



NORDIC AGRICULTURE.

Can community and participatory gardening projects contribute to the development of a new sustainable food system in Nunavik?

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Context: a global subsistence crisis...

In the world:

- Coexistence of food insecurity and overweight
- Impact of climate change
- Waste of food

...With repercussions in the North

In the Canadian Arctic:

- Westernization of the diet
- High cost of living
- Climate change and environmental pollution



Véronique Coxam, 2016



Véronique Coxam, 2016

Context: food security in Nunavik

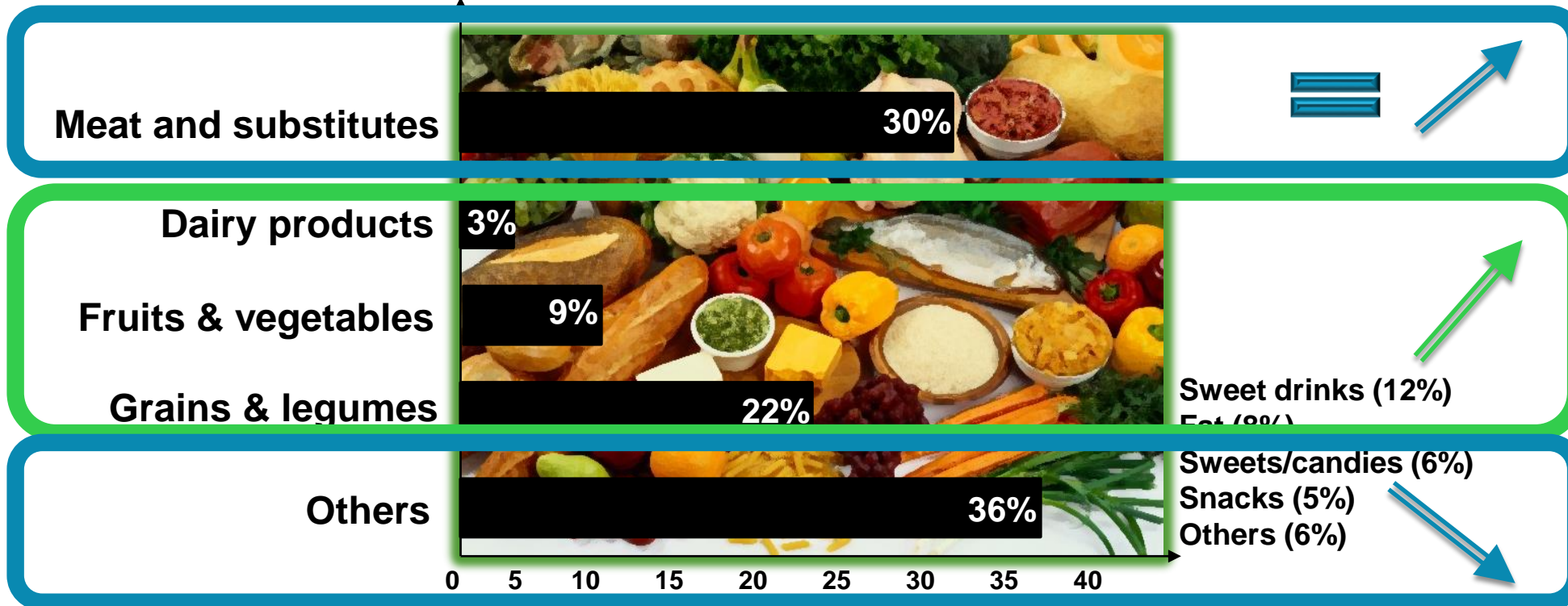


Context: Cultural food security in Nunavik



- Transmission of cultural values, skills and spirituality.
- Knowledge about traditional food
- Access to traditional food systems

