



BUGI

Western Balkans Urban Agriculture Initiative

Presentation title

Local nutrients in urban agriculture

by

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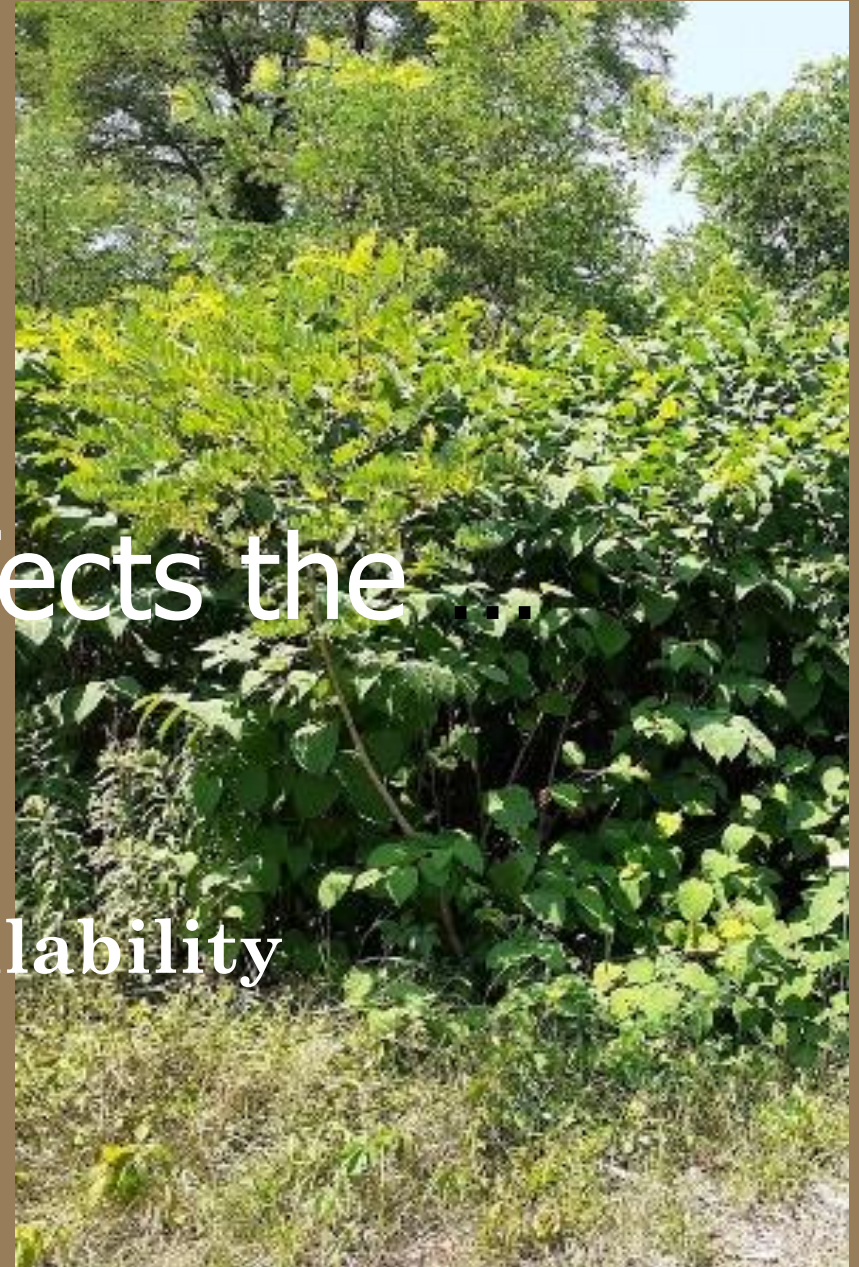
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Challenges

Japanese knotweed affects the ...

