**Results**

**Background characteristics of study participants based on a Socioecological Model: Rufunsa District, Lusaka Province Zambia**

The table presents demographic characteristics of 89 children aged 6–23 months and their households across three areas—Nyangwena, Bundabunda, and Rufunsa—in Rufunsa District. Children’s age and gender distributions were comparable