Recommendations towards a better food security



Deficiencies:
Vitamins : A, B3, B6, C, D
Minerals : Calcium, Magnesium
Fibres

Objectives of the project

① Increase the availability of fresh local products

② Improve the nutritional quality of food

③ Contribute to a strategy for sustainable community development

Improve the health and well-being of the population

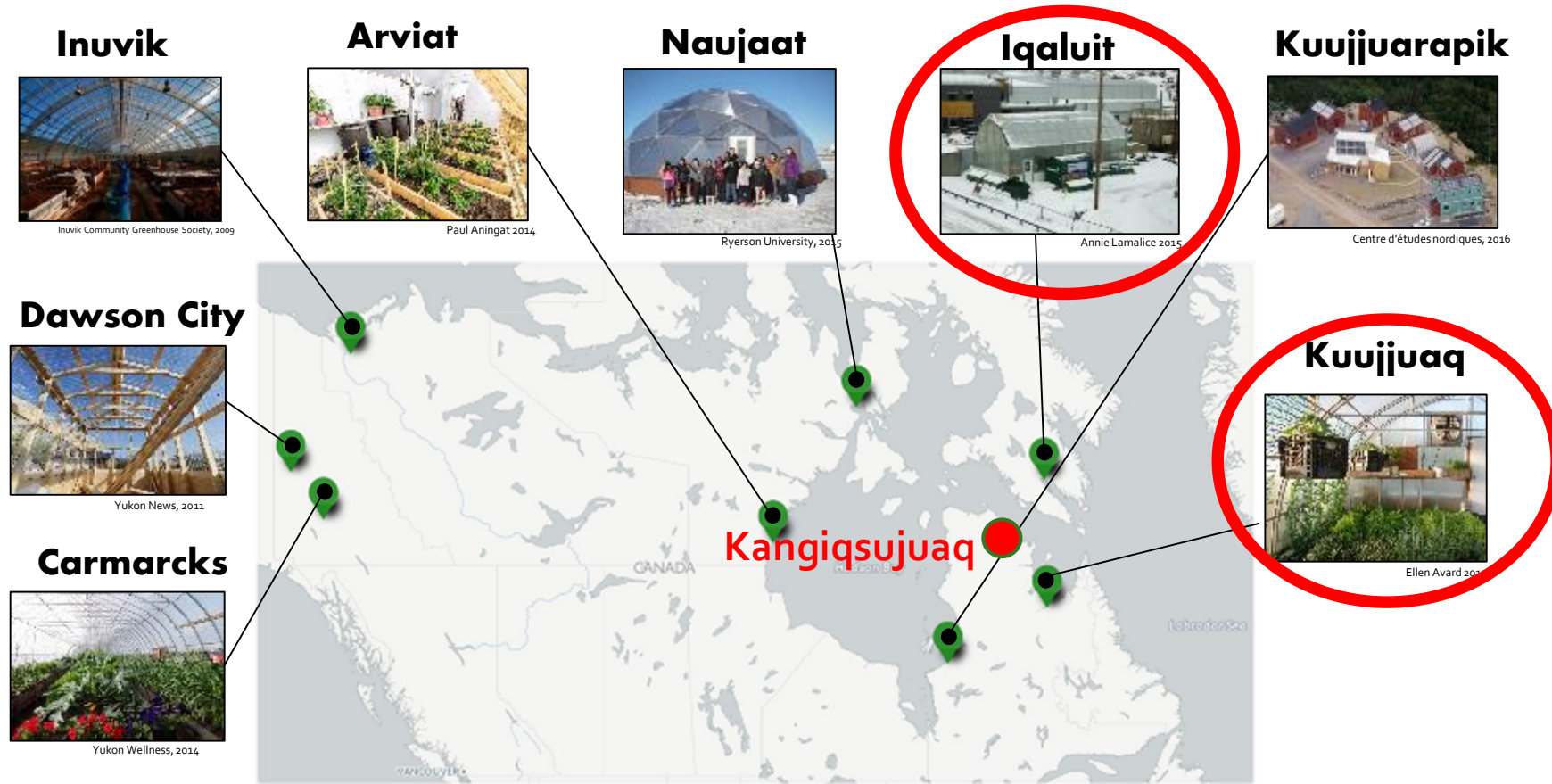


Didier Haillot, 2016



Davidee Nulukie and Marc-André Lamontagne, 2016

Greenhouses in the Canadian North



- Community greenhouses**
Ex. Kuujuaq, Iqaluit, Inuvik...
- Commercial activities**
Ex. Dawson City, Inuvik
- Research activities**
Ex. Kuujjuarapik

Annie Lamalice, 2016

A new project aligned with previous research

Ellen Avard's thesis

2009-2010

- Horticultural micro-projects in Kuujjuaq
- Social acceptability of gardening and greenhouse projects in Nunavik



