



**Journées Rurales Montpellier**  
**Les relations ville – campagne face à la question alimentaire**  
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# Food self-production of vegetables : from household supply to local food system

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*March 25th, 2021*



# Introduction

- The commercial sphere at the heart of food issues
- Rarity of studies on domestic production
- Place of community and associative gardens and associated research themes : sociabilities, participation, social development, appropriation of space
- Rarity of studies on private vegetable gardens
- Urban agriculture presented as a response to food sustainability issues
- PSDR 4 FRUGAL (Urban forms and Food Governance), focuses on urban food supply

**=> What is the contribution of domestic vegetable production to the functioning of local food systems?**



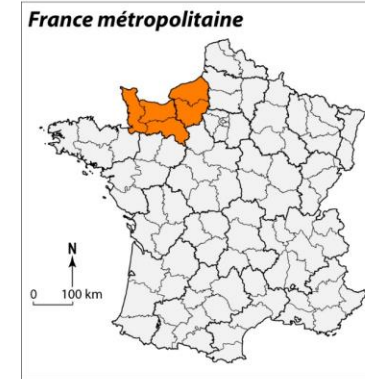
# 1. A study of vegetable gardens in two western French cities

A work based on the study of two western French cities : Caen and Alençon

A three-step methodology :

- A fine-scale inventory of vegetable production areas (allotment gardens, community gardens, and especially « private » vegetable gardens)

	Population (2013)
Caen	184 449
Alençon	39 920



Source : BD-Topo IGN, INSEE 2013  
M. Marie, UMR ESO - Université de Caen Normandie



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2 : Un potager collectif (jardins familiaux) à Fleury/Orne (14)



3 : Un de potager privé à Mondeville (14)



4 : Un potager collectif (Jardinot) à Rennes (35)



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5 : Un potager privé à Mondeville (14) après digitalisation



6 : Un potager collectif (Jardinot) à Rennes (35) après digitalisation



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A geographic database from the photo-interpretation of high resolution images (2013 and 2014) : 4 788 vegetables gardens in Caen and 2 133 in Alençon

FID	Shape *	Id	surface	Type
3693	Polygone	0	53,783548	potagers privés
3694	Polygone	0	31,502079	potagers privés
3695	Polygone	0	21,561423	potagers privés
3696	Polygone	0	22,909012	potagers privés
3697	Polygone	0	35,186072	potagers privés
3698	Polygone	0	77,390108	potagers privés
3699	Polygone	0	73,548604	potagers privés
3700	Polygone	0	14,840979	potagers privés
3701	Polygone	0	36,507409	potagers privés
3702	Polygone	0	22,42948	potagers privés
3703	Polygone	0	10,597299	potagers privés
3704	Polygone	0	39,869031	potagers privés
3705	Polygone	0	107,459892	potagers privés
3706	Polygone	0	172,820406	potagers privés
3707	Polygone	0	46,043439	potagers privés
3708	Polygone	0	578,561935	potagers privés
3709	Polygone	0	94,09496	potagers privés
3710	Polygone	0	271,96375	potagers privés
3711	Polygone	0	58,48046	potagers privés
3712	Polygone	0	140,033042	potagers privés
3713	Polygone	0	20,90478	potagers privés
3714	Polygone	0	39,982439	potagers privés
3715	Polygone	0	7391,88411	jardins collectifs
3716	Polygone	0	13811,8030	jardins collectifs
3717	Polygone	0	14879,6920	jardins collectifs
3718	Polygone	0	16806,1229	jardins collectifs
3719	Polygone	0	25026,4329	jardins collectifs



