

## Idea for the establishment of a *rootstock/rootstock-hardy fruit tree* working group

Kirchensaller Mostbirne and Bittenfelder Seedling, the most commonly used rootstocks for full standard trees in central Europe (DACH region), are reaching their limits as rootstocks. Diseases, pests and increasingly long periods of drought and heat waves have been severely affecting these rootstocks for several years.

Alternative, strong-growing rootstocks have been lacking due to more or less a complete lack of research in this area over the last 70 years. The knowledge that used to exist has evaporated during this time and is also very poorly documented. Healthy, highly vigorous, full-standard size, old trees could show the way. To achieve this, it would have to be possible to use these characteristics for the full-standard, vigorous trees of the future. Are there ways to obtain these trees with their characteristics as future rootstocks or even as true-root trees?

The idea arose to work on this challenge within a working group in the Pomologist Association of Germany with a citizen-science approach with an invitation to interested public research institutions.

The necessary steps seem to be as follows:

1. Identify stakeholders in this area
2. Bring interested parties together and
3. Formulate a joint work program for the next few years
4. Implement and develop this step by step.
5. Search for sponsors

### 1) Search for suitable mother trees

Requirements for future sustainable fruit rootstocks are vigorous growth, maximum vitality and high resistance to the most important pests and diseases. The first priority is to identify old (evolution-tested) and still vital apples and pears for seed production, among other things.

Growing vigorous trees on their own roots is also an important topic.

The desired rootstock varieties and true-to-root varieties should be easy to propagate, suitable for different locations, stable in yield and have a high affinity to cultured varieties when grafted. In addition, they should be extremely robust (e.g. pear blight, Diplodia canker) and as tolerant as possible to pest infestation under normal conditions (e.g. aphids, Phytophthora crown, collar and root rot, Nectria canker).

### 2) Possible propagation methods:

Seedling cultivation of suitable varieties or species in greenhouses/containers or in pomace beds or direct sowing to later locations.

**Malus domestica:** e.g. seeds of varieties with a proven history of extreme vitality and vigorous growth and/or very late blossoming (→ self-pollinating?) like Luiken varieties, Pomme d'or, Genereuse de vitry and other suitable varieties.

#### **Malus sylvestris**

#### **Malus sieversii**

**Malus sylvestris spp.** e.g. from dry summer regions such as southern Syria.

- Crossing of varieties or species that appear suitable in order to find new “rootstock types”.
- Cuttings.
- Suckers from suitable standard fruit trees.
- Auxiliary rooting (deep grafting on standard rootstocks such as M 9 or Bittenfelder).

- Meristem propagation.
- Other methods.

## 2a) Cultivation partners

In order to minimize risks, it makes sense to distribute the cultivation of new rootstocks, which are then to be tested, to various reliable partners. People who have such possibilities are therefore also sought (agricultural land, old greenhouses lying fallow, tree nurseries with niche options, ...).

## 3) Test plantings:

Long-term observation and assessment of the young trees obtained at various locations:

- Ideally in larger replicate numbers.
- Possible comparison with standard rootstocks, such as Bittenfelder Seedling in Germany, for example.
- Either as true-root trees if suitable, or grafted with a suitable high-vitality local variety depending on the location.
- Possibly also nationwide varieties, such as Winterrambour or Brettacher in Germany (DACH-region?), for broader comparison.
- Entry of each of the trees with information on the tree and GPS data for longer-term data collection possibility (10 to 30 years and more).

## 4) Procedure:

### Step 1: "Rounding up the herd..." The 5 Questions:

To all those who may be interested in any way of participating, the following questions:

1. Who is already doing what in the area of rootstocks/true-root (seedling) fruit trees?  
(Please give a short description in max. 3-5 sentences)
2. Who would like to do something and with which possibilities?
3. Who sees themselves where in this Working Group (technical, organizational, supportive)?
4. Who has good references from literature sources and oral traditions?
5. Who can do good literature research?

The feedback will be summarized in a file and sent to all those who participate as a collective document within this group with their name, postcode and email address so that everyone has the same level of information.

**Step 2 is a (hybrid) one-day working meeting** at which the current situation is briefly described, and the next steps are discussed - preferably in the coming winter of 2024 / 2025

**Step 3** will be defined when the time is right

Please send the answers to questions 1-5 to either Roman Eisenring (focus on pears) or Christoph Schulz (focus on apples) by **15.12.24** - Thank you!



Roman Eisenring, Oberdorfstrasse 13, CH-9248 Bichwil, [pirum-radix@gmx.info](mailto:pirum-radix@gmx.info)

Christoph Schulz, Hauptstr. 97/1, D-74226 Nordheim, [bindus.achtebacht@gmail.com](mailto:bindus.achtebacht@gmail.com)

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