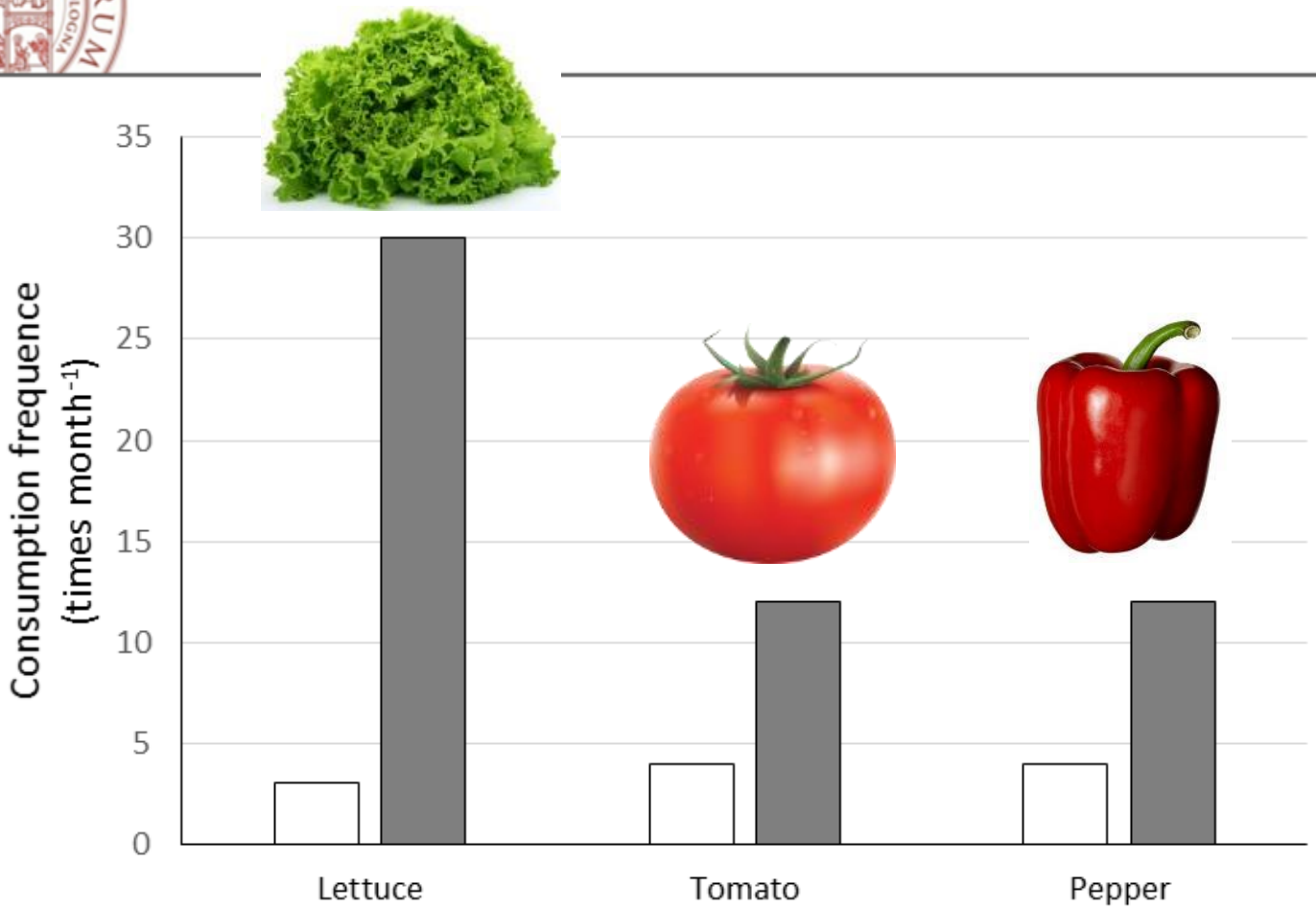


Health

Diet diversification



Diet composition in the periurban areas of Teresina (PI-Brazil), before the beginning of the project (Survey 2004, white bars, and 2007, grey bars). Orsini et al., 2009