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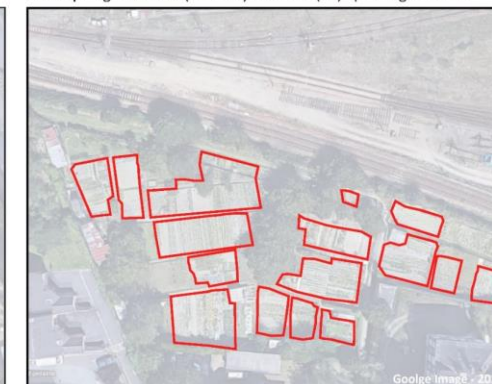
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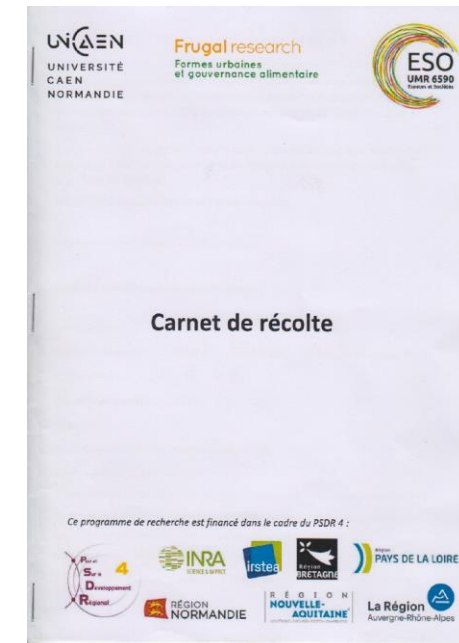


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Date	Type de fruit / légume	Poids
17/08/17	Haricots secs	0,40 kg
17/08/17	Carottes	0,640 kg
18/08/17	Tomates crues	0,08 kg
20/08/17	Carotte	0,20 kg
20/08/17	Tomates crues	0,20 kg
21/08/17	Tomates crues	0,140 kg
24/08/17	Haricots secs	0,060 kg
24/08/17	Tomates crues	0,340 kg
25/08/17	Thym	0,10 kg
25/08/17	Tomates crues	0,180 kg
25/08/17	Carotte	0,000 kg
25/08/17	Carottes	0,960 kg
25/08/17	Haricots secs	0,020 kg
26/08/17	Brocolis	0,020 kg
26/08/17	Persil	0,040 kg
26/08/17	Courgette jaune	0,120 kg
27/08/17	Tomates crues	0,280 kg
28/08/17	Tomates crues	0,120 kg
29/08/17	Tomates crues	0,200 kg
31/08/17	Tomates crues	0,200 kg
31/08/17	Courgette jaune	0,10 kg
31/08/17	Carotte	0,080 kg
31/08/17	Radis	0,000 kg

Data from harvest books (2017, 2018, 2019, 2020)

**Prices list  
FranceAgriMer  
(From April to  
November 2019)**

Types	la pièce	le kg
AIL blanc sec		11,3
AIL frais		11,5
ARTICHAUT blanc		5,0
ARTICHAUT Camus		4,4
ARTICHAUT violet		5,6
AUBERGINE longue-violette		4,7
BETTE vrac		3,6
BETTERAVE ROUGE crue		3,0
CAROTTE non lavée		2,9
CÉLERI-BRANCHE		4,3
CÉLERI-RAVE		3,5
CHICORÉE frisée	2,0	
CHICORÉE Scarole	2,0	
CHOU blanc	3,0	
CHOU blanc France		3,0
CHOU Brocoli		5,1
CHOU Chinois		4,2
CHOU DE BRUXELLES		6,2
CHOU FLEUR couronné	3,4	1,7
CHOU rouge		3,1
CONCOMBRE Noa		4,1
COURGE Butternut		3,4

