



**ITA TUNNELLING**  
AWARDS 2019



# Underground Green Farming

## Switzerland

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# Motivation

## Underground Green Farming

### Advantages of underground farming

- Safe against impacts of climate change
- Closed and controllable environment
- Constant climate conditions
- No impact on the natural ecosystem
- Local production in urban areas







# Underground Green Farming

- Interdisciplinary and comprehensive approach
- Development and commissioning of the first UGF prototype
- Sustainable food production by using aquaponics
- Specific research program
- Proof of concept





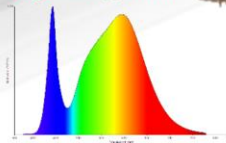
# Aquaponic cycle



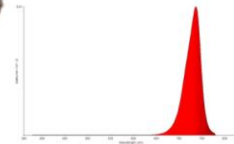
## Wavelength for plant growth



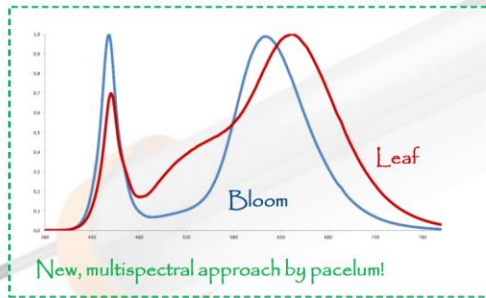
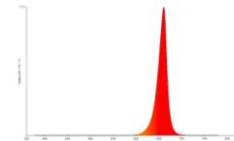
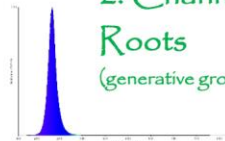
1. Channel =  
Leave & length  
(vegetative growth)



3./4. Channel =  
Flower & taste  
(generative growth)



2. Channel =  
Roots  
(generative growth)





# Impressions of the prototype







# Project stakeholders

SCAUT = Project owner

- Innovation platform / partner network
- New concepts and solutions for the use of underground space
- Driven by the industry («applied technologies»)
- Enabler / catalyst





# Project stakeholders

## SCAUT industry consortium

- Amberg Group (CH)
- AMP Aquaponic Management Project (FRA)
- Pacelum (GER)
- Hagerbach Test Gallery (CH)







# Main achievements

- Innovative way of the use of underground space
- Urban food security
- Reduction of the carbon footprint
- UN Global Goals for Sustainable Development
- Awareness campaigns





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# Outlook

- Industrial food production
- Different food applications
- Use of synergies with other underground applications





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**SCAUT**  
Swiss Center of Applied  
Underground Technologies

Thank you for your attention!

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