



Amamillet

A Healthy Snack
to Achieve Sustainable Agriculture
and Combat Double Burden Malnutrition

Maria Fransisca Njoman
Ratchadetch Termpitipong
Elsa Safira Kinanti

"A MILE CLOSER TO A SUSTAINABLE EARTH"

Amamillet

"A mile closer to a sustainable earth"

Background





Background : Double burden of malnutrition¹



1



1.9 billion
adults are
overweight

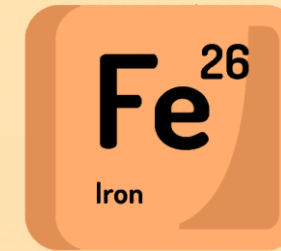
2



one-third children
are having severe protein-
energy malnutrition &
micronutrients deficiency

462 million
adults are
undernourished

3



**Iron deficiency
is the 9th rank**
among 26 risk factors in
the Global Burden
Diseases 2000

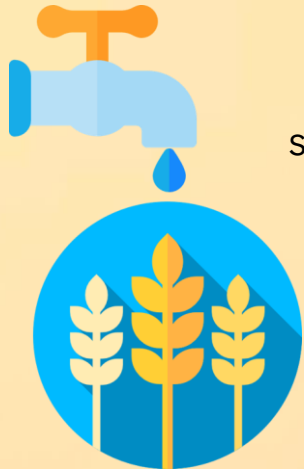
¹WHO, 2018



Background : Environmental issues²

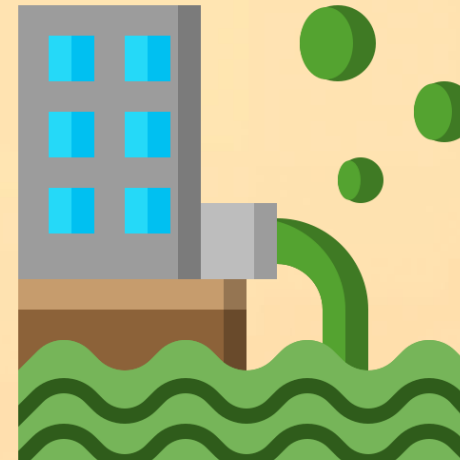


1



Agriculture
sector is the largest
water exploiter

2



food processing
contributes the highest
amount of organic
water pollutants

²Ritchie H & Roser M, 2018



Background : Market opportunities



1

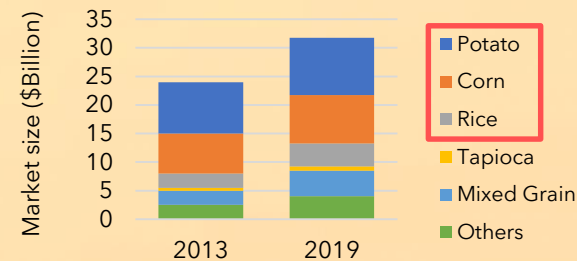
Potential **special needs** market^{3,4,5}



2

Emerging trends
RTE foods⁶

Extruded Snacks Market Size, by type, 2013 vs 2019 (\$Billion)



Ancient grains utilisation offers
more sustainable business
for RTE foods^{7,8}

	Modern grains	Ancient grains
	↑	↓
	↑	↓
	↑	↓

³Game Changers, 2018

⁴Storhaug CL, et al, 2017.

⁵Mishra S, et al, 2018

⁶Marketsandmarkets, 2019

⁷Boukid F, et al, 2018

⁸Hinterthuer A, 2017



Solution: Amamillet

1



Convenient snack
utilising millet and
amaranth

2



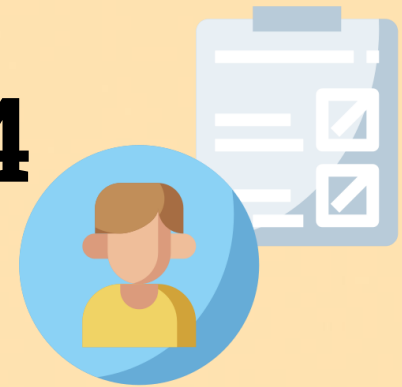
**Environmentally
friendly**

3



Source of protein, iron,
and fibre, to address
**double burden of
malnutrition**

4



Suitable for **niche
markets with
special needs**

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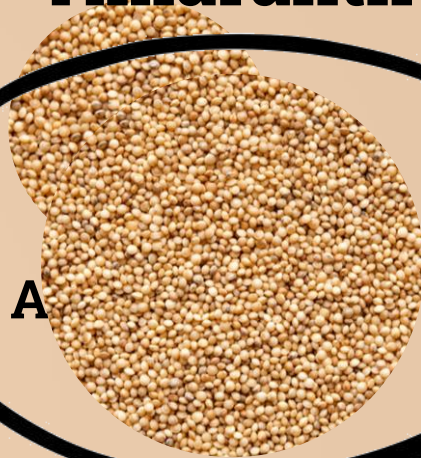
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Formulation & Process Design