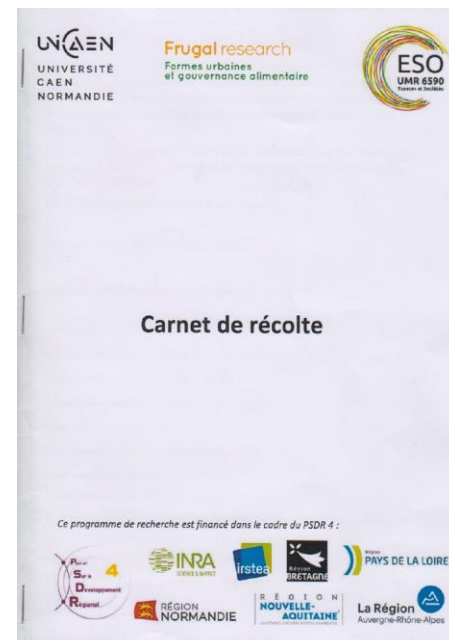


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Data from harvest books (2017, 2018, 2019, 2020)

identifiant	Année	Type de jardin	Surface cultivée (m <sup>2</sup> )	Diversité des cultures	Production (en kg)	Valeur commerciale (en €)	Rendement kg/m <sup>2</sup>	Rendement €/m <sup>2</sup>	Volume / pers (en kg)	Valeur / pers (en €)	Typologie
jardinier 1	2017	Jardin privé	8	4	18,8	90,4	2,4	11,3	6,3	30,1	anecdotique
jardinier 2	2017	Jardin privé	7	3	10,2	68,1	1,5	9,7	3,4	22,7	anecdotique
jardinier 3	2017	Jardin privé	8	8	17,8	101,1	2,2	12,6	5,9	33,7	anecdotique
jardinier 4	2017	Jardin privé	22	14	77,7	353,4	3,5	16,1	22,2	101,0	moyen
jardinier 5	2017	Jardin familial	46	18	60,6	291,0	1,3	6,4	24,2	116,4	moyen
jardinier 6	2017	Jardin privé	12	10	14,8	79,8	1,2	6,6	5,9	31,9	anecdotique
jardinier 7	2017	Jardin privé	33	5	18,7	107,0	0,6	3,2	12,5	71,3	faible
jardinier 8	2017	Jardin familial	176	19	142,0	658,8	0,8	3,7	47,3	219,6	conséquent
jardinier 9	2017	Jardin privé	16	1	15,7	84,0	1,0	5,2	15,7	84,0	faible
jardinier 10	2017	Jardin privé	15	11	58,7	176,4	3,9	11,8	19,6	58,8	faible
jardinier 11	2017	Jardin privé	8	4	16,5	97,9	2,1	12,2	4,1	24,5	anecdotique
jardinier 12	2017	Jardin privé	54	12	119,1	663,5	2,2	12,3	34,0	189,6	moyen
jardinier 13	2017	Jardin privé	42	12	61,2	268,4	1,5	6,4	30,6	134,2	moyen
jardinier 14	2017	Jardin privé	18	4	32,5	183,5	1,8	10,2	16,3	91,8	faible
jardinier 15	2017	Jardin privé	20	9	37,5	173,2	1,9	8,7	12,5	57,7	faible
jardinier 16	2017	Jardin familial	165	15	168,0	735,7	1,0	4,5	84,0	367,8	quasi-autonome

