

Nomination: 18544

Upcycle! AgriUpcycling Turning Waste to Wealth: Leverage biotechnology to create diversified health products.

Page: General Information
Name of Organization / Company TCI Co., Ltd
Logo Download File (https://asiasteveawards.secure-platform.com/file/27186/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWVpYUlkIjoyNzE4NiwiYWxsbn3dOb3RTaWduZWVcmwiOiJGYWxzZSI6ImInbm9yRjmyVt9mauW9K5vW2OGVY1k?%28Logo%29%20TCI%20Co.%20Ltd..pdf)
Web Site Address https://www.tci-bio.com/technology/what-unique-raw-material-stories-does-tci-possess/ (https://www.tci-bio.com/technology/what-unique-raw-material-stories-does-tci-possess/)
Page: Entry Information
Entry Title Upcycle! AgriUpcycling Turning Waste to Wealth: Leverage biotechnology to create diversified health products.
Category U01 - U11 - Award for Innovation in Sustainability > U04. Reuse and Recycle
Submission Format An Essay of up to 625 Words

Essay

Considering Taiwan produces 4-5 million tons of agricultural by-products annually, TCI launched the "Upcycle! AgriUpcycling Turning Waste to Wealth" in 2017 to reduce methane production with high GHG potential and discover the functional ingredients in the by-products.

The Project successfully reduced 2,148 tons of agriculture by-products and created 186 supplement and skincare products, reducing approximately 4,081.2 tons of CO₂e.

The Project aims to address:

1. To alleviate food waste and high carbon emissions, by procuring agricultural by-products from local farmers.

2. To assign new economic value to by-products, while reducing the use of raw materials.

The project leverages a "Bio-Mining Platform" that integrates big data, AI, and automated laboratories to accelerate the development of functional ingredients through innovative extraction and fermentation technologies.

The Project has achieved the following achievements and impacts

1. Achievement

(1) Red quinoa(Formosa Ruby™)

Agriculture waste purchased volume: 186.6 tons.

Product items created: 162.

Revenue generated: US\$2.52M.

End market value created for customers: US\$16.39M.

(2) Banana peel(Happy Banana®)

Agriculture waste purchased volume: 233.6 tons.

Product items created: 136.

Revenue generated: US\$3.29M.

End market value created for customers: US\$21.38M.

(3) Banana flower(Happy Angel®)

Agriculture waste purchased volume: 209.52 tons.

Product items created: 51.

Revenue generated: US\$50.94 thousand.

End market value created for customers: US\$331.12 thousand.

2. Special Achievement: The closed-loop upcycling of Red quinoa (Formosa Ruby™)

The red quinoa husk can be made as a raw material (Formosa Ruby™), it can promote skin collagen production and anti-collagen glycation to slow skin aging. The Efficacy Verification showed after 28 days, skin collagen increased by 19.6%, and water content increased by 11.4%.

(1) The Upcycling Achievement

After the first extraction from the husk, "red quinoa noodles" are produced from the remaining husk residue, which is rich in dietary fiber.

(2) The Closed-loop Achievement

The compost made from the husk residue can be returned to the red quinoa fields to start a closed-cycle.

TCI creates another closed-cycle through eco-friendly containers: The Quinoa Designed Cream Jar. The idea is to address the skincare package disposal and upcycle the quinoa by-product. The outer packaging is made from ocean-recycled plastic, and the inner capsule is made of a mixture of red quinoa residue and bioplastic to create another closed loop.

3. Impact

(1) The Project achieved the mitigation of food losses and carbon emissions.

(2) By implementing friendly-farming, the analysis of the soil organic carbon(SOC) and carbon fixation capabilities shows that friendly-farming can stabilize the SOC and reduce carbon emissions.

(3) TCI offers technical expertise and resources to contract farmers.

(4) The Project provides new business opportunities for TCI and farmers and enables TCI to share its expertise in the field of biotechnology.

A. Benefits of the Economy and Environment

1. TCI had purchased 18 kinds of agricultural by-products, a total weight of over 2,148 tons, TCI helped the farmer gain US\$ 2.92 million in additional income.