Which grains? Not only quantity, but also quality⁹

Amaranth



A



Freekeh



**Lysine &
Tryptophan**

Protein 13.6%

Fibre 6.7%

Iron 0.8%

Barley



Kamut



Wheat



Bulgur

Methionine & Cysteine

Protein 11.0%

Fibre 8.5%

Iron 0.3%



Quinoa



Farro



Millet



Millet

Spelt

⁹US Department of Agriculture, 2019

Why extrusion¹⁰?

1



Cost efficiency

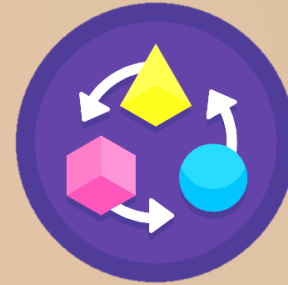
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Energy efficiency

(66% lower than baking,
80% lower than deep-
frying)

3



Flexibility

wide range of
products and shapes

4

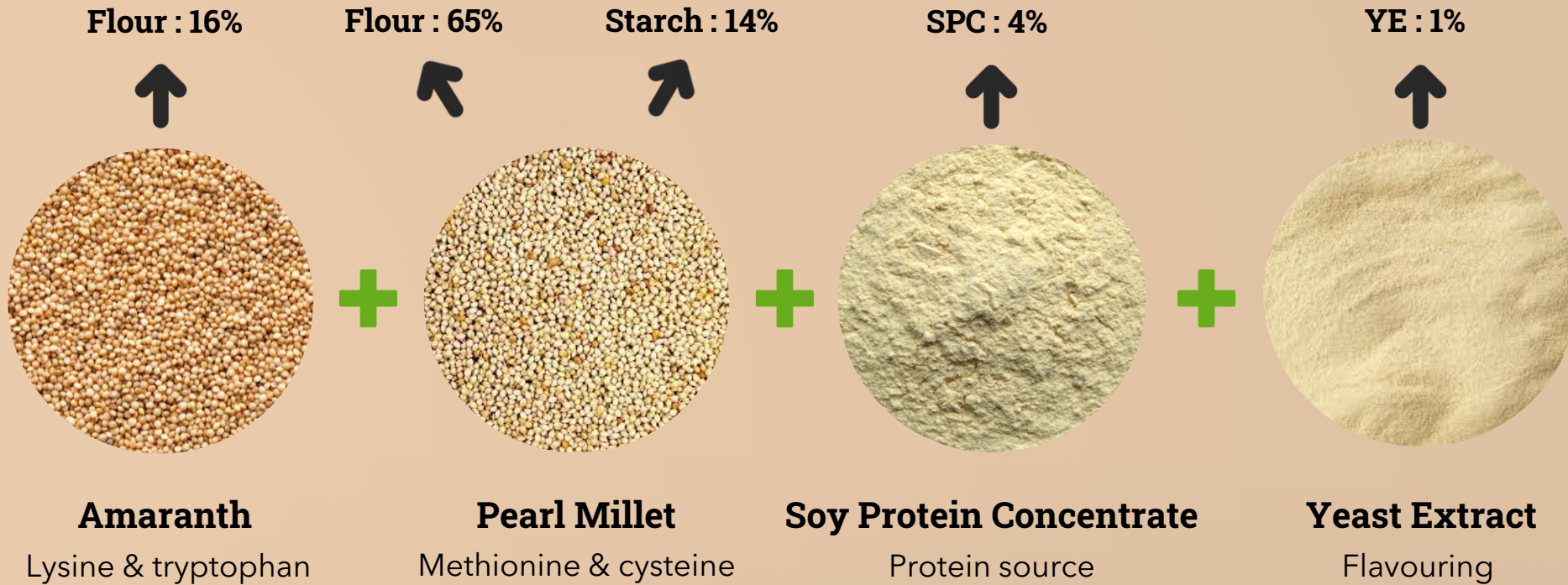


Non-frying process
=

Good for health

¹⁰Bouberte MY, et al, 2015

Formulation



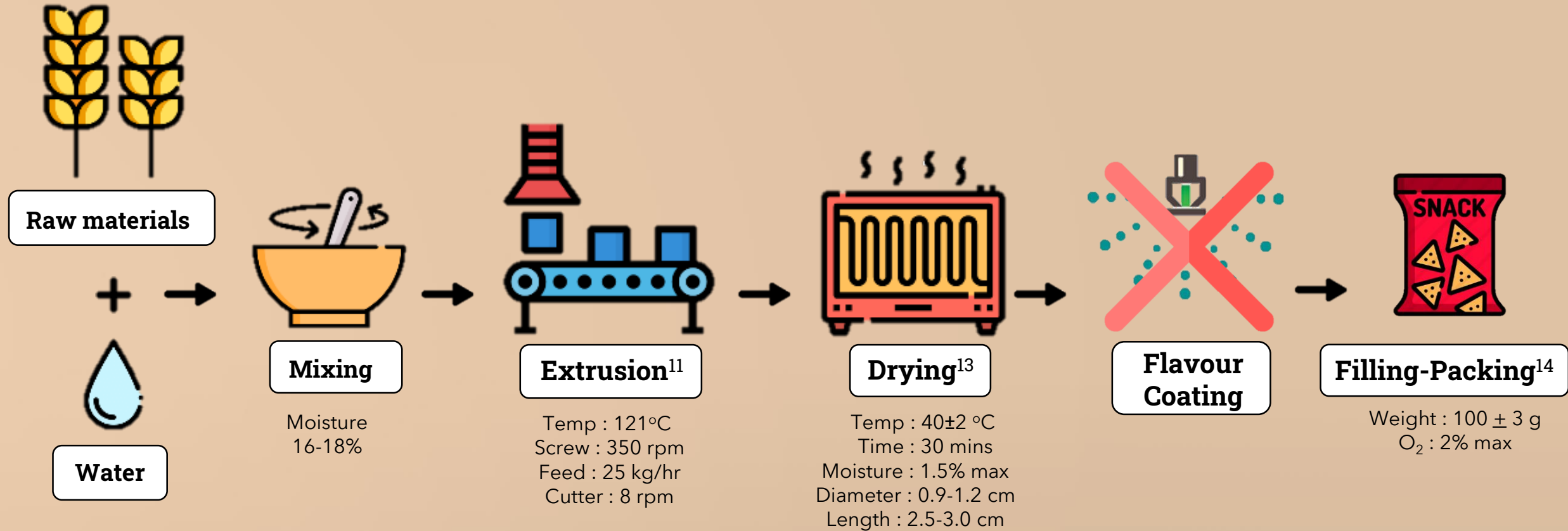
Frying Oil



Sensory acceptance¹¹

8.5/10

Production Process of Amamillet¹²



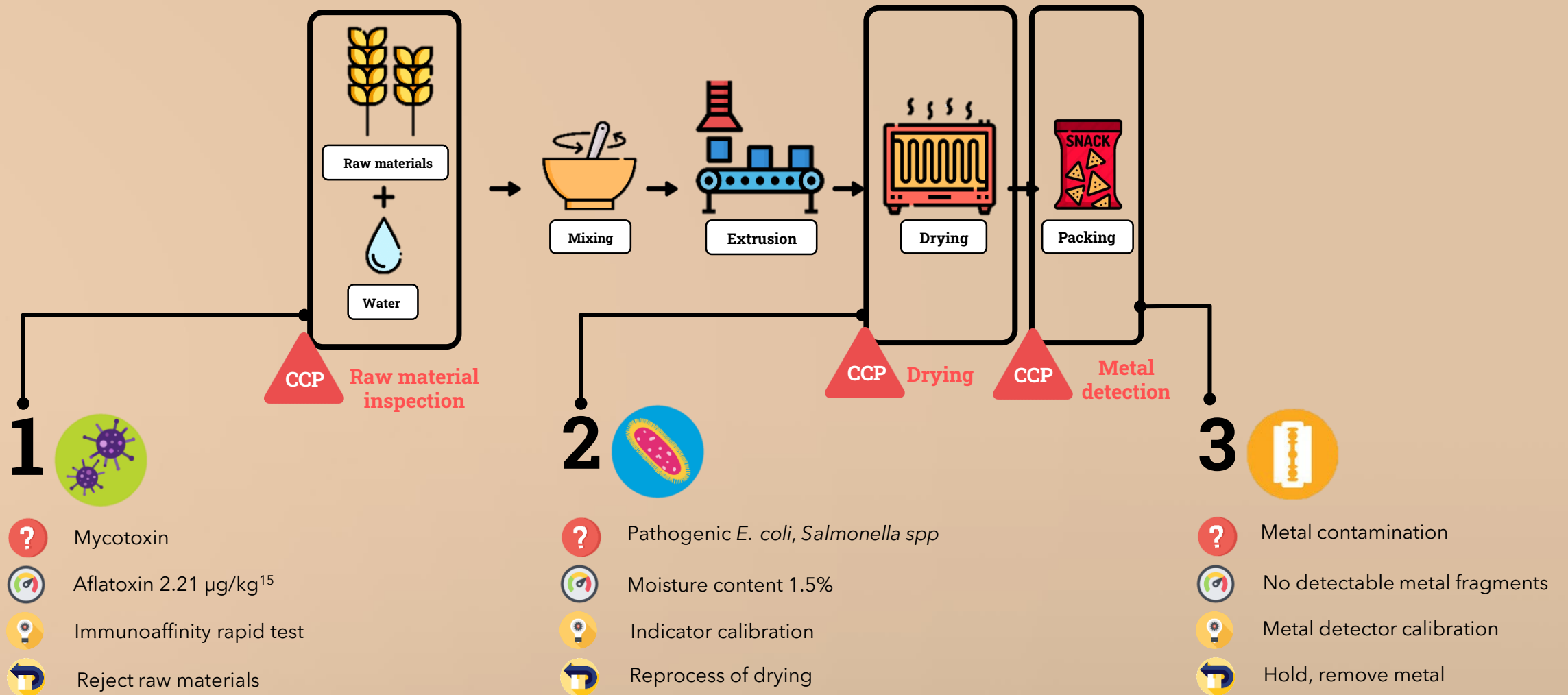
¹¹Kaushik I & Grewal R, 2017.

¹²Joy C, et al, 2012

¹³Mazlan M, et al, 2019

¹⁴Marsh K & Bugusu B, 2007

Safety aspects of Amamillet



¹⁵EFSA, 2013

Sustainability of Amamillet

1

Raw materials

Ancient grains



2

Production and process