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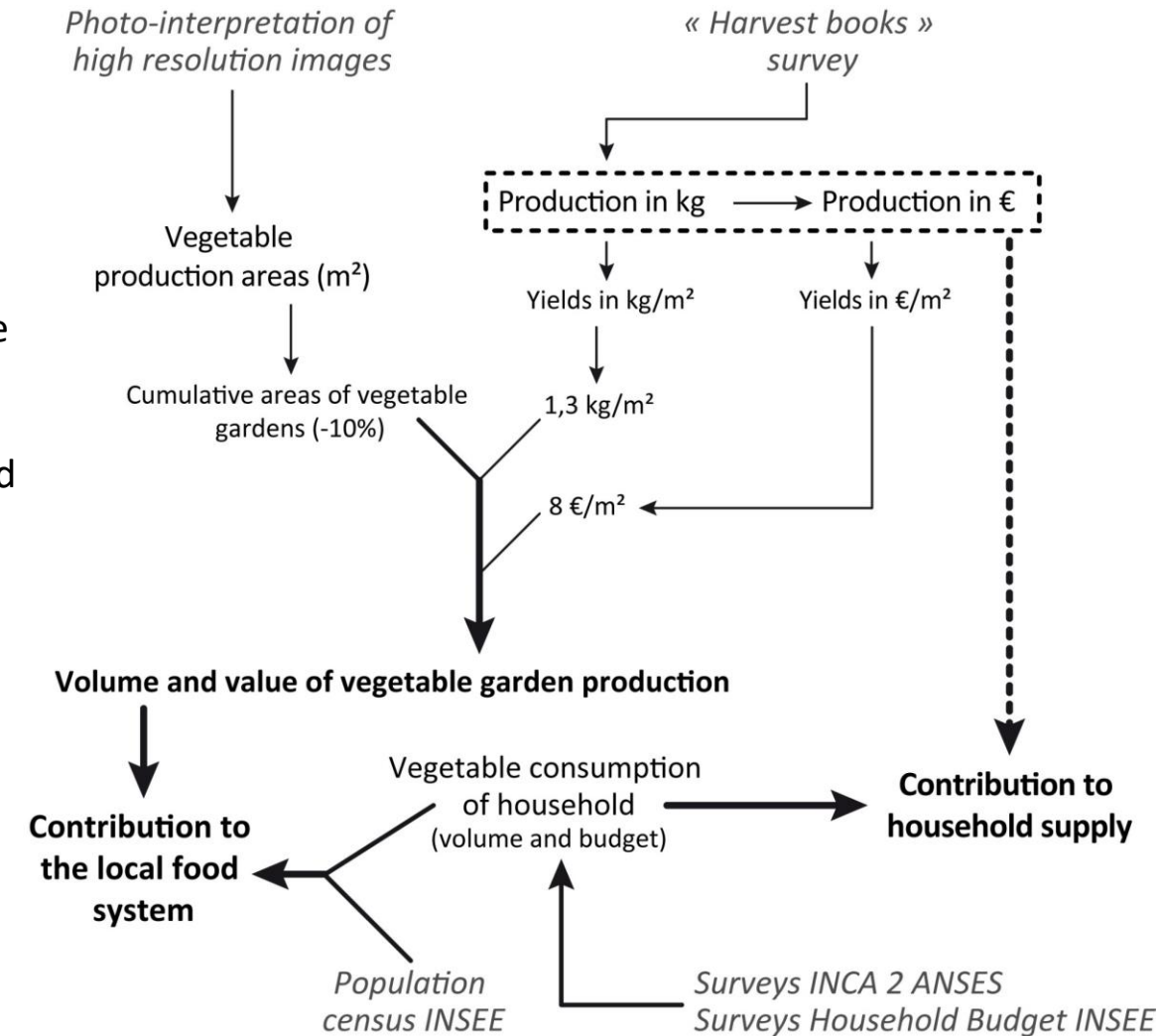
+ Interviews with gardeners and collection of additional variables (cultivation method, social properties, etc.)

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- A survey with gardeners about their garden and their production (in volume and value) : 60 harvest books « usable »
- An estimate of the contribution of vegetable gardens production to the food system at two levels : the urban areas and the household