Didier Haillet, 2016

OHMI-Nunavik project

2015- 2019

- New research project in Kuujjuaq and Kangiqsujuaq



Ellen Avard, 2013

2011-2013

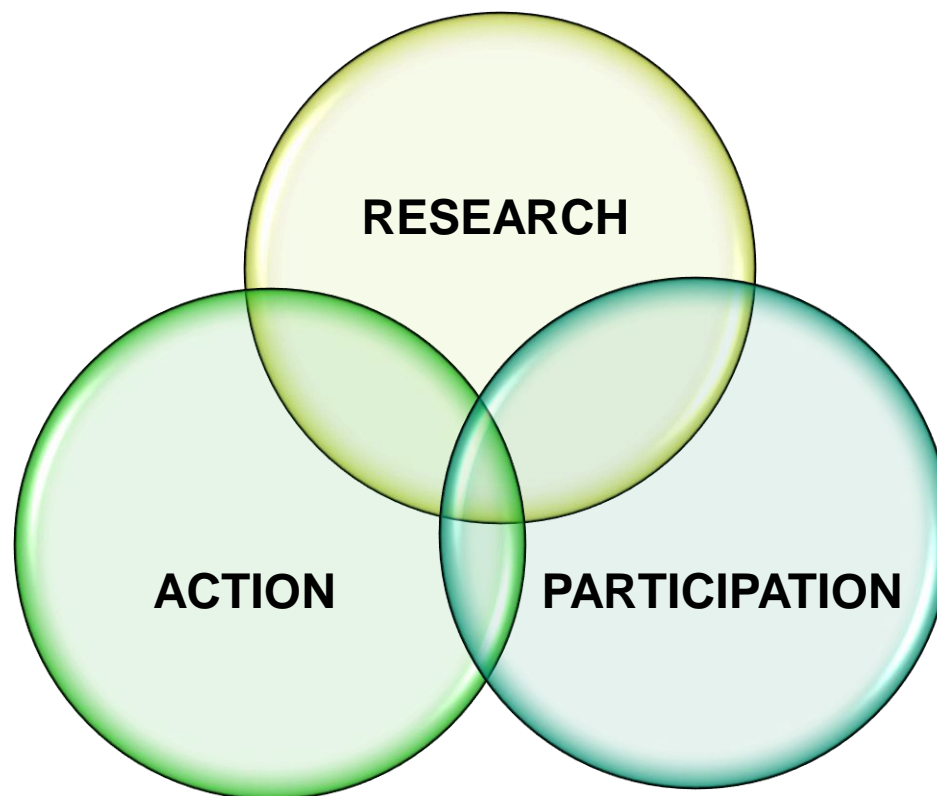
- Construction of a second community greenhouse in Kuujjuaq



An interdisciplinary participatory action research

Interdisciplinarity

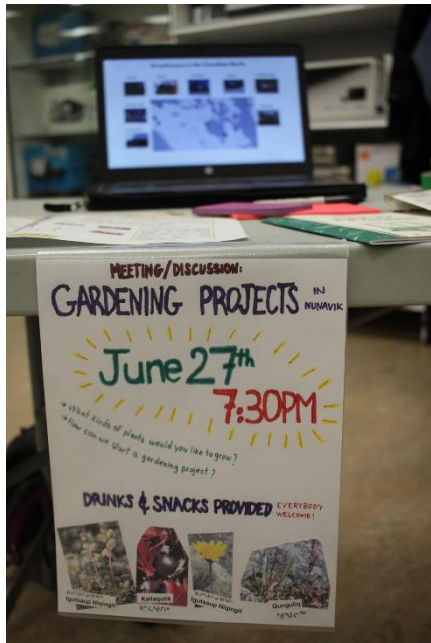
- Geography of health
- Ethnobotany
- Nutrition
- Mechanical engineering
- Thermodynamics



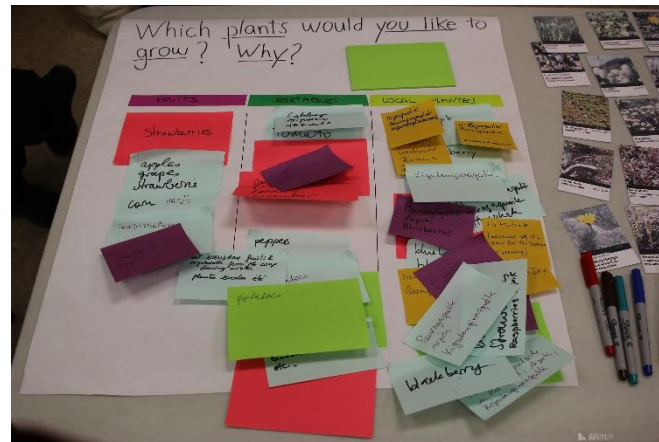
Local partners

- Gardeners and volunteers
- Childcare centers
- Supervised apartments
- Municipal administration of Kangiqsujuaq
- Makivik Research Center
- Nunavik Regional Board of Health and Social Services