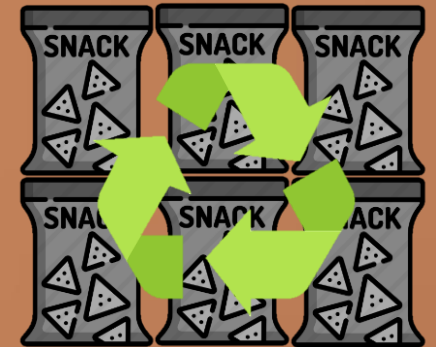
Secondary extrusion



3

Packaging

Recyclable material



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Final Product & Impact



Nutrition facts¹⁶

	Per 100 g	Per 30 g	%RI per 30 g
Calorie (kcal)	370.7	111.2	5.56%
Calorie from protein (kcal)	45.2	13.6	
Calorie from fat (kcal)	32.5	9.8	
Protein (g)	12.1	3.6	7.29%
Fat (g)	3.9	1.2	1.79%
Saturated Fat (g)	0.7	0.2	1.05%
Trans Fat (g)	0.0	0.0	
Carbohydrate (g)	71.8	21.5	7.18%
Dietary fibre (g)	6.8	2.1	
Sugar (g)	0.3	0.1	
Sodium (mg)	75.9	22.8	0.95%
Iron (mg)	3.6	1.1	7.72%