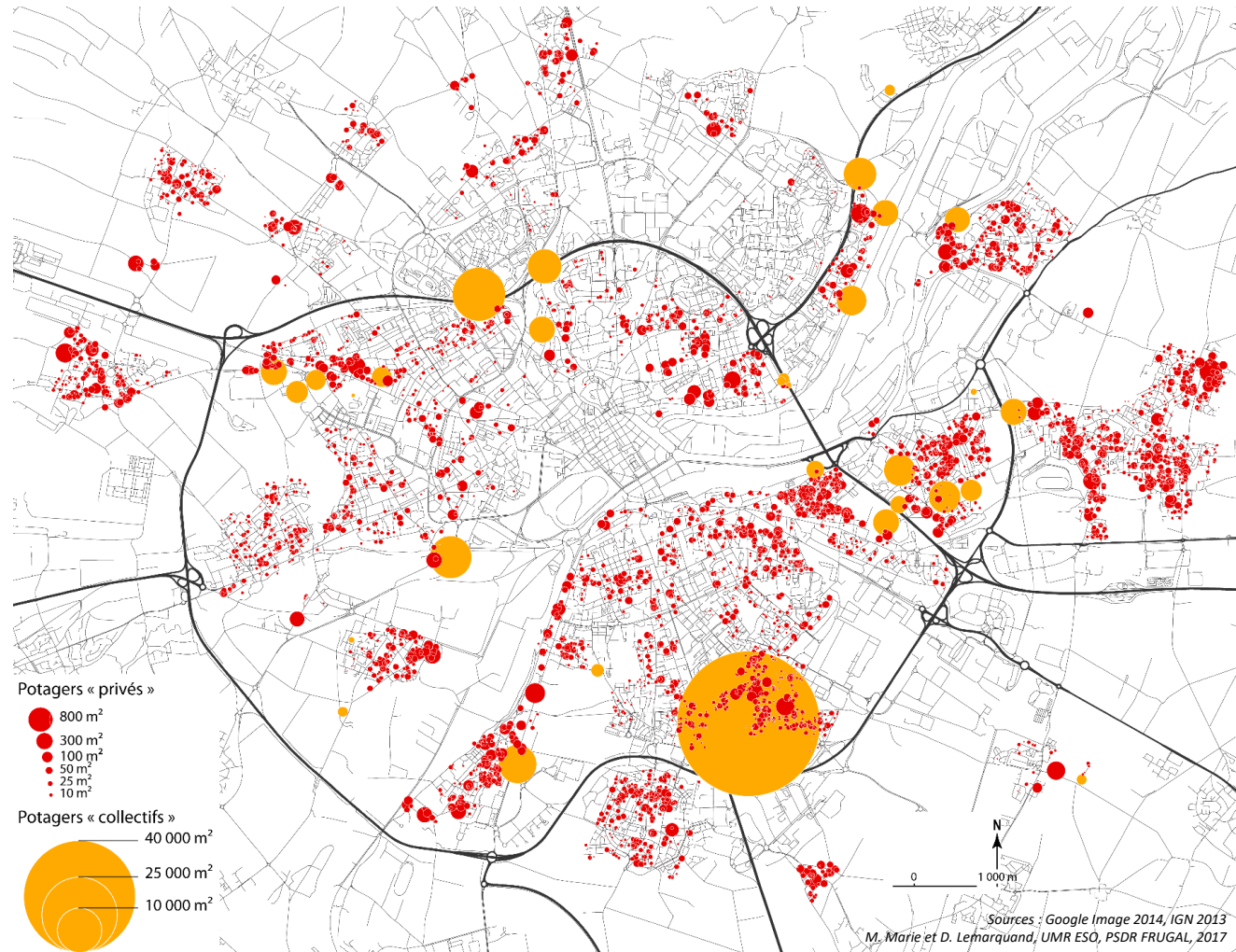


## 2. Place of vegetable gardens in the city and the diversity of gardener practices

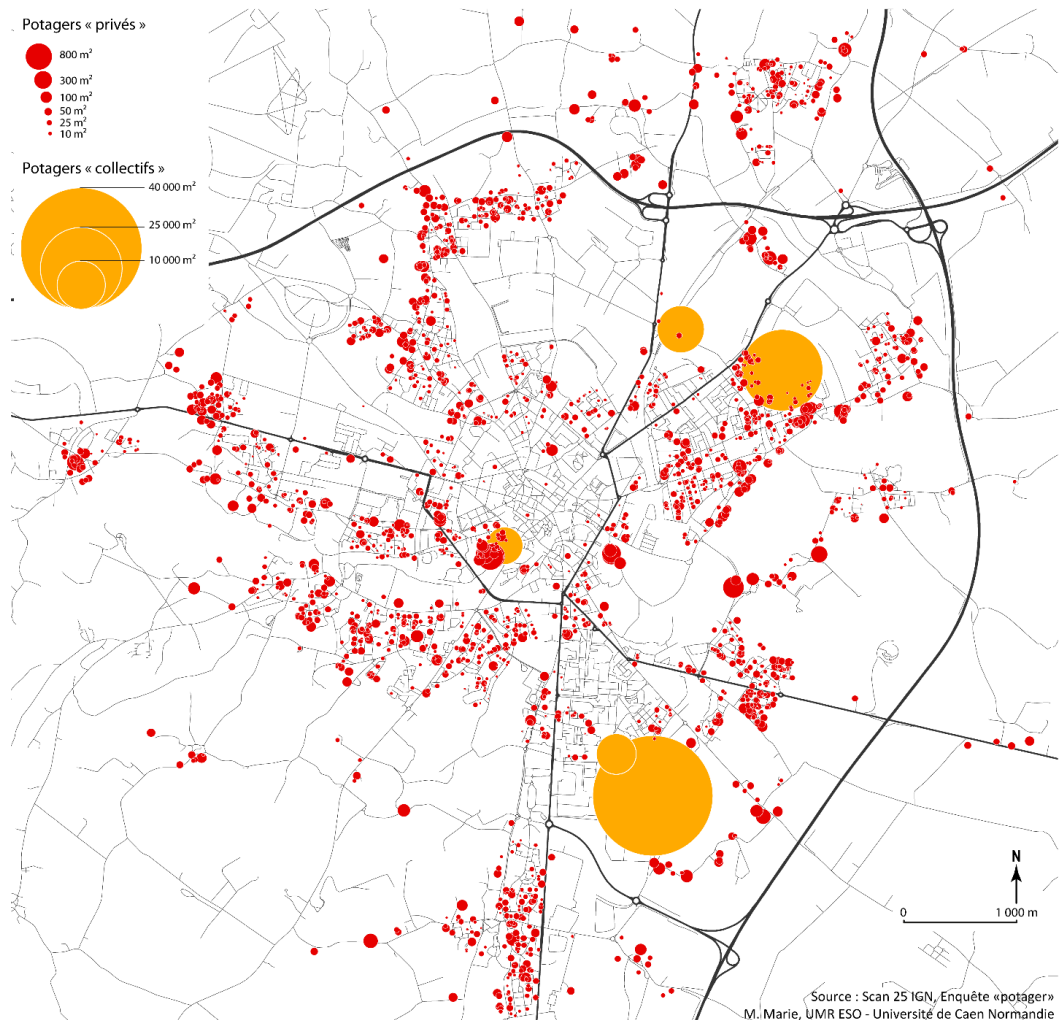
The study highlights the importance of the areas cultivated with vegetables especially for home garden

A spatial distribution based on the social division of space and urban morphology

Vegetable production areas in the urban areas of Caen in 2014



Vegetable production areas in the urban areas of Alençon in 2013



## 2. Place of vegetable gardens in the city and the diversity of gardener practices

The global results show the importance of vegetable for the gardeners :