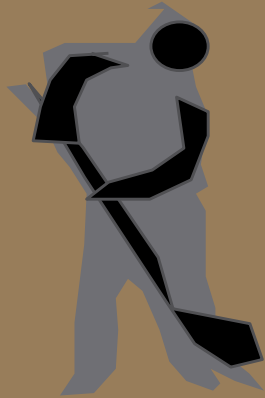
- native biota diversity & activity
- soil erodibility & nutrient availability
- ecosystem structure & function



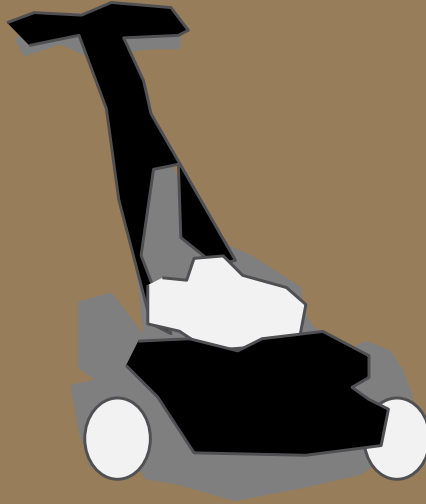
Management Methods



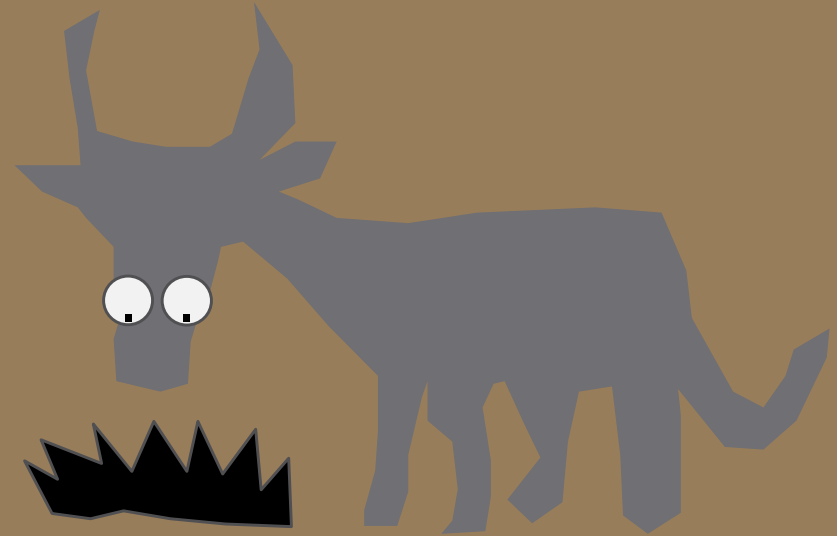
excavate



dig

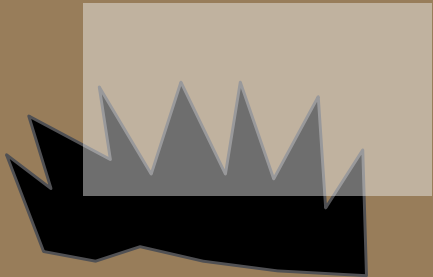


mown



graze

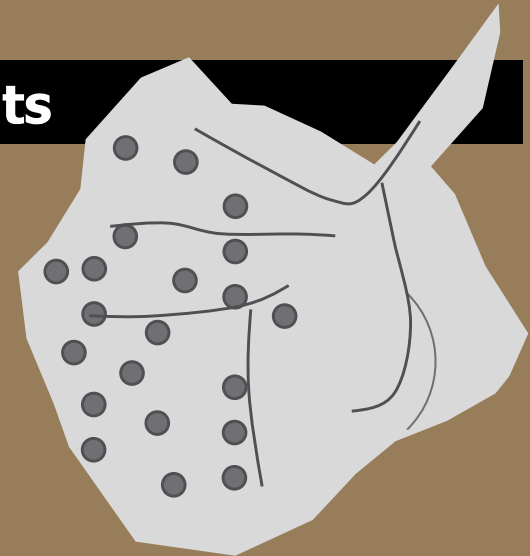
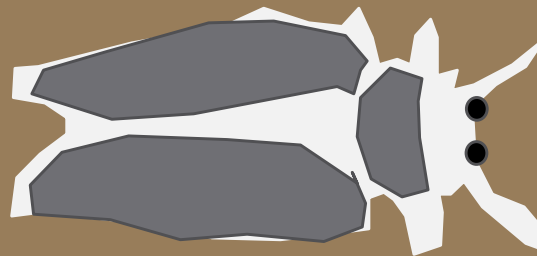
cover