Size

100g size per pack
30g recommended serving size

Packaging

Metallised film
MAP N₂
Shelf life 6 months 25-28°C¹⁷

¹⁶EFSA, 2006
¹⁷Yadav U, et al, 2018

Strength



Nutritious



Sustainable



High resistance

Weakness



Grainy flavour



Distribution

Opportunity



Snack trend



Flavour options



Potential market

Threat



Ingredients sourcing



Current brand loyalty

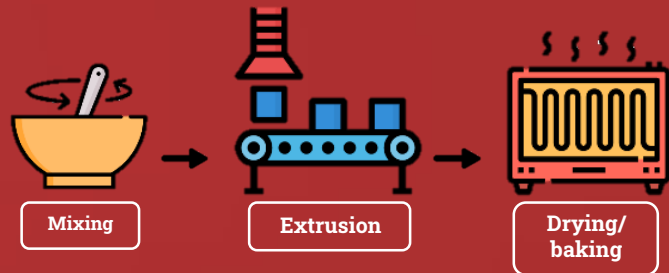


Economic feasibility of Amamillet

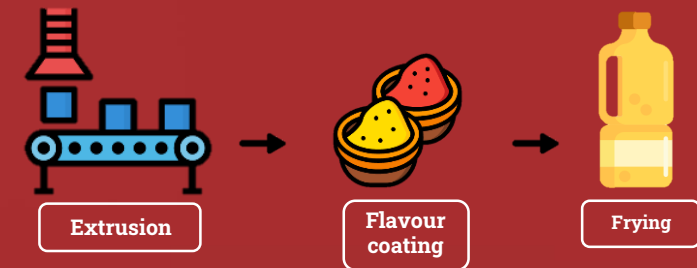


Industrial scale

Selling price €0.2/pack
150,000 pack/day



VS



**Payback period:
3 years 1 month**

Hot air oven



**Payback period:
4 years 5 months**

Flavour coating drum
Deep fat fryer
Vegetable oil



Amamillet's purposeful impacts

3 GOOD HEALTH
AND WELL-BEING



1

Combat double burden of malnutrition



For nutrient deficiency

Source of protein
Source of iron



For obesity & CVD

High fibre
Low sodium
Low saturated fat
Sugar-free

3 GOOD HEALTH
AND WELL-BEING



2

Grab special needs market



6 CLEAN WATER
AND SANITATION



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



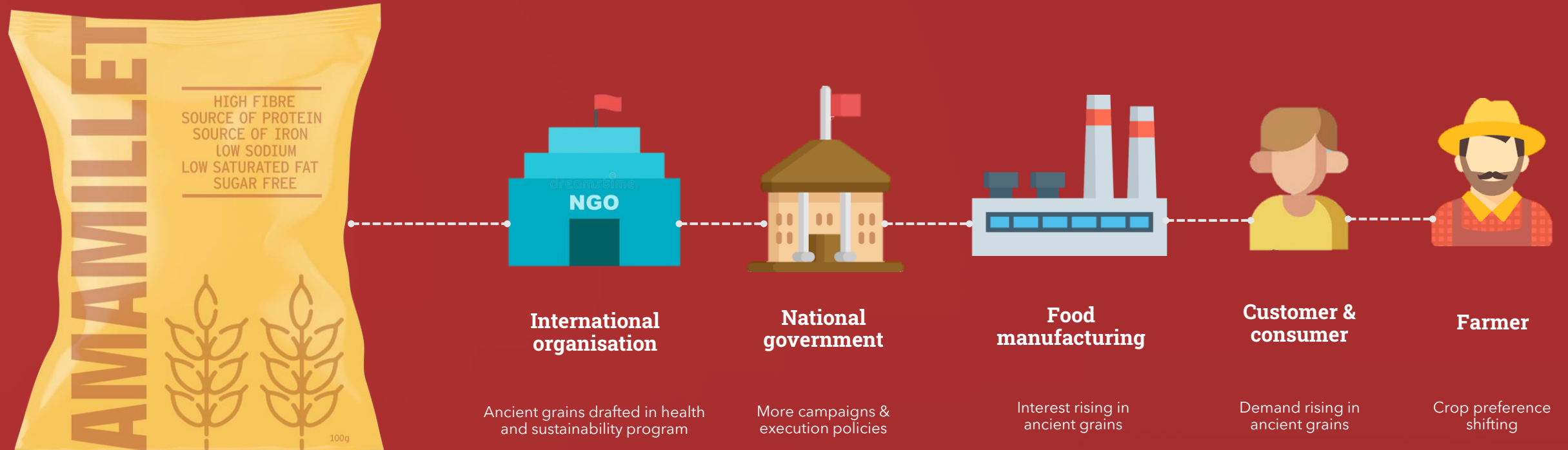
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Environmentally friendly



Low water and fertiliser
Energy efficient
Less attractive to pest
No oil utilisation

Future recommendation



Scan me for
detailed references!



Thank
You!

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