In the field of communication

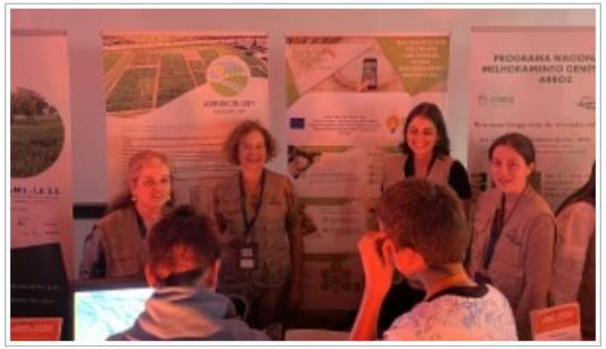
TRACING RICE AND VALORIZING SIDE STREAMS ALONG MEDITERRANEAN BLOCKCHAIN

17.12.2024

TRACE-RICE with Grant nº 1934 (call 2019, section 1 Agrofood) is part of the PRIMA Programme supported under Horizon 2020, the European Union's Framework Programme for Research and Innovation

101 NEWS

TRACE-RACE WAS FEATURED DURING THE EUROPEAN RESEARCHERS' NIGHT



Published on 30/09/2024

Trace-Race was featured at the Science Museum in Parque das Nações, Lisbon, during the European Researchers' Night, a celebration of science across Europe. The event highlighted t...

TRACE-RICE COORDINATOR DELIVERED AN ORAL SESSION ABOUT THE LATEST RESULTS

Published on 27/07/2024

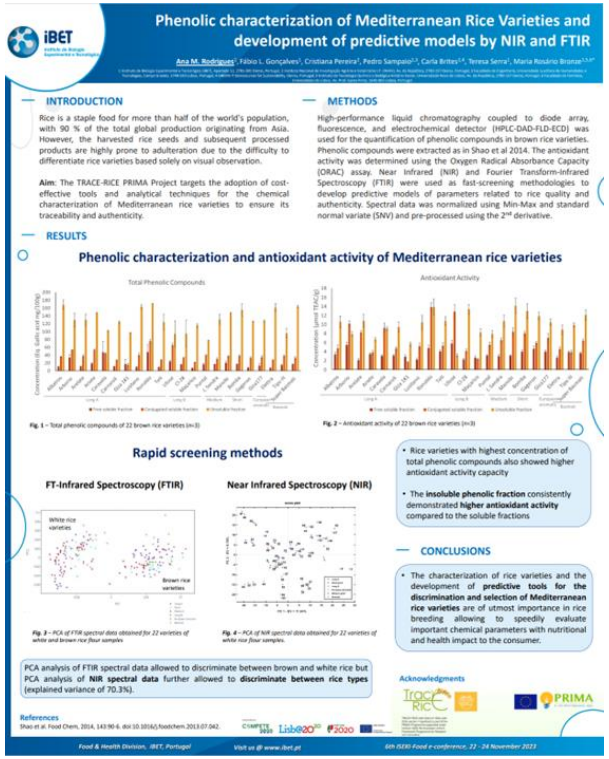
On July 24th and 25th, the TRACE-RICE project was presented at the "International Conference on Sustainable Foods - Achieving the Sustainable Development Goals" in Bragança, Portug...

TRACE-RICE HONORED WITH "BEST STUDENT POSTER COMMUNICATION AWARD"

Published on 27/07/2024

At the "International Conference on Sustainable Foods - Achieving the Sustainable Development Goals" (https://icsf.morecolab.pt/), held in Bragança, Portugal, on July 24th and 25th...

