Background: In rural northern Vietnam, childhood stunting rates are 15-27.5%. In Lào Cai province, female subsistence farmers grow crops, but face barriers sending produce to markets. The present intervention purchases these crops which are processed in local small-scale food processing facilities (SSFPF) to produce instant fortified complementary foods (FCF) for weaning.

Methods: This project leverages the experience of the NIN of Vietnam to ensure HACCP and ISO 22000 standards during manufacture. Locally grown rice was combined with a ZnFe premix before extrusion and hammer-milling. Local vegetables such as: “Sweet leaf” (Sauropus androgynous), pumpkin, Shiitake mushrooms (Lentinula edodes) and carrots were dehydrated and hammer-milled.

Results: Sensory testing in Lào Cai with parent/caregiver-child pairs (n=126) showed that acceptability of rice milled into a homogeneous particle size was sub-optimal; whereas different particle sizes gave a better texture. The rice with pumpkin FCF scored highest using a 7-point hedonic scale, followed by Shiitake, carrot and “Sweet leaf”. A “Just-about-right” scale showed high satisfaction among subjects (81-92%) for product consistency, fat content and saltiness.

Conclusions: Producing FCF in local SSFPF can assist with the implementation of FCF as "Just-about-right" scale showed a high satisfaction for product consistency, fat content, and saltiness of FCFs. Three sensory analyses were used: a) a validated organoleptic sensory test (ISO 11136:2014) for rating the smell, flavour, structure, after-taste and overall preference of the 4 FCF using a 7-point hedonic scale; b) a “Check-All-That-Apply” dimensions test was used to highlight descriptive attributes; c) a “Just-About-Right” scale was used to measure satisfaction with the consistency, fat content, and saltiness of FCFs.

The pumpkin FCF scored highest for acceptability of smell, flavor, structure, after-taste and overall preference. There was no difference between the overall preference of pumpkin (5.4/7) and shiitake FCF (5.2/7), with a score of 5/7 classified as “liked”. Both pumpkin and shiitake FCF scored significantly higher (p<0.05) than the carrot (5.0/7) and Sweet leaf (4.8/7) FCF, with a score of 4/7 classified as “marginally acceptable”.

The “Check-All-That-Apply” dimensions test, participants described the pumpkin and shiitake FCF as “eye-catching, aromatic, smooth, and savoury”, carrot FCF as “smooth, eye-catching, having a vegetable taste, and savoury”; and Sweet leaf FCF described as “savoury, having a vegetable taste, smooth, and aromatic”.

The “Just-About-Right” scale showed a high satisfaction for consistency, fat content and saltiness of each FCF with satisfaction ranging from 81-92%.

Materials and Methods:

Focus of the project: 3 provinces in North Việt Nam:
Lào Cai, Lai Châu, Hà Giang

- Poverty rates: 26, 22, 35%
- Stunting: 35.2-36.7%
- Underweight: 20-23.2%
- Wasting: 5.8-9.8%

The project’s Food Systems Approach to align with Agriculture and Food Security foci.

Sensory testing was performed to quantify the acceptability of four types of instant FCF: Sweet leaf, pumpkin, shiitake mushrooms and carrots added to a rice base.

The pumpkin FCF is capable of producing 100 tons of fortified instant porridge a year and 2 million vegetable packets; the majority of factory workers are women.

Implementation of FCF:

Set up of Little Sun Nutrition Counselling Centres for IYCF counselling of mothers.

Mapping of impact of project on North Việt Nam nutrition, IYCF, food security, GAP and sustainability of Food Systems Ecosystem Approach.

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