Reducing Disease Risk by Discovery, Introduction and Commercialization of New Citrus Varieties

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Year 2 of 3 (100% Complete)

Objectives
1. Identify Varieties to Introduce
2. Initiate Introduction of Varieties
3. Make Public Aware of Introduced Varieties

Problem and Significance
Hobbyists would like to grow many citrus varieties that are unavailable from the Citrus Clonal Protection Program (CCPP). For many citrus varieties, non-certified budwood can be used by hobbyists and small nurseries to propagate trees. Propagation and movement of citrus trees that originate from non-certified budwood are a severe threat to citrus in California because of the possibility of spreading huanglongbing (HLB) and other diseases.

Benefit to Industry
Introducing citrus varieties desired by hobbyists via the CCPP reduces the threat of hobbyists spreading disease via the movement of diseased citrus propagative material.

Progress Summary
In order to effectively survey online audiences, I deployed modern web-based survey software that enables surveys with high completion rates. I used the software to create a survey to help understand the frustrations of hobbyists and what citrus varieties ought to be introduced. I sent emails to my audience asking them to take the survey. I also published a YouTube video and a web article asking my audience to take the survey. I worked with translators and also conducted the survey with Spanish-speaking, Chinese-speaking, and Vietnamese-speaking audiences.

I also conducted Zoom meetings with both the Orange County Chapter and the Monterey Bay Chapter of the California Rare Fruit Growers to get input from more California citrus hobbyists as to what citrus varieties ought to be introduced.

In all I received more than 400 survey responses via the survey software. In researching the citrus varieties from the survey I discovered a California nursery that was selling budwood online of 49 different citrus varieties, seven of which are not available from the CCPP. I also discovered another nursery that appeared to be selling trees of some of the varieties not available from the CCPP. I reported these findings to the California Department of Food and Agriculture (CDFA) and observed several weeks later that the nursery that had been selling budwood online stopped selling budwood online.

Based upon both the hobbyist feedback and also the non-certified varieties being distributed by the nursery, the introduction of the following ten varieties was initiated with the CCPP: Poorman Orange, Kinkoji, Tankan, Sunquat, Sanbokan, Ichang Lemon, Ichang Papeda, Morton Citrange, Hyuganatsu, and Ten degree tangerine.

Conclusions
By surveying citrus hobbyists it is possible to determine citrus varieties that ought to be introduced to reduce the spread of HLB and other diseases. Properly introducing discovered varieties via the CCPP is expected to satisfy the demand from citrus hobbyists and reduce the spread of disease. Furthermore it is possible to discover the source of illegal distribution of non-certified propagative material by online research of varieties sought by hobbyists. As this research appears to be unique and the project is ending, perhaps the CDFA should hire someone to conduct this type of
research to further reduce the distribution of non-certiﬁed citrus propagative materials in California.

**CRB Project # 5200-172**

**Publications and Presentations**


Willey, D. (2021) 关于柑橘品种的反馈 [Online]. at: [https://fruitmentor.com/zh-hans/%e5%85%b3%e4%ba%8e%e6%9f%91%e6%a9%98%e5%93%81%e7%a7%8d%e7%9a%84%e5%8f%8d%e9%a6%88](https://fruitmentor.com/zh-hans/%e5%85%b3%e4%ba%8e%e6%9f%91%e6%a9%98%e5%93%81%e7%a7%8d%e7%9a%84%e5%8f%8d%e9%a6%88)

Wille, D. (2021) 品尝 *Citrondarin*, 一种来自前苏联的奇异的柑橘类水果 [Online]. at: [https://fruitmentor.com/zh-hans/%e6%9c%80%e5%a5%87%e6%80%aa%e7%9a%84%e4%bf%84%e7%bd%97%e6%96%af%e6%9f%91%e6%a9%98%e7%b1%bb%e6%b0%b4%e6%9e%9c](https://fruitmentor.com/zh-hans/%e6%9c%80%e5%a5%87%e6%80%aa%e7%9a%84%e4%bf%84%e7%bd%97%e6%96%af%e6%9f%91%e6%a9%98%e7%b1%bb%e6%b0%b4%e6%9e%9c)