Horti Therapy

GIARDINI PER RIVIVERE: ORTICOLTURA E GIARDINAGGIO A FINI TERAPEUTICI IN CONTESTI SANITARI

Dottorando: Costantina Righetto
Coordinatore Dottorato: Prof. Giovanni Dinelli
Relatore: Prof. Giorgio Prosdocimi Gianquinto
Correlatori: Prof. Stefano Bona
Dott.ssa Francesca Meneghello
Dott.ssa Maria Chiara Paparella

Bologna 18 maggio 2015

A garden to re-live

A therapeutical garden at Hospital San Camillo (Venice) for neuro-physiological recovery from pathologies and stress.

Acta Hortic. 1121. ISHS 2016. DOI 10.17660/ActaHortic.2016.1121.3
XXIX IHC – Proc. XII Int. People Plant Symposium: Horticulture and Human Communities
Eds.: S.A. Park and E. Rappe

Garden therapy in neurorehabilitation: well-being and skills improvement

F. Meneghello[1], G. Marcassa[1], I. Koch[1], P. Sgaravatti[1], B. Piccolomini[1], C. Righetto[2], G. Prosdocimi Gianquinto[2] and F. Orsini[2]

Wellbeing from the garden (0-10 self evaluation scale)

Variable	Difference (after vs before gardening)	Significance (P-value)
Self evaluation of wellbeing	+0.57 (improvement by gardening)	0.0000
Wellbeing by sex	+0.49 (in females)	0.0423
Wellbeing by age	-	ns
Wellbeing by use of wheelchair	-	ns
Wellbeing by use of both hands in the garden	+0.45 (use of both hands)	0.0000
Wellbeing by use of main hand in the garden	+0.80 (by use of main hand)	0.0000
Wellbeing by background environment (rural-urban)	-	ns
Wellbeing by number of visits in the garden	+1.00 (after 3 visits)	0.0000
Wellbeing according to activities performed	+0.45 (planting bulbs, sowing, cleaning flowerbeds, harvesting flowers)	0.0001

Realization of a neuro-rehabilitation therapeutic garden: design criteria and horticultural choices

C. Righetto[1], G. Prosdocimi Gianquinto[1], F. Orsini[1], F. Meneghello[2], P. Sgaravatti[2] and B. Piccolomini[2]

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ISHS

ResCUE-AB

“Progetto Elicriso presso Casa Ramello”

Ariano nel Polesine
ROVIGO

Azienda Ulss 19 di Adria, Unità Operativa
Disabilità Adulta

Il Progetto del giardino terapeutico Elicriso

Studio Arch. Stefano Maurizio

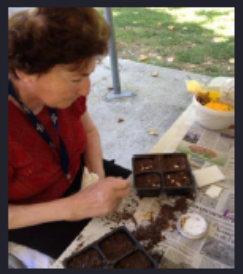
“Progetto Elicriso presso Casa Ramello”

Ariano nel Polesine
ROVIGO

Azienda Ulss 19 di Adria, Unità Operativa Disabilità Adulta

Giardino terapeutico Elicriso
Questionario su aspetto relazionale, gradimento lavorazioni e soddisfazione per le attività

Analisi della regressione multipla. Variabili edoniche e lavorazioni che contribuiscono ad innalzare il livello di soddisfazione