An interdisciplinary participatory action research



Annie Lamalice, 2016



Annie Lamalice, 2016



Véronique Coxam, 2016



Véronique Coxam, 2016



Didier Haillot, 2016



Annie Lamalice, 2016

The three dimensions of the project



1-Technical and organizational challenges



2-Ethnobotany

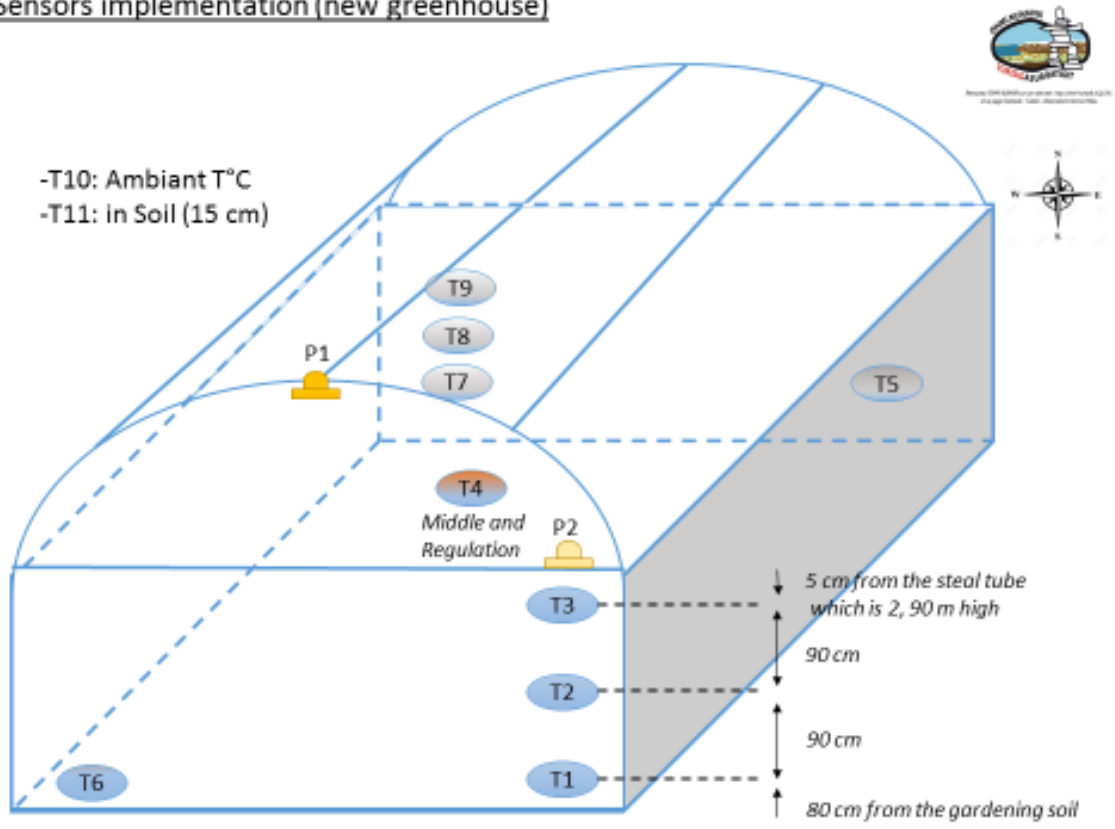


3-Nutrition and health



1-Technical and organizational challenges: managing energy

Sensors implementation (new greenhouse)



Didier Haillot 2016

Pictures: Didier Haillot 2016

1-Technical and organizational challenges: the soil

- The possibility to use local soil for gardening
- The compost project
- Hydroponic cultivation