pull



use biological agents



After removal

restore the grounds

&

recultivate the area

Ecosystem services

CARBON ADSORBENT
TEXTILE
BIOFUEL
CELLULOSE
FUNGICIDE
HEATING BRIQUETTES
MEDICINE
INSECTICIDE



Invasives in Support of Urban Farming

**Community
involvement**

do it together

New use: Organic fertilizer(OF)



Chop

Add EM*

Ferment

use
OF



© Cvejić, 2017



*Effective
microorganisms



© LivadaLAB, 2021

Why fermentation, why EM*?

Fermentation vs. composting

- ↓ energy input
- ↓ release of gaseous compounds in air
- ✓ plant nutrients remain in the OF
- ↓ microbial degradation
- ↑ secondary products
- ↓ C footprint
- ↓ Pathogenic microorganisms

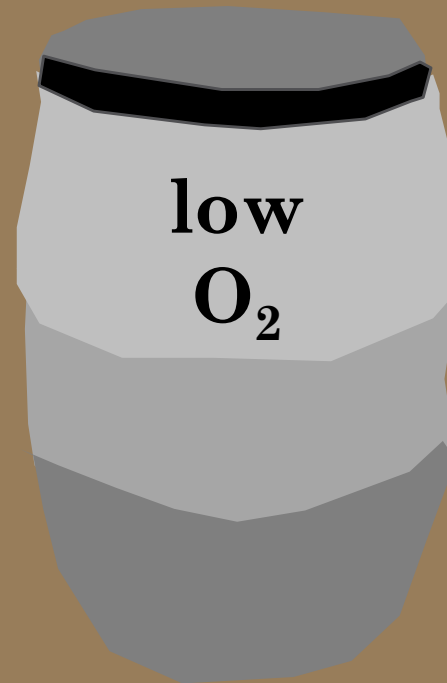
!! Caution: propagules

*Effective microorganisms

↑ soil biological activity

↑ physical
and chemical
soil properties

↑ plant growth



Organic fertilizer characteristics (% in fresh matter)