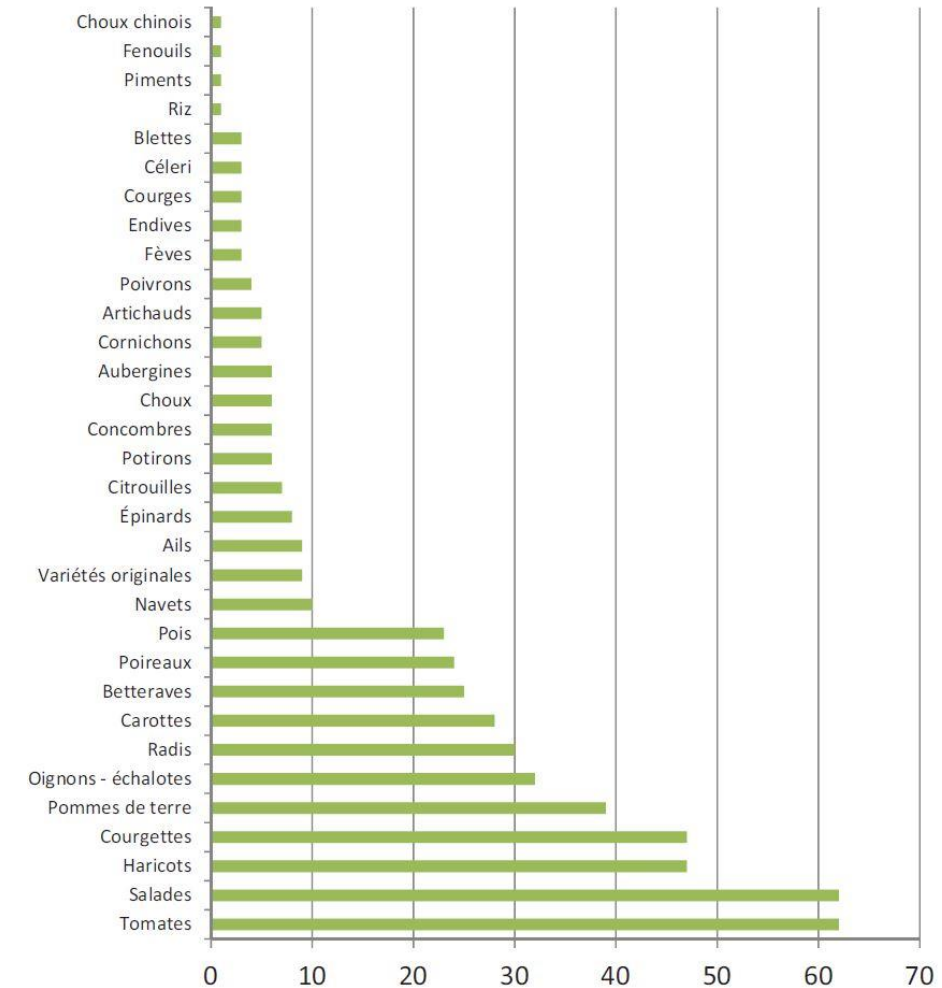
- Mean production over 70 kg per garden (between 5 kg to 300 kg !)...

The diversity of crops is relatively important but it still dominated by a few vegetables :

- More than 80 % of gardeners grow tomatoes and salads
- 60 % of them grow zucchinis and beans
- 50 % harvest potatoes
- Next are the onions, the radishes, the carrots, the beets, the leeks and the peas...



Variety of vegetables cultivated  
(number of gardeners)



Source : M. Marie, UMR ESO, 2021  
d'après enquêtes « carnets de récolte »

**A wide variety of gardener profiles : diversity of motivations, practices and yields...**

### 3. Estimation of the contribution of domestic production to the local food system

#### The contribution of the vegetable garden at the household scale :

- Almost half of the vegetable gardens have a low contribution
- For a quarter of households, the contribution is important (Working class or low incomes)

#### Different practices depending on the socio-professional categories :

- Gardeners belonging to privileged SPCs grow mostly summer vegetables (cherry tomatoes, zucchinis, salads) often according to permacultural or agroecological « esthetics » (mulching, mounds, etc.)
- Among the working class, « profitable » crops are often favored (green beans, peas), of winter crops are often implemented (leeks, carrots, beets, etc.)

