

Abstract

One of the main objectives of the Highland Research and Development Institution (Public Organization); HRDI, is to support research and development projects and the application of the research outcome of the projects to others highland areas or for public uses. However, the implementation of the research results so far has not been done with the feasibility study of such research products.

In this study, we investigated the feasibility of the selected research products resulted from the research projects of HRDI and evaluate the possibilities of commercializing in different ways i.e.; self-production and distribution, licensing to entrepreneur or a company or a joint venture. In addition, the guidelines and recommendations for developing the suitable product has been developed along with the feasibility study report for each product. Primarily, HRDI selected 18 research projects for the study and we had selected the 8 potential research products possible for commercialization. The 8 selected projects were further studied in detail for feasibility in terms of financial return, business model, and others suggestions for the suitable product development.

The research products from HRDI can be classified in 10 category; (1) Products for face and skin such as face nourishing cream from tea leaves extract, skin inflammation inhibiting gel, skin cream products from *Harrisonia perforata* (Blanco) Merr and wrinkle removing gel from *Caesalpinia sappan*. (2) Product for hair and hair skin such as hair and hair skin nourishment. (3) Product for oral such as inflammation in the mouth and throat reduction spray. (4) Products for skin such as herpes virus inhibitor and wound wrapped removing gel from tea leaves extract. (5) Bioproducts such as bioproduct powder for seed, soil improvement bioproduct, cricket protection bioproduct, plants growth promoting bioproduct and postharvest diseases control bioproducts. (6) Pheromones such as melon fly pheromones. (7) Products for construction material such as hemp block. (8) Supplementary food such as supplementary food from hemp oil. (9) Test kit such as THC test kit. And (10) Herbal product such as massage oil from *Celastrus paniculatus* Willd. The research products were classified in different TRL from 2 to 6. TRL 2 in LAB scale with prototype was herpes virus inhibitor. TRL 3 with field or clinical trial test was melon fly pheromones. TRL 4 in pilot scale were soil improvement bioproduct, cricket protection bioproduct, soil improvement bioproduct, massage oil from *Celastrus paniculatus* Willd, hemp block, THC test kit and supplementary food from hemp oil. TRL 5 with product standards were skin cream products from *Harrisonia perforata* (Blanco) Merr, wrinkle removing gel from *Caesalpinia sappan* and wound wrapped removing gel from tea leaves extract. TRL 6 with pre-industrial production were face nourishing cream from tea leaves extract,

inflammation in the mouth and throat reduction spray, skin inflammation inhibiting gel, hair and hair skin nourishment, bioproduct powder for seed and postharvest diseases control bioproducts.

The research products were classified in different MRL from 4 to 6. MRL 4; a development stage or production process which is primarily as a prototype in the laboratory (Prototype); were THC test kit, soil improvement bioproduct, melon fly pheromones and herpes virus inhibitor. MRL 5; the research products with prototype which has an optimization of the production rate and efficiency in pilot scale; were hemp block, supplementary food from hemp oil, bioproduct powder for seed, postharvest diseases control bioproducts and massage oil from *Celastrus paniculatus* Willd. MRL 6; the research product was tested and qualified for produce as pre-full rate production based on basic standards support; were face nourishing cream from tea leaves extract, inflammation in the mouth and throat reduction spray, hair and hair skin nourishment, skin cream products from *Harrisonia perforata* (Blanco) Merr and wrinkle removing gel from *Caesalpinia sappan*.

The potential of 8 research project for commercialization was selected by assessing the feasibility of marketing, technical, management and financial. It was found that THC test kit was suitable for self-production. Bioproduct powder for seed, hemp block, massage oil from *Celastrus paniculatus* Willd, herpes virus inhibitor and face nourishing cream from tea leaves extract were suitable for OEM. Whereas, postharvest diseases control bioproducts and melon fly pheromones were suitable for both self-production and OEM.

Keywords: Highland Research and Development Institution, HRDI, feasibility study, commercialization, research