Major characteristic and comparison to other fertilizers

N 1.59, P 0.19, K 1.00

N > cattle farmyard manure

N \approx solid poultry, rabbit manure

% DM 49.6

%DM \approx composts, > digestates

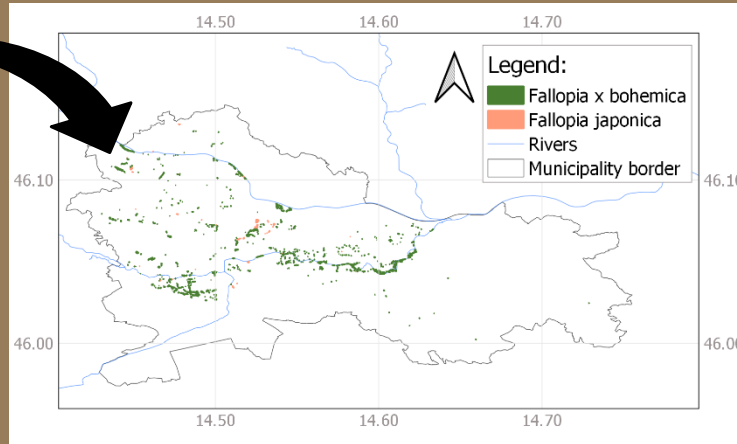
C/N 14.5:1

C/N narrow, N would be readily mineralized after the OF in soil

P and K ratio

P & K \approx needs of vegetables, which take up 4 to 8 times more K than P

OF developed and applied



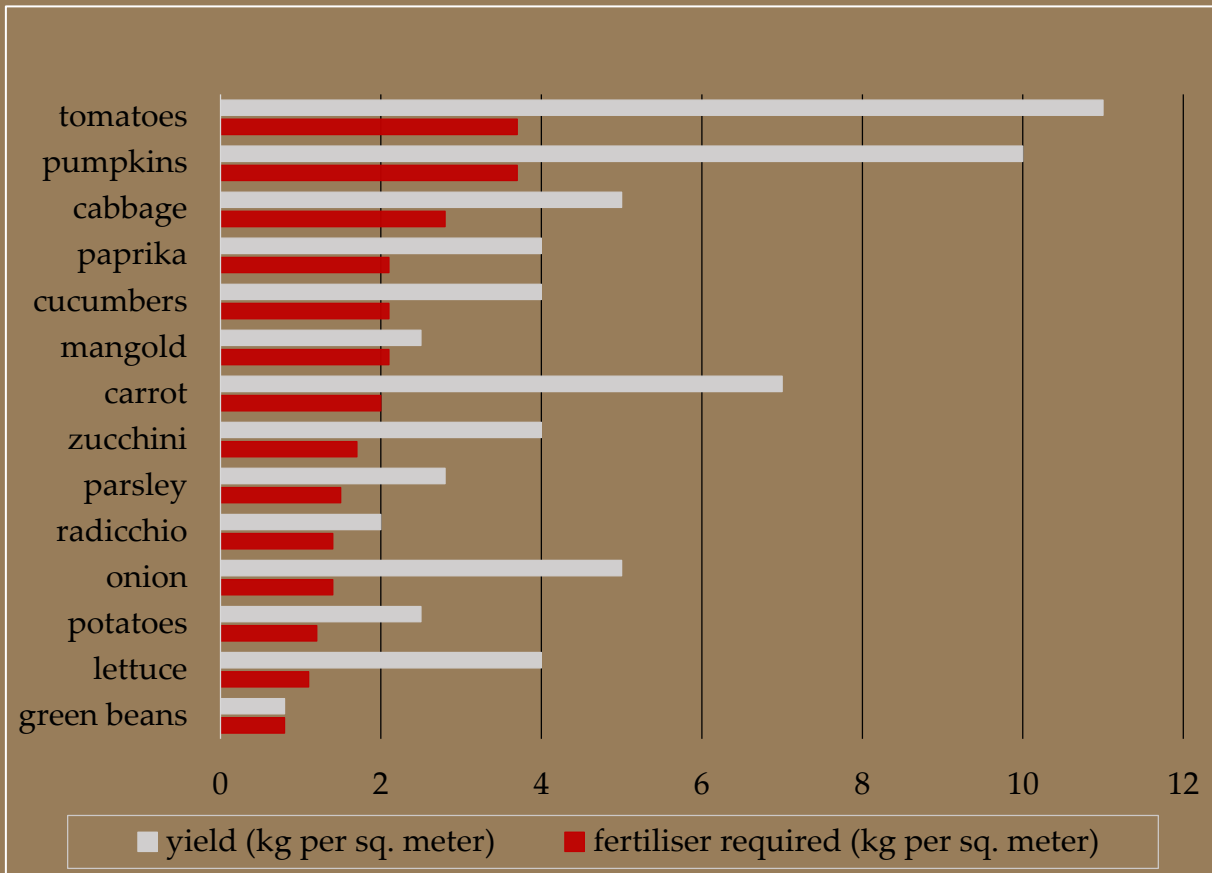
In Ljubljana, Slovenia, approximately 35 ha (0.13%) of municipality-owned land is infected by Japanese and Bohemian knotweeds.



