Fruit City – Raising awareness of edible landscapes in cities

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Background and Goals

This experiment addressed two pressing issues: the unsustainability of urban areas and current food systems. Urbanization and dominant food practices negatively impact the environment and deplete natural resources, making cities less habitable and reducing biodiversity in surrounding agricultural landscapes. As a science communication experiment, the project focused on meadow orchards (Streuobstwiesen) as a sustainable urban initiative. Meadow orchards, consisting of fruit trees and meadows grazed by livestock, are biodiverse cultural landscapes that preserve old fruit varieties and genetic diversity. However, these orchards are being replaced by intensive agriculture, leading to reduced biodiversity and reliance on pesticides. Establishing meadow orchards in urban areas could protect these landscapes, enhance urban biodiversity, and improve local recreation by allowing city dwellers to harvest fruits. A kickoff event in October 2021 at the Botanical Garden and a workshop series at Biotopia Lab explored the potential of meadow orchards in cities, aiming to inspire city dwellers to recognize the importance of biodiversity in food systems and the preservation of old fruit varieties. The target group was primarily urban adults aged 18 to 60, but families with children also participated, prompting the inclusion of interactive sessions for children.

The experiment tested several hypotheses: that family workshops enhance public awareness of ecological and socio-economic relationships; that these workshops effectively communicate the cultural and environmental importance of urban meadow orchards; and that hands-on activities, such as apple juicing with a cider press or soil exploration, effectively convey knowledge about planetary health to a broad audience, including children.

SciComm Format and Evaluation

The kickoff event took place during the SENSE festival and the annual Thanksgiving exhibition at the Botanical Garden in September 2022. The Fruit City project featured an antique cider press for juicing regional apples, interactive inquiries to assess visitors' awareness of meadow orchards, and an interactive station for children to illustrate tree growth needs. This event identified knowledge gaps that informed the subsequent workshop series. The workshop series, addressing the identified knowledge gaps, consisted of six workshops over five weekends from March to September 2023 at Biotopia Lab. Each session, lasting 40 minutes and conducted multiple times per day, explored different aspects of an apple tree from soil to fruit. Various experts were invited to lead these workshops, ensuring comprehensive content support. The project group, named Fruit City, created a logo and an Instagram page to notify the public about their activities and ensure easy recognition.

The following section will showcase the specific content of each workshop and their respective evaluations:

- Workshop 1: "A Glance Through the Soil Window" (March 5, 2023) – This workshop introduced participants to soil science using the Geowindow, an observation chamber (see figure 1). The session covered soil formation, compaction, and bioturbation, emphasizing the importance of healthy soil for meadow orchards. Activities included filling the Geowindow with soil layers and observing water flow and groundwater regeneration.

- Workshop 2: "The Edaphon – An Unknown Universe" (March 18, 2023) – This workshop focused on the soil microbiome. It included a presentation on soil organisms and their importance, followed by hands-on microscopy of soil samples to identify various microorganisms and their roles in soil health.
- Workshop 3: "No Insects, No Fruits – Fruit Tree Flowers and Their Pollinators" (April 15, 2023) – Participants learned about insect pollination, dissected flowers to study their structures, examined honeybees under microscopes, and analyzed honey samples to understand pollen diversity and the role of pollinators.
- Workshop 4: "Biodiversity of the Meadow Orchard" (May 14, 2023) – This workshop discussed the birds of meadow orchards using taxidermies and bird songs. The session also covered the establishment and maintenance of urban meadow orchards, with participants examining seeds under microscopes.
- Workshop 5a and 5b: "Apple's Arc – The Genetic Diversity of Old Apple Varieties" and "Best of FruitCity Workshops" (September 23-24, 2023) – These workshops highlighted the importance of preserving old apple varieties. Activities included apple juicing with a historic cider press, tasting, and discussing sustainable apple cultivation (see figure 2).

The evaluation was conducted in two stages using qualitative and quantitative methods. During the kickoff event, visitors rated their knowledge and attitudes towards meadow orchards using a 5-point scale. The workshop series included pre- and post-workshop questionnaires, noting the challenge of family participation affecting response accuracy. This led to a shift to family-based surveys. There are some noteworthy limitations and recommendations for future experiments. Participants were mostly from the Biotopia and Botanical Garden visitor base, introducing bias. Different attendees per session and incomplete responses posed challenges. Recommendations include using a control group for better impact assessment and conducting workshops across diverse neighborhoods to reach a broader demographic. Quantitative data was analyzed using Microsoft Excel to generate descriptive statistics and graphs, while qualitative data from open-ended questions identified common themes. Observations during events were meticulously documented to provide a comprehensive overview of the workshops' impact.

Results and Discussion

The demographic data revealed a balanced gender distribution and a high educational level among participants, predominantly German speakers from various professions, suggesting a need for broader outreach. The workshops aimed to assess participants' knowledge, perceptions, and attitudes towards orchards, environmental influences, and biodiversity. Participants rated their knowledge about orchards on a 5-point Likert scale before and after each workshop. The displayed changes in those constructs are of purely descriptive nature since due to the data structure, it is not possible to determine whether these changes are statistically significant. The average knowledge score increased, indicating a general rise in knowledge. The perceived importance of fruit trees and meadow orchards in Munich showed minimal change, suggesting participants were already informed and reflective. Participants' awareness of human-made influences on the environment and vice versa was assessed, resulting in a slight increase in average agreement for both statements. Participants rated generally rated their satisfaction with the workshops very high. Most participants were satisfied and likely to recommend the workshops, with a total of 186 recommendations. The workshops' impact on participants' perspectives on living soil organisms and biodiversity was rated post-workshop, reaching moderate, yet positive scores. This highlights the workshops' potential long-term benefits.

Methodological limitations constrain the statistical analysis, such as unmatched pre- and post-survey samples and high dropout rates. Despite these issues, the workshops' qualitative feedback underscores their positive impact. Participants gained valuable insights into soil structure, the role of soil organisms, pollinators, and the importance of old fruit trees for biodiversity.

These findings suggest that while quantitative data showed slight changes, qualitative responses revealed significant learning and increased environmental awareness among participants. This iterative process will inform future workshop improvements, fostering a more informed and engaged community regarding meadow orchards.

Figure 1: Workshop participants use the historic cider press to make apple juice.

Figure 2: Workshop participants watching the experimental model setup of the Geowindow to illustrate how rainwater seeps into the soil.

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