Véronique Coxam, 2016



Annie Lamalice, 2016



Jacques Bertrand, 2016

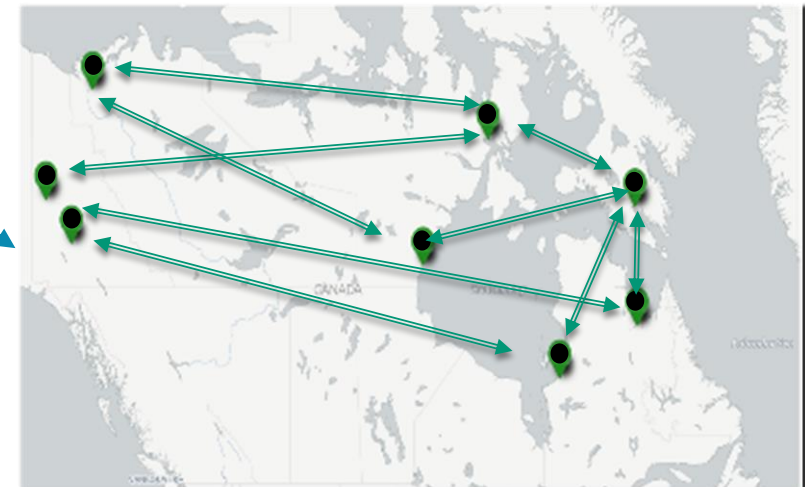
1-Technical and organizational challenges: acquiring knowledge

Annie Lamalice, 2016



Involve the children

Acquiring and sharing knowledge



Create a Web platform to share information

Planting tips

Carrots

Generalities

Latin name : *Daucus carota*
 Family : Apiaceae
 Origin : Afghanistan

Size : 10 cm

Exposition in full sun or light shade

Carrots germinate from 10°C, but they are resistant to cold period.

Watering
Drench regularly

Harvest

Pick carrots as soon as the size is reached and coloring is orange :

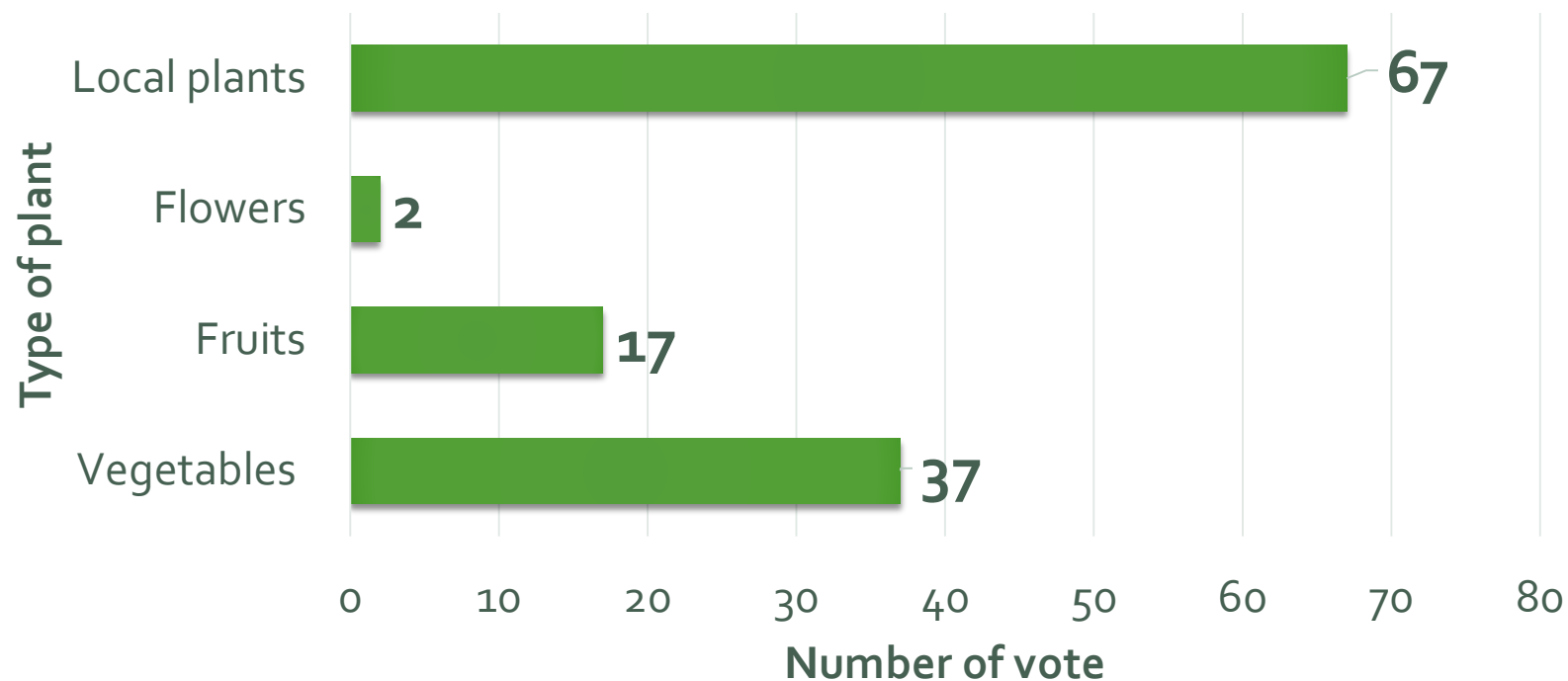
- diameter : 2,5cm
- height of foliage : 19-20cm
- root length : 10cm