Required application (kg/m²)

*assumed recovery efficiency for N 46%

Selected crops



Average

- Yield: 5 kg/m²
- Application: 2 kg/m²
- Coverage:

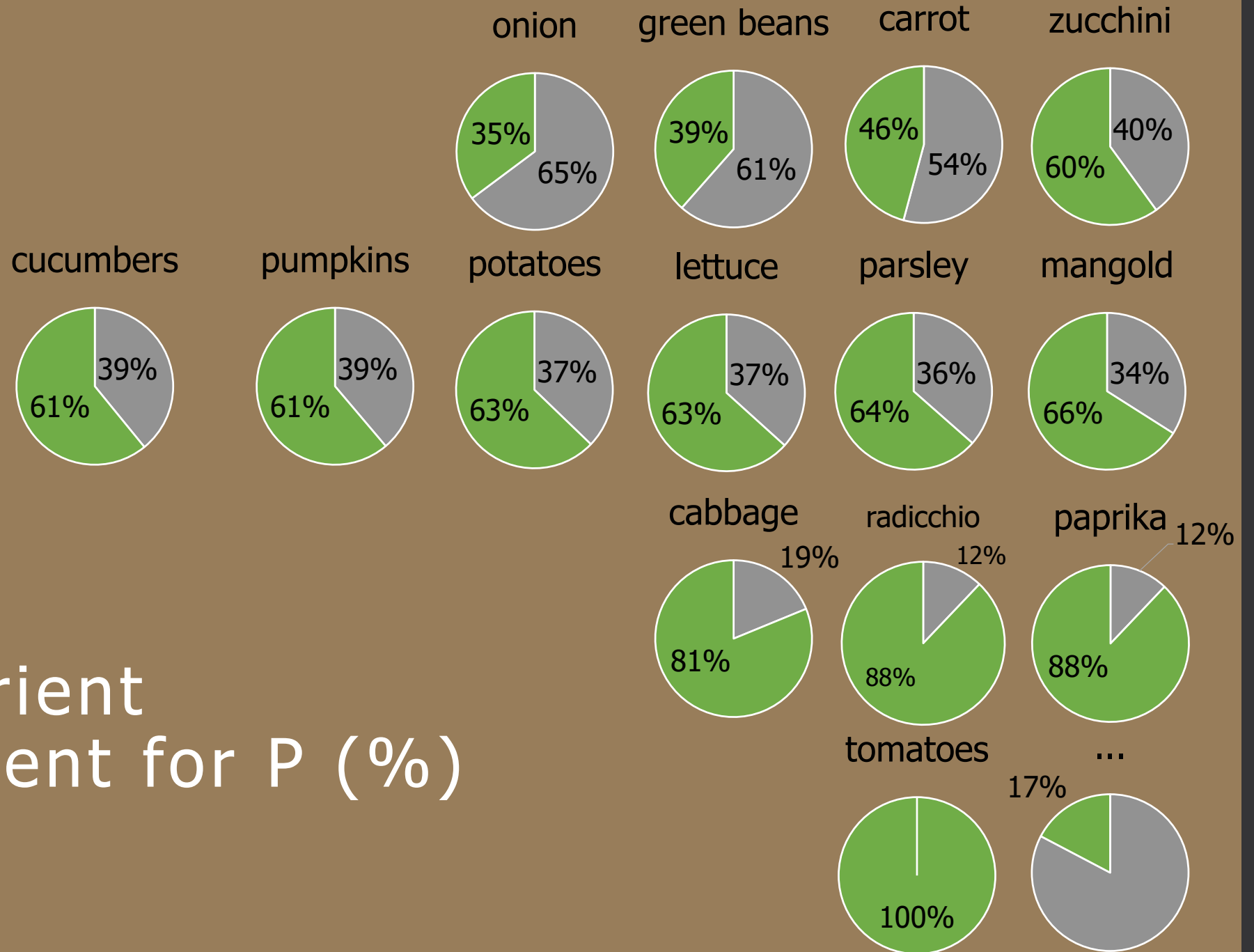
100 % N

66 % P

88 % K

P

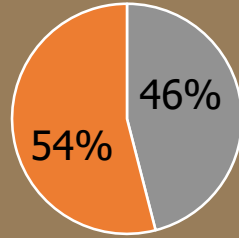
Supplied
crop nutrient
requirement for P (%)
100% N