42 POSTERS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CONCLUSIONS
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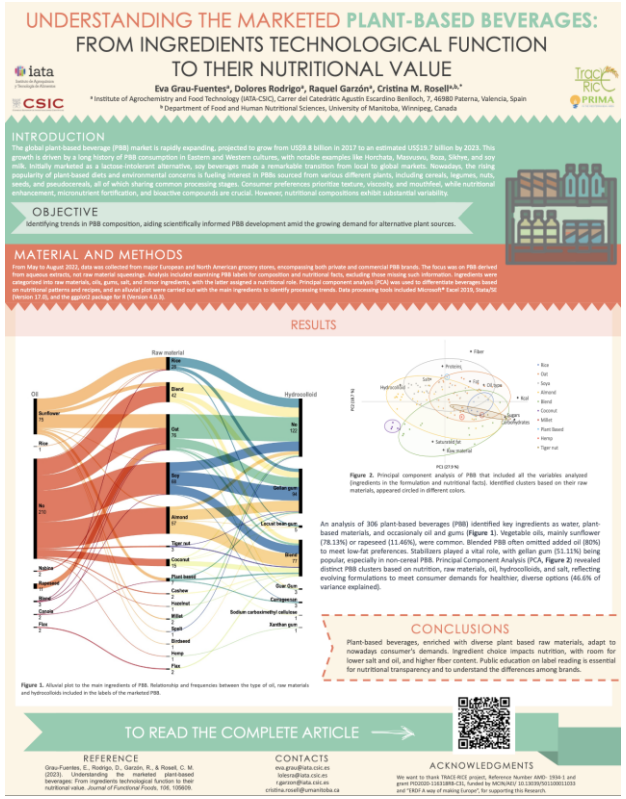
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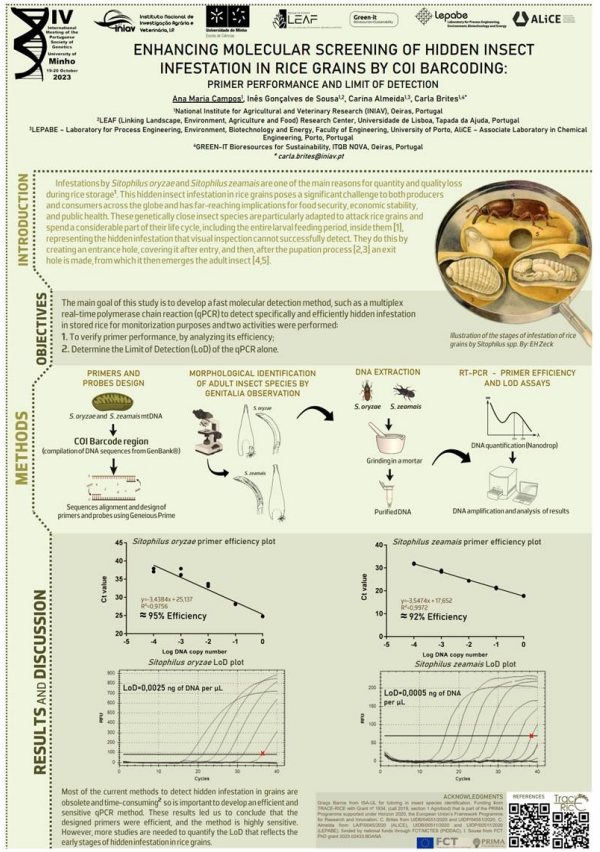
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Sitophilus zeamais primer efficiency plot
Sitophilus oryzae LoD plot
Sitophilus zeamais LoD plot

23 ARTICLES

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Design thinking for food: Remote association as a creative tool in the context of the ideation of new rice-based meals

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ARTICLE INFO

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Creativity
Idea generation
Design thinking
Remote associates task
Rice-based products

ABSTRACT

Portugal is the greatest European rice consumer. Thus, incorporating whole rice and rice bran in innovative rice products is challenging. An experimental method based on the creativity association theory was applied. A group of nine students performed simple brainstorming to generate recipe ideas. Following the Design Thinking approach, a group of nine chefs received a stimulus to generate words related to rice recipes, working as a stimulus for a group of 14 students to generate recipe ideas. All ideas from both groups were evaluated by the chefs. The inclusion of stimuli led to more creative ideas from young aspiring chefs.