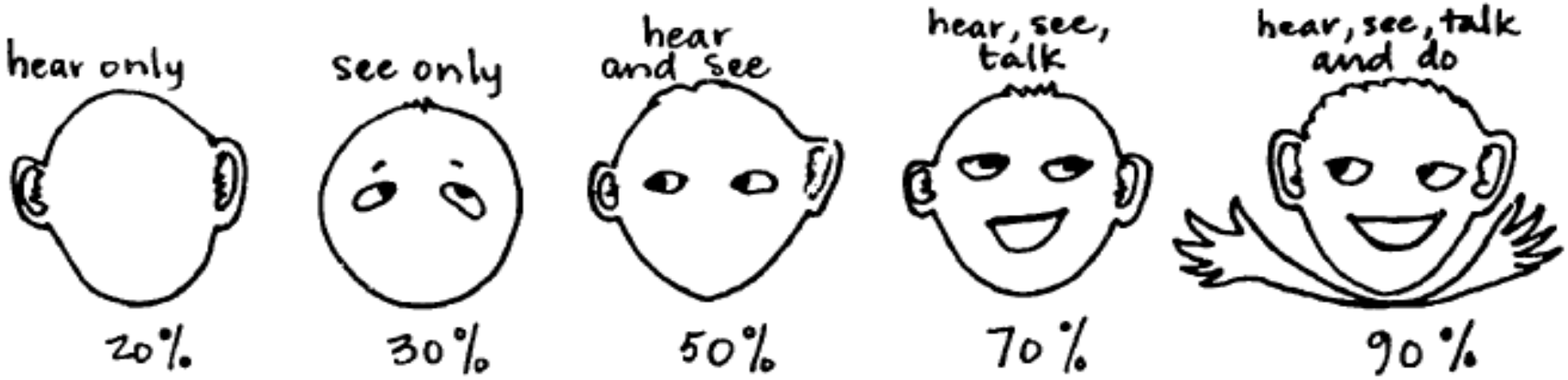
	P-value
Avere un impegno costante	0,0000
Avere a che fare con le piante	0,0002
Il progetto ha aiutato a farsi grandi amici	0,0002

	P-value
Seminare	0,0056
Riordinare gli attrezzi	0,0315
Trapiantare	0,0036

Education

Learning in gardens

Learning is a participatory, active, democratic, collaborative and experience-based process …



… which must actively and fully involve the participants so that they are not only called to listen … but also to **see, talk and do!**

School aquaponic garden

Social inclusion


Willkommen!
TON-STEINE-GÄRTEN
http://gaerten-am-mariannenplatz.blogspot.com
Tritt ein, flaniere auf den Wegen, genieße mit den Augen, und lass die Pflanzen den Pflanzen, und die Früchte den GärtnerInnen ...danke!
Bitte erklär das auch Deinem-angeleinten-HUND
Come in, enjoy strolling on the paths of our Community Garden -