Better to consume fresh

Co-produce documentation

2-Ethnobotany

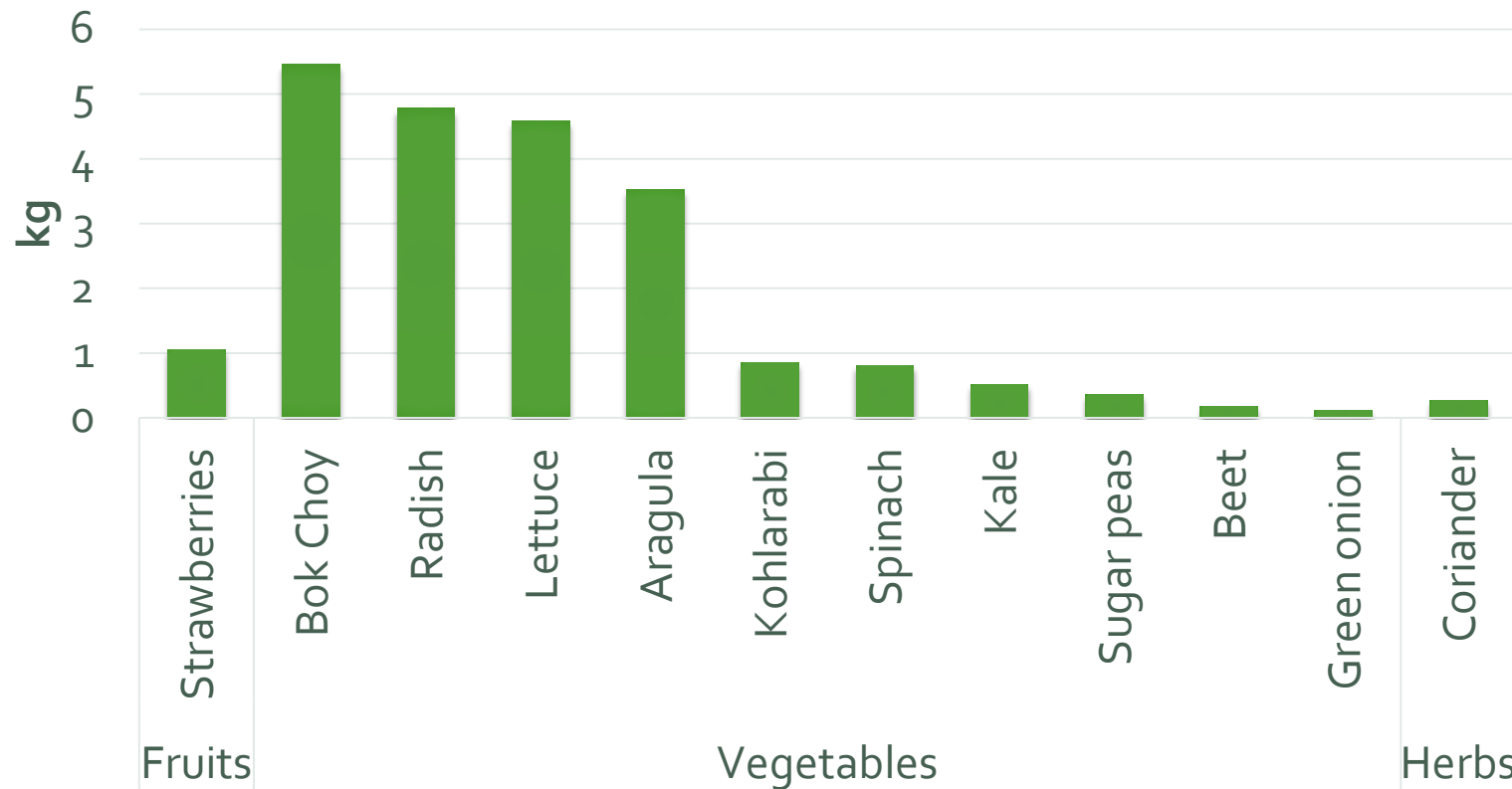
Which type of plants would the population of Kangiqsujaq like to grow?