1. Introduction

Rice (Oryza sativa L.) is the staple food of most of mankind, with a World per capita consumption of about 80.6 kg/year. The European average value of consumption is more modest, just 6.7kg/capita/year, registered between 2015 and 2019. Within this region, Portugal has the highest consumption, with a per capita average of about 16.1 kg/year (FAO, 2019). The importance of rice in Portuguese gastronomy can be perceived not only by the consumption data, but also by analysing rice preparations, which comprise many rice-based dishes (Vasco et al., 2021). Such dishes span from plain white rice to more elaborate rice dishes, presented as a side dish or even as a main course, and incorporating vegetables, legumes, fish, shellfish or all types of meats (poultry, lamb, pork or beef) (Cabral et al., 2022).

Despite the benefits of whole rice (Castanho et al., 2019), traditional rice preparations are made with milled rice kernels, with the remaining rice bran being incorporated into animal feed (Esa et al., 2013). However, rice bran is known to promote several health benefits (Bhaskaragoud et al., 2018; Bumrungpert et al., 2018; Wang et al., 2017; Francisqueti et al., 2017; Kosuka et al., 2015).

Design Thinking (DT) can be considered a transdisciplinary and user-centred method directed at innovation, as popularized by IDEO and Stanford d.school (Brown, 2008; Dunne and Martin, 2006; Kelley, 2001). However, it was at first, a part of the designers' activity discussed by design theorists and mainly focused on what is design and how design is a discipline that uses different types of cognitive processes to think about ill-defined problems (Cross, 1982; Lawson, 2006; Rittel and Webber, 1973; Schön, 1983; Simon, 1969). DT as a method has been used in different ways, regarding the number of iterative process steps and their terminology (Waidelich et al., 2018); according to Michel et al. (2019) the most employed methods are the ones from IDEO (Inspiration, Ideation, Implementation), Stanford d.school (Empathize, Define, Ideate, Prototype and Test) and IBM (Understand, Explore, Prototype, Evaluate).

Although the DT approach has been applied broadly, its use in food innovation is scarce (Olson, 2015). Frost (2019), reported the positive role of rapid prototyping in a food DT experience where chefs and scientists worked together. Derbe et al. (2020) integrated applied a DT methodology in a project-based learning experiment with students to create food products based on consumers' needs.

The brainstorming technique was first introduced by Osborn (1953), who described it as a team exercise performed in two phases: free-wheeling (idea generation), and discussion (idea integration). When describing the IDEO design methodology, Kelley (2001) emphasizes the brainstorming technique as the key to idea generation and creating a list of rules to get the "perfect brainstorm".

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QUALIDADE E SEGURANÇA ALIMENTAR

A GERMINAÇÃO E A FERMENTAÇÃO DO ARROZ PARA AUMENTAR O SEU VALOR NUTRICIONAL

Os processos de germinação e fermentação estão a ser estudados para aumentar a concentração de compostos bioativos (γ-orizanol e ácido γ-aminobutírico) e potenciar o valor nutricional e a utilização do arroz.

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foods

MDPI

Article

Relationship between Physicochemical and Cooking Quality Parameters with Estimated Glycaemic Index of Rice Varieties

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Abstract: Rice is a significant staple food in the basic diet of the global population that is considered to have a high glycaemic index. The study of the physical and chemical parameters in rice that are related to the starch digestion process, which allows us to quickly predict the glycaemic index of varieties, is a major challenge, particularly in the classification and selection process. In this context, and with the goal of establishing a relationship between physicochemical properties and starch digestibility rates, thus shedding light on the connections between quality indicators and their glycaemic impact, we evaluated various commercial rice types based on their basic chemical composition, physicochemical properties, cooking parameters, and the correlations with digestibility rates. The resistant starch, the gelatinization temperature and the retrogradation (setback) emerge as potent predictors of rice starch digestibility and estimated glycaemic index, exhibiting robust correlations of $r = -0.90$, $r = -0.90$, and $r = -0.70$ ($p \leq 0.05$), respectively. Among the rice types, Long B and Basmati stand out with the lowest estimated glycaemic index values (68.44 and 68.10), elevated levels of resistant starch, gelatinization temperature, and setback values. Furthermore, the Long B showcases the highest amylose, while the Basmati with intermediate, revealing intriguingly strong grain integrity during cooking, setting it apart from other rice varieties.

