Appendix

Consumer demand for novel fruit and vegetable products with extended shelf lives in East Africa: A multinational multiproduct analysis

Table A.1: Participant characteristics, by information

| Variable                                | With information mean (Std.) | Without information mean (Std.) | Difference (p-value) |
|-----------------------------------------|------------------------------|---------------------------------|----------------------|
| Sex (Female)                            | 58 % (57 %)                  | 38.41 (12.47)                  | 0.772                |
| Age (years)                             | 37.72 (12.95)                | 37.72 (12.95)                  | 0.285                |
| No. of household members                | 4.17 (2.19)                  | 4.17 (2.19)                    | 0.421                |
| Education level (1 = none; 2 = primary; 3 = secondary; 4 = tertiary) | 2.52 (0.78)                  | 2.48 (0.72)                    | 0.469                |
| Wealth (Index)                          | 0.002 (1)                    | -0.002 (1)                     | 0.332                |
| Location (urban)                        | 50 % (48 %)                  | 50 % (48 %)                    | 0.551                |
| Sensory perception                      |                              |                                 |                      |
| Cowpea leaf soup mix                    | 0.12 (0.91)                  | -0.13 (1.07)                   | 0.037**              |
| Guava nectar                            | -0.03 (0.99)                 | 0.03 (1.01)                    | 0.814                |
| Dried cashew apples                     | -0.04 (0.97)                 | 0.04 (1.03)                    | 0.375                |
| African nightshade relish               | -0.03 (1.06)                 | 0.03 (0.93)                    | 0.865                |
| Dried African nightshade                | -0.05 (0.96)                 | 0.05 (1.04)                    | 0.334                |
| Jackfruit juice                         | -0.11 (1.04)                 | 0.11 (0.94)                    | 0.053*               |

N: 482 460

Note: * p < 0.1 and ** p < 0.05 according to Mann-Whitney-U-Test
Insufficiency in micronutrients such as vitamin A, vitamin C or iron has been reported in Kenya. With insufficient intake of micronutrients, we are more prone to night blindness, tiredness, and infection. Eating a cowpea leaf soup mix can help to improve your health, because it is a good source of vitamin A, iron, and zinc. Cowpea leaves are even more nutritious than kales which are commonly consumed. While fresh cowpea leaves are only available during harvest season, the cowpea leaf soup mix has a long shelf-life and is available all year-round, independent of the cowpea growing season. This allows you to consume it even when fresh cowpeas are not available. The cowpea leaf soup mix can be stored over several month and will remain safe. Preparing a cowpea soup mix is easy and fast. Once the water boils, the soup is ready within five minutes. No special cooking skills are needed. This saves time.
Table A.2: Descriptive statistics of participants by country and location

| Variable                               | Kenya          | Tanzania       | Uganda          |
|----------------------------------------|----------------|----------------|-----------------|
|                                        | Rural          | Urban          | Rural           | Urban          | Rural           | Urban          |
|                                        | Mean (Std.)    | Mean (Std.)    | Mean (Std.)     | Mean (Std.)    | Mean (Std.)    | Mean (Std.)    |
|                                        | Female         | 62 % (13.7)    | 54 % (13.03)    | 67 % (13.39)   | 48 % (11.30)   | 0.000***       |
|                                        | Age (years)    | 38.95 (11.37)  | 40.53 (14.4)    | 38.83 (13.99)  | 35.45 (11.30)  | 0.036**        |
|                                        | No. of household members | 3.97 (2.04) | 3.51 (1.84) | 4.33 (2.04) | 4.4 (1.67) | 0.545 | 4.96 (2.82) | 4.09 (2.21) | 0.006*** |
|                                        | Education level (1 = none; 2 = primary; 3 = secondary; 4 = tertiary) | 2.60 (0.75) | 2.99 (0.82) | 2.16 (0.62) | 2.33 (0.63) | 0.017** | 2.47 (0.72) | 2.54 (0.74) | 0.316 |
|                                        | Wealth (Index) | -0.25 (1.19)   | 0.34 (1.31)     | -0.54 (1.03)   | 0.32 (0.56)    | 0.000***       | -0.03 (1.03)   | 0.25 (0.69)   | 0.764 |
|                                        | Information (yes) | 49 % (1.51) | 52 % (1.51) | 51 % (1.51) | 53 % (1.51) | 0.666 | 51 % (1.51) | 51 % (1.51) | 0.889 |
|                                        | Sensory perception | Cowpea leaf soup mix | -0.03 (1.06) | 0.03 (0.94) | 0.885 |
|                                        | Guava nectar   | -0.1 (1.06)    | 0.11 (1.06)     | -0.07 (0.98)   | 0.08 (1.02)    | 0.051*         |
|                                        | Dried cashew apples |              |                | 0.03 (0.95)    | -0.04 (1.06)   | 0.662         |
|                                        | African nightshade relish |          |                | -0.07 (1.04)   | 0.08 (0.95)    | 0.048**        |
|                                        | Dried African nightshade |          |                |                |                |                |
|                | N  |   |   |   |   |
|----------------|----|---|---|---|---|
| Jackfruit juice| 149| 134| 177| 156| 150| 173|