Hélène Draper, 2016

3-Nutrition and health

Type and weight of the crops in Kuujjuaq's greenhouse between June 25th and July 24th 2016

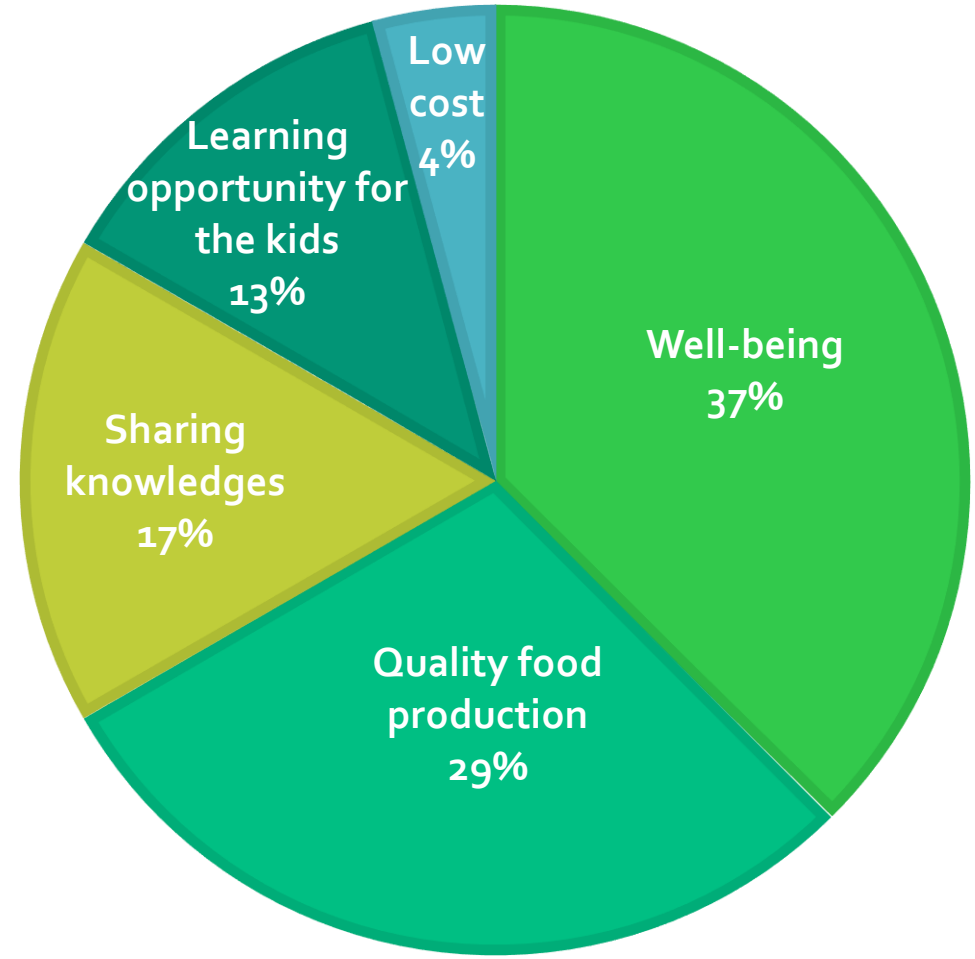


Hélène Draper, 2016

3-Nutrition and health

Benefits of a greenhouse project according to Kuujjuaq's gardeners, June 2016

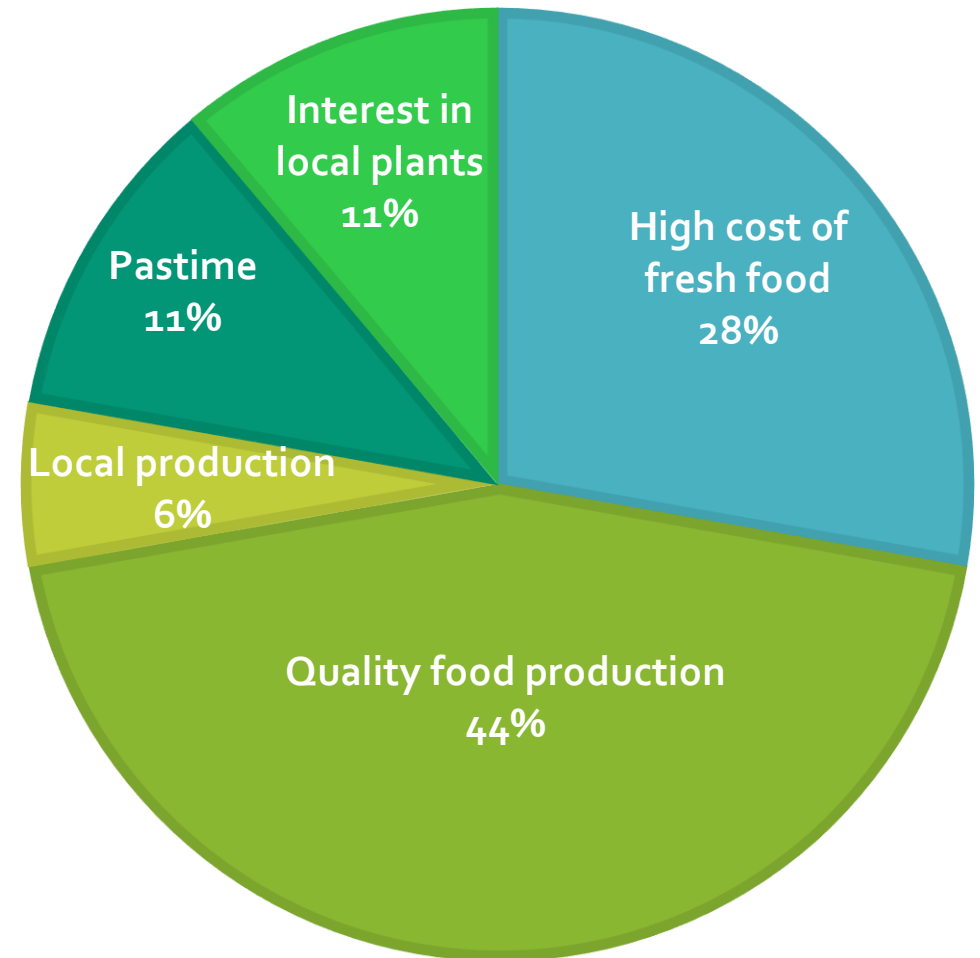
- " Gardening is fun!"
- " Relaxing "
- " Contact with nature "
- " Good vegetables "
- " Fresh vegetables "
- " Organic vegetables "
- " Sharing knowledge "
- " Learning opportunity for kids "
- " Low cost "



3-Nutrition and health

- "We like fresh things"
- "Fresh fruits, vegetables and local plants"
- "fresh-fresh veggies and fruits"
- "Wouldn't cost a lot of money"
- "Veggies and fruits are too expensive"
- "To save some money"
- "No need to ship the food"
- "It's nice to grow flower"
- "I like local plants"

Interest for a greenhouse project in Kangiqsujuaq, July 2016



Conclusion



Acknowledgement

Research partners in Nunavik: Davidee Nulukie– Marc-André Lamontagne and all the gardeners of Kuujjuaq –The Tumiapiit Child care center - The NV of Kangiqsujuaq – Northern Villages of Kuujjuaq and Kangiqsujuaq – Nunavik research center (Makivik Corporation)

Sponsors: Le Labex « Dispositif de Recherche interdisciplinaire sur les Interactions Hommes-Milieux » (DRIIHM) et l'OHMI Nunavik- Le Fond de Recherche du Québec – Société et Culture - Le Conseil de Recherches en Sciences Humaines du Canada (CRSH) – Le Conseil québécois de l'horticulture (CQH) - Kativik Regional Administration (KRG) - L'Association universitaire canadienne d'études nordiques (AUCEN) -