Keywords: rice commercial types; physicochemical parameters; cooking parameters; glycaemic index

check for updates

Citation: Pereira, C.L.; Sousa, I.; Lourenço, V.M.; Sampaio, P.; Gárzon, R.; Rosell, C.M.; Brites, C. Relationship between Physicochemical and Cooking Quality Parameters with Estimated Glycaemic Index of Rice Varieties. *Foods* **2024**, *13*, 135. https://doi.org/10.3390/foods13010135

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1. Introduction

Rice holds a significant position among cereal crops, serving as a crucial energy source and being widely integrated into the diets of populations. Ensuring the quality of rice grains is of paramount importance due to its impact on consumer preferences, acceptance, and its influence on economic value [1]. The evaluation of grain quality encompasses a spectrum of factors, including its physical attributes (such as form, size, and colour), its fundamental chemical composition (including protein, lipid, and fibre content), and its physicochemical characteristics (such as amylose content, gelatinization temperature and viscosity profiles). The cooking and eating quality of rice is directly affected by amylose content with impact on the water absorption during cooking [2], in the grain elongation ratio, in the final hardness of the cooked grain [3], in the gelatinization temperature and in the rate of retrogradation [4].

4 FLYERS | 4 LANGUAGES

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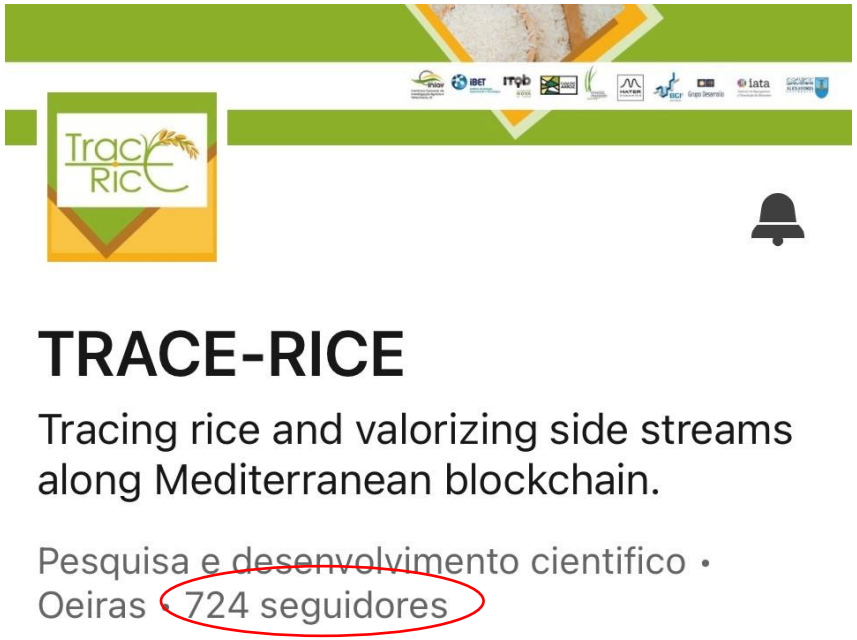