Note: *p < 0.1, **p < 0.05, and ***p < 0.01 according to Mann-Whitney-U-Test
Table A.3: Descriptive statistics of participants by country and sex

| Variable | Kenya | | Tanzania | | Uganda | |
|----------|-------|-----|--------|-----|--------|-----|
|          | Men   | Women | Difference (p-value) | Men | Women | Difference (p-value) | Men | Women | Difference (p-value) |
| Location (urban) | 52 % (44 %) | 0.195 | 44 % (48 %) | 0.379 | 64 % (45 %) | 0.000*** | |
| Age (years) | 35.02 (12.54) | 38.49 (12.78) | 0.013** | 40.51 (13.59) | 39.47 (12.06) | 0.653 | 35.69 (13.38) | 38.04 (11.55) | 0.015** | |
| No. of household members | 3.41 (1.85) | 3.99 (2.01) | 0.014** | 4.42 (1.98) | 4.31 (1.80) | 0.490 | 4.41 (2.74) | 4.55 (2.39) | 0.183 | |
| Education level (1 = none; 2 = primary; 3 = secondary; 4 = tertiary) | 3.04 (0.78) | 2.60 (0.78) | 0.000** | 2.32 (0.61) | 2.18 (0.64) | 0.073* | 2.60 (0.71) | 2.44 (0.74) | 0.044** | |
| Wealth (Index) | 0.07 (0.94) | 0.00 (1) | 0.82 | -0.06 (1.06) | -0.21 (1.16) | 0.065* | 0.17 (0.82) | 0.08 (0.92) | 0.105 | |
| Information (yes) | 46 % (53 %) | 0.237 | 54 % (50 %) | 0.486 | 51 % (51 %) | 0.908 | |
| Sensory perception | Cowpea leaf soup mix | -0.05 (1.09) | 0.03 (0.93) | 0.772 | | | |
| Guava nectar | 0.04 (0.93) | 0.03 (1.05) | 0.233 | | | | |
| Dried cashew apples | | | | | | | |
| African nightshade relish | | | | | | | |
| Dried African nightshade | | | | | | | |
| Product                          | Willingness to Pay (US $) |  |  |  |
|---------------------------------|---------------------------|--|--|--|
| Jackfruit juice                 | -0.16                     | 0.12 | 0.005*** |
| Cowpea leaf soup mix            | 1.04                      | 0.79 | 0.083*  |
| (0.91)                          | (0.59)                    |    |       |
| Guava nectar                    | 1.11                      | 0.88 | 0.047** |
| (0.91)                          | (0.66)                    |    |       |
| Dried cashew apples             | 0.51                      | 0.42 | 0.332   |
| (0.42)                          | (0.25)                    |    |       |
| African nightshade relish       | 0.44                      | 0.41 | 0.964   |
| (0.33)                          | (0.22)                    |    |       |
| Dried African nightshade        | 0.50                      | 0.51 | 0.706   |
| (0.29)                          | (0.30)                    |    |       |
| Jackfruit juice                 | 1.59                      | 1.39 | 0.002*** |
| (0.72)                          | (0.07)                    |    |       |

N 116 167 146 189 140 183

Note: * p < 0.1, ** p < 0.05, and *** p < 0.01 according to Mann-Whitney-U-Test
### Table A.4: Result of the sensory analysis

|                  | Cowpea leaf soup mix | Guava nectar | Dried cashew apples | African night-shade relish | Dried African nightshade | Jackfruit juice |
|------------------|----------------------|--------------|---------------------|-----------------------------|--------------------------|-----------------|
| **Color**        | 3.95 ± 1.02<sup>a</sup> | 4.18 ± 0.93<sup>b</sup> | 4.32 ± 0.63<sup>bc</sup> | 4.10 ± 0.66<sup>ad</sup> | 4.33 ± 0.68<sup>bce</sup> | 4.56 ± 0.68<sup>f</sup> |
| **Aroma**        | 4.15 ± 0.97<sup>a</sup> | 4.35 ± 0.91<sup>b</sup> | 4.29 ± 0.65<sup>ac</sup> | 4.04 ± 0.75<sup>d</sup> | 4.32 ± 0.66<sup>bce</sup> | 4.49 ± 0.76<sup>bf</sup> |
| **Texture in the mouth** | 4.15 ± 0.98<sup>a</sup> | 4.41 ± 0.78<sup>b</sup> | 4.32 ± 0.69<sup>ac</sup> | 4.16 ± 0.72<sup>ad</sup> | 4.34 ± 0.68<sup>ce</sup> | 4.53 ± 0.77<sup>f</sup> |
| **Taste**        | 4.23 ± 1.07<sup>a</sup> | 4.62 ± 0.68<sup>b</sup> | 4.61 ± 0.57<sup>b</sup> | 4.38 ± 0.72<sup>ad</sup> | 4.56 ± 0.69<sup>bce</sup> | 4.72 ± 0.62<sup>f</sup> |
| **General appearance** | 4.33 ± 0.86<sup>a</sup> | 4.56 ± 0.71<sup>b</sup> | 4.69 ± 0.54<sup>c</sup> | 4.41 ± 0.70<sup>ad</sup> | 4.63 ± 0.64<sup>bce</sup> | 4.72 ± 0.51<sup>cef</sup> |

**Note:** different letters a, b, c, d, e, f reflect a significant difference in a characteristic between products (p < 0.05) according to Kruskal-Wallis and Dunnet-T. Scales for all five categories ranged from 1 = dislike it very much to 5 = like it very much.
Figure A.6: Mean willingness to pay for six fruit and vegetable products, by region (values in US$, adapted by the purchasing power parity of the respective country the product was tested in); ** $p < 0.05$, and *** $p < 0.01$ according to Mann-Whitney-U-Test between urban and rural consumers.