2. TCI adds value to 1,276 product items with the upcycling concept from manufacturing agricultural by-products. For 1068 product items, there are a total of 1.48 billion numbers of products were made, which generates US \$438.31M in revenue for TCI.

3. According to the revenue TCI has generated above, TCI also brought US \$2.85B end market value to our branded customers.

4. The accumulated purchased by-products are equivalent to a reduction of 4,081.2 tons of CO₂e.

B. Future Plan

1. Make local farmers amplify their influence in carbon reduction and waste reduction efforts.

2. TCI has begun researching how to convert the extracted red quinoa residue into Solid Recovery Fuel (SRF). This SRF will be provided to the company that manufactures cardboard boxes for TCI to use as a production fuel, achieving a more detailed and sustainable closed-loop utilization.

For this category please provide

An essay of up to 625 words describing the nominated innovative achievements since July 1 2021, **OR** a video of up to five (5) minutes in length illustrating the same.

Optional (but highly recommended), a collection of supporting files and web addresses that you may upload to our server to support your entry and provide more background information to the judges.

Credits

Do You Have Supporting Files You Would Like to Upload?

Yes

Audio (Mp3), Documents (PDFs, Word, PowerPoints), Images (PNG, JPG, TIF), and Video (Mp4)

200 MB Max per File

File 1

Download File (https://asiastevieawards.secure-platform.com/file/28603/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwMyYiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%281%29.jpg)

File 2

Download File (https://asiastevieawards.secure-platform.com/file/28604/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwNCwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rhdrTxl_mIA?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%281%29.png)

File 3

Download File (https://asiastevieawards.secure-platform.com/file/28605/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwNSwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rR8?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%282%29.JPG)

File 4

Download File (https://asiastevieawards.secure-platform.com/file/28606/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwNiwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rnmhYEI4t18iw7u6_CgrhlzDoz2ArM?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%282%29.png)

File 5

Download File (https://asiastevieawards.secure-platform.com/file/28607/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwNywiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rhEI6N0mhNBFguQDY0XCo--f3z71NXDYOpvQoKQ?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%283%29.png)

File 6

Download File (https://asiastevieawards.secure-platform.com/file/28608/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwOCwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rkG5pjKHJCjDaecdpYC4SajYAaTs?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%284%29.png)

File 7

Download File (https://asiastevieawards.secure-platform.com/file/28609/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwOSwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%285%29.jpg)

File 8

Download File (https://asiastevieawards.secure-platform.com/file/28610/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYwMCwiYXN3dOb3RTaWduZWRVcmwiOiJGYWxzZSIzImInbm9rTSFXQGH4sCUB0AKjmhV6kmQZp4nE?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%286%29.jpg)

File 9

Download File (https://asiastevieawards.secure-platform.com/file/28611/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYxMSwiYWxsbn3dOb3RTaWduZWRVcmwiOiJGYWxzZSIsImlnbm9xfk3_KFu5r08c?ASIA-PACIFIC%20Stevie%20Awards_%20U04.%20Reuse%20and%20Recycle_TCI%20Co.-%20Ltd%20%287%29.jpg)

File 10

Download File (https://asiastevieawards.secure-platform.com/file/28612/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJtZWRpYUlkIjoyODYxMiwiYWxsbn3dOb3RTaWduZWRVcmwiOiJGYWxzZSIsImlnbm9j%20EN_230327_2%288%29.jpg)

Do You Have Website URLs you would like to link to

Yes

URL 1

<https://www.tci-bio.com/technology/what-unique-raw-material-stories-does-tci-possess/> (<https://www.tci-bio.com/technology/what-unique-raw-material-stories-does-tci-possess/>)

URL 2

URL 3

URL 4

URL 5

URL 6

URL 7

URL 8

URL 9

URL 10

By your submission of this entry to The Stevie Awards you verify that you have read and agree to abide by the regulations, terms and conditions of the competition (<http://asia.stevieawards.com/rules-and-terms-conditions-competition>).

Terms and Conditions

I Agree