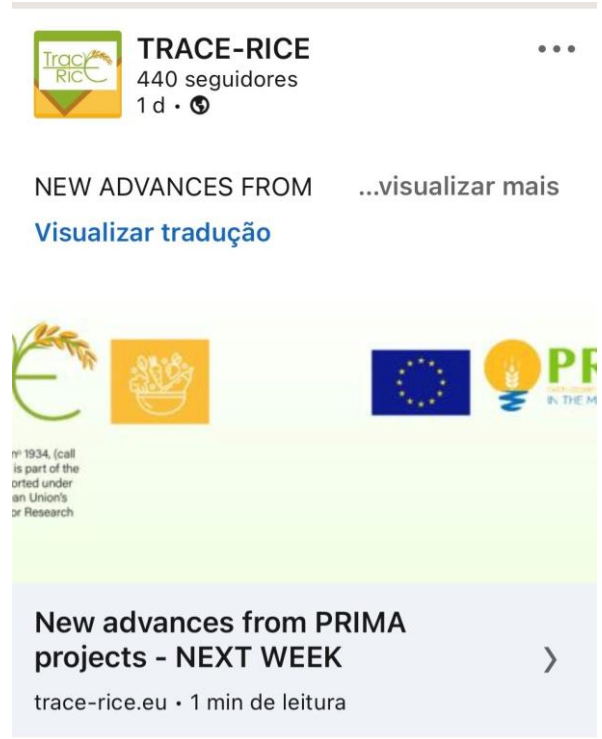

TRACE RICE VIDEO

TRACE RICE videos
Promotional activities

TraceRice project activities in Egypt

Trace Rice Project 2022 IATA Promotional Video

IBET Promotional Video

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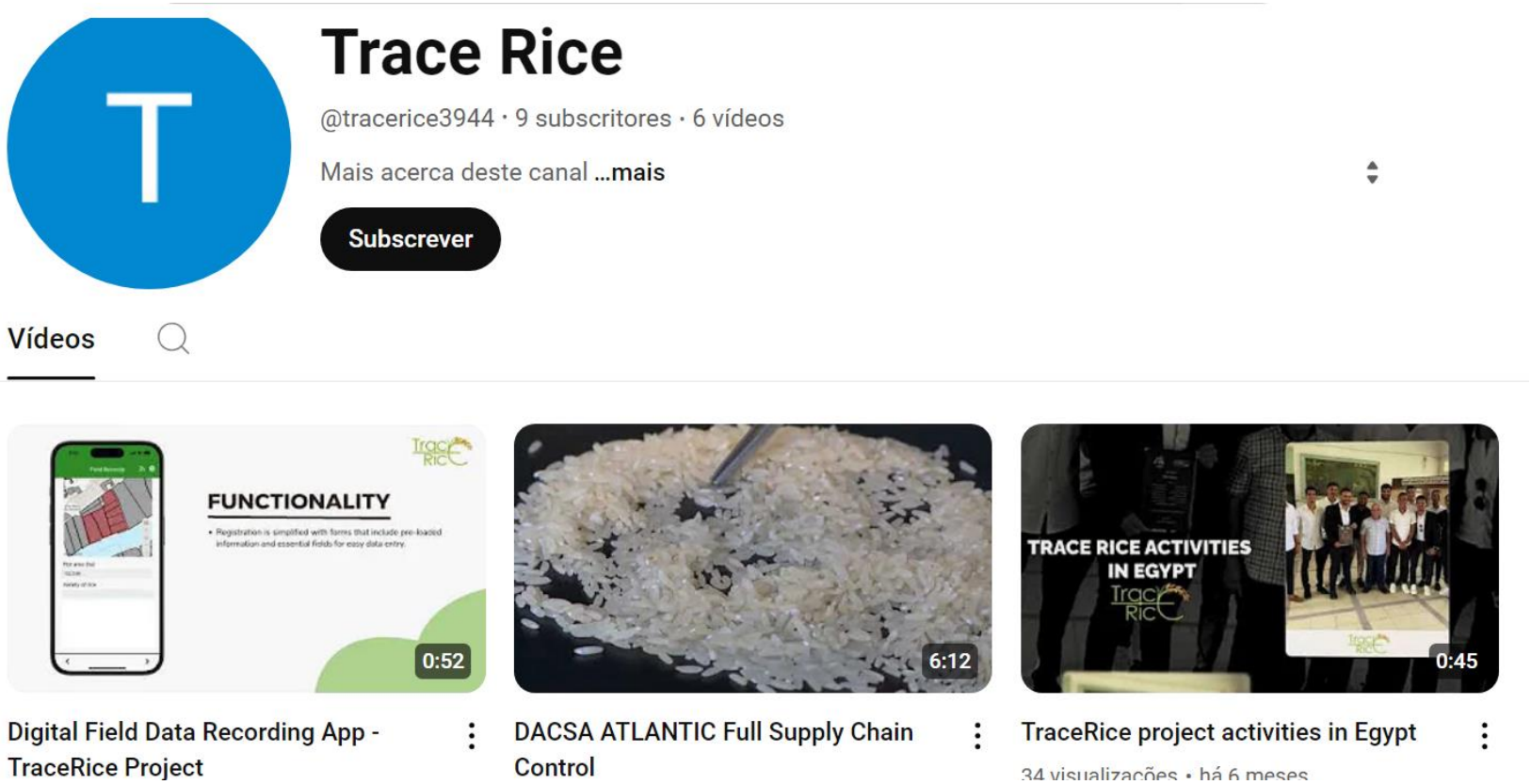