Garden's contribution

Typology (n)	Area (m <sup>2</sup> )	Number of vegetables	Production (kg)	Production /person (kg)	Value of the production (€)	Value / person (€)
anecdotal (16)	12,3	6,5	14,1	5,1	102,4	38,1
low (13)	30,8	9,8	38,9	15,1	221,2	87,4
medium (12)	53,8	12,6	54,9	26,5	361,2	177,6
substancial (12)	94,2	15,4	124,9	58,2	744,7	345,3
almost autonomous (7)	196,6	17,4	243,5	91,7	1 322,1	497,4
<i>Total général (60)</i>	<i>55,9</i>	<i>10,3</i>	<i>71,3</i>	<i>31,2</i>	<i>371,6</i>	<i>163,8</i>

Source : M. Marie, UMR ESO, 2021

d'après enquêtes « carnets de récolte » (2017-2020), enquête INCA de l'ANSES, relevés de prix FranceAgriMer 2019

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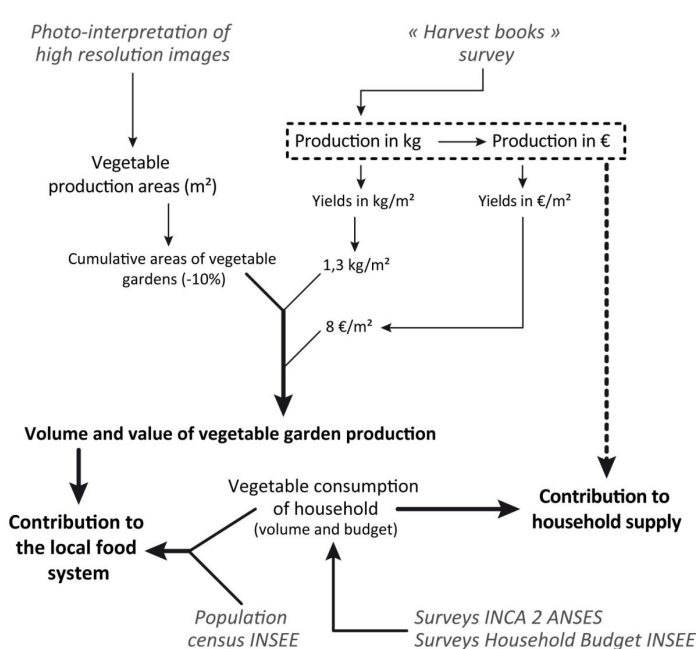
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Source : L. Pauchard, Paris, 2019

### 3. Estimation of the contribution of domestic production to the local food system

#### The contribution of the vegetable garden at the town scale :

- A significant difference between Caen and Alençon: from 8 to 18% of consumption (in t./year)
- The commercial value of production ranging from 3.7 million euros in Caen to 1.9 million euros in Alençon (i.e. 7 to 21% of the total household budget for buying vegetables)



	Caen	Alençon
Cumulative area of vegetable gardens (m <sup>2</sup> )	460 685	233 867
<i>Volume of theoretical production of vegetable gardens (t./year)</i>	599	304
Vegetables consumed by the general population (t./year)	7 493	1 670
<b>Contribution of home gardens in volume</b>	<b>8 %</b>	<b>18 %</b>
<i>Value of theoretical production of vegetable gardens (k€/year)</i>	3 685	1 871
Household budget spent on fresh vegetables (k€/year)	51 913	8 811
<b>Contribution of domestic vegetable gardens in value</b>	<b>7 %</b>	<b>21 %</b>

Source : M. Marie, UMR ESO, 2021

d'après enquêtes « carnets de récolte » (2017-2020), RP INSEE 2017, enquête INCA de l'ANSES, relevés de prix FranceAgriMer 2019

This quantitative estimate allows self-production to be seen as an important part of the local food system

The difference between Caen and Alençon can be explained by the urban morphology (share of houses in the dwellings), the offer of allotment gardens and the importance of the working classes and retired people in the population

# Conclusion

## Food Self-production : a significant practice

- Importance of the volumes produced and surfaces
- A spatial distribution based on the social division of urban space and the morphology of the habitat
- A significant contribution to the household budget

## Diverse profiles of gardeners

- Quantity and self-sufficiency / Production of vegetables with high economic value
- A majority of gardeners come from low-income fraction or working class