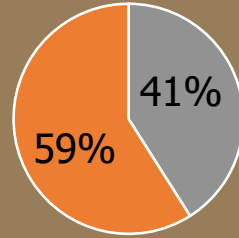
K

Supplied
crop nutrient
requirement for K (%)
100% N

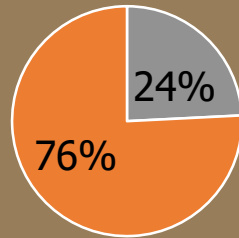
green beans



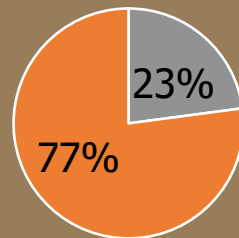
carrot



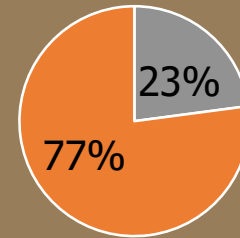
lettuce



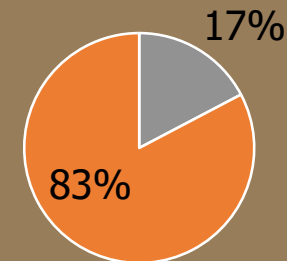
onion



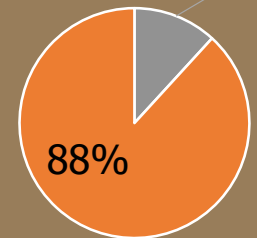
potatoes



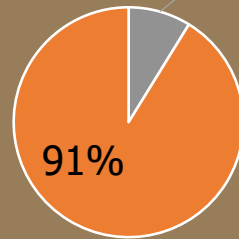
zucchini



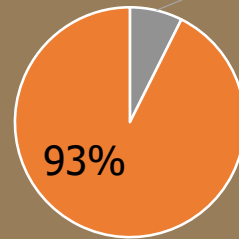
pumpkins 12%



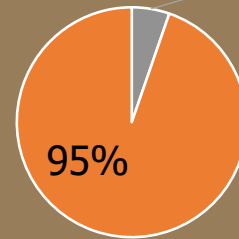
parsley 9%



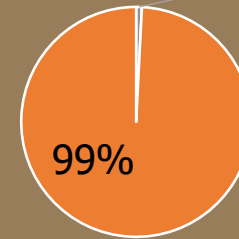
mangold 7%



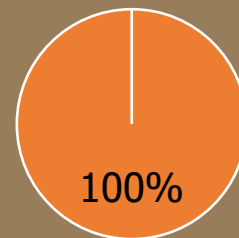
cucumbers 5%



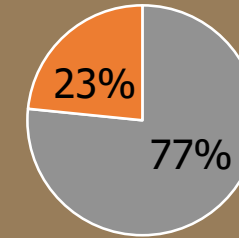
cabbage 1%



tomatoes



...



Implications for urban land use planning and community involvement?

- viable alternative
- simple production process
- mechanized approach
- interrupted plant reproductive cycle
- circular economy
- community management
- possible reluctance of users?

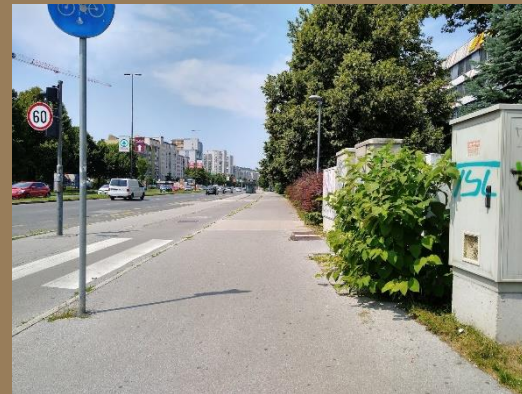
Riparian vegetation



By the railroad



By roads



Contraction pits



Read more:

Cvejić et al., 2021. Invasive Plants in Support of Urban Farming
Fermentation-Based Organic Fertilizer from Japanese Knotweed. DOI:

<https://doi.org/10.3390/agronomy11061232>



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Invasive Plants in Support of Urban Farming: Fermentation-Based Organic Fertilizer from Japanese Knotweed

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