TEMPELHOFER PARK
COLUMBIADAMM
ODERSTRASSE
TEMPELHOFER DAMM
DER TEMPELHOFER PARK
THE TEMPELHOF PARK
HINWEISE
NOTICES


Social Seeds
Saatgut Vermehrung

Social housing buildings, via Gandusio, Bologna

Biodiversity

Wild flowers

Bretzel & Pezzarossa, 2010

Intensive green roofs

Dunnet, 2010

Extensive green roofs- Moorgate Crofts, Rotherham, June 2007

Dunnet, 2010

Extensive green roofs - Moorgate Crofts, Rotherham, July 2007

Dunnet, 2010

Extensive Green Roofs - Moorgate Crofts, Rotherham August 2007

Dunnet, 2010

Biodiversity

Case study

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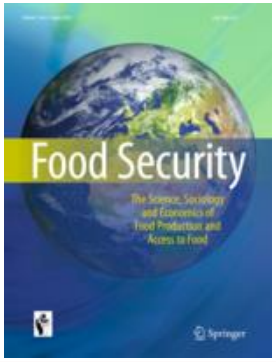
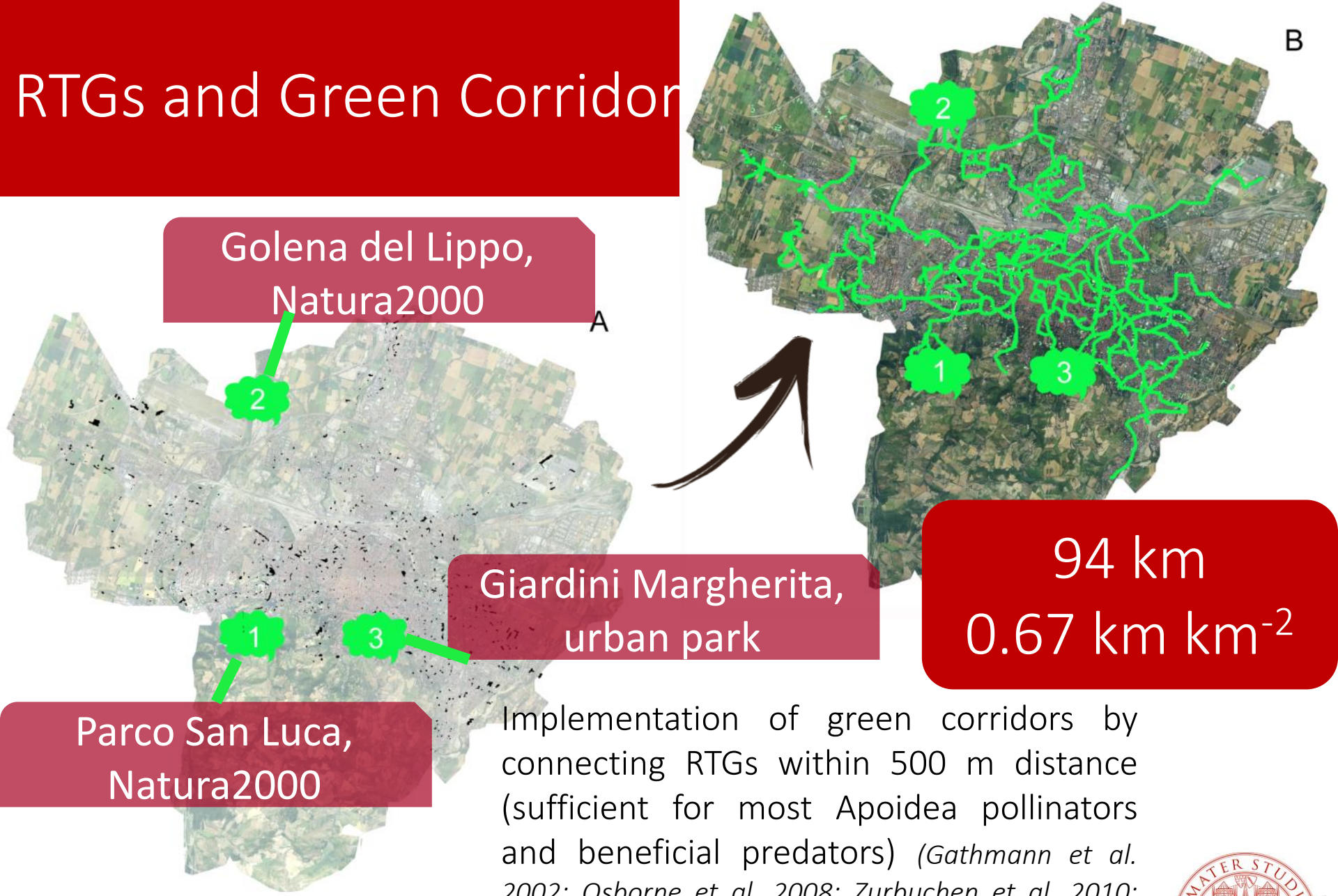


RTGs and Green Corridor



94 km
0.67 km km^{-2}

Implementation of green corridors by connecting RTGs within 500 m distance (sufficient for most Apoidea pollinators and beneficial predators) *(Gathmann et al. 2002; Osborne et al. 2008; Zurbuchen et al. 2010; Ludgren 2009)*

Income Generation


656


DMU 298009 8
KR 2210
I.G.W. 24.000 KGS
52.910 LBS
ARE 2.200 KGS
4.850 LBS
ET 21.800 KGS
48.060 LBS
U.CAP. 33.2 M³
1.171 FT³
Getränke
LEMONAID

Roof-top greenhouses

The Hague, The Netherlands

Lula Farm, Montreal, Canada


Thank you for your kind attention

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