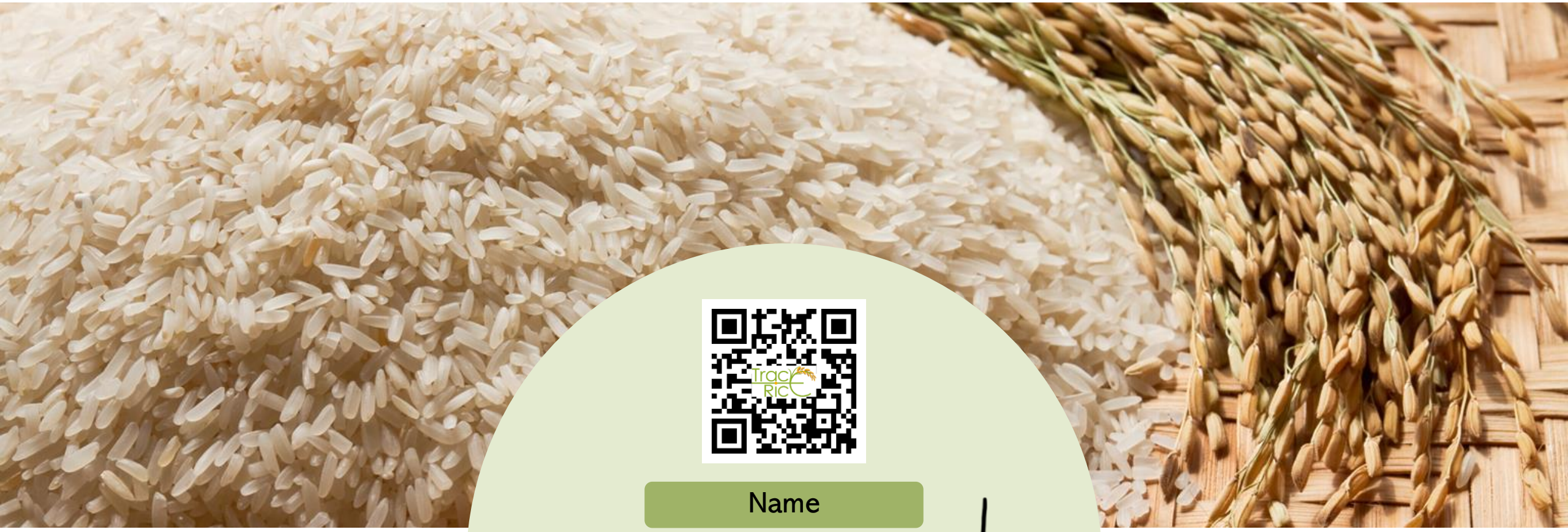

Name

thank you!