

Terms of Reference

Purchase of Laboratory freezer MVE Fusion series

Location of installation: CIP facilities at Huancayo

Date: April 05, 2022

1. Background

The International Potato Center (CIP) conserves one of the largest clonal germplasm collections of potato, sweetpotato and other roots and Andean crops. Cryopreservation, i.e., the conservation of plant material at ultra-low temperatures in liquid nitrogen (LN; -196 °C), is currently considered as the best method for long-term conservation of clonally propagated plants. In this case, small parts of the plant (generally shoot tips), are protected with chemicals against the extreme temperature of LN, plunged into LN, stored in small 2 mL cryovials (with LN), and then transferred to cryoboxes which are located in large-capacity tanks filled with LN (called cryotanks). Over the last 10 years, CIP has built up the world's largest potato cryobank, conserving >4000 potato accessions in its cryotanks. The genebank is planning to maintain a national safety copy of its cryo-collections at CIP facilities in Huancayo. For this purpose, it is required to purchase a new cryotank, fully equipped with stainless steel racks and cryoboxes. Classic cryotanks continuously lose some LN by evaporation, and hence they must be refilled periodically with LN, in order to restore the LN loss. Chart Industries has developed a next generation of cryotanks, called "Fusion Technology", in which the evaporated LN is recycled and liquified again, without the need of refilling the tank. This new technology is the option to choose for a more remote place like Huancayo, as it guarantees nearly complete autonomy, saves costs (LN) and only consumes minimum staff time for maintaining the cryo-collection.

2. Technical description

- Manufacturer: Chart Industries (US)
- Model: MVE Fusion® 1500 Series
- Capacity: 31200 cryovials (2 mL)
- Required accessories:
 - o 20 racks for 100-vial cryoboxes
 - o 16 mini-racks for 25-vial cryoboxes
 - o 260 standard cryoboxes (capacity: 100 cryovials [2 mL])
 - o 208 mini cryoboxes (capacity: 25 cryovials [2 mL])
 - o Back-up battery (for the case of energy cuts)
 - o Cryotank on wheels
 - o Stairs should be included

3. Delivery

- Cryotank, racks, and back-up battery should be delivered and installed at CIP facilities in Huancayo
- Cryoboxes (standard, mini) should be delivered to CIP-HQ at Lima
- The cryotank should be fully operative in September/October 2022

4. References

- <https://mvebio.com/wp-content/uploads/2020/09/mve-fusion-series-spec-sheet.pdf>
- <https://www.directindustry.com/prod/chartindustries/product-205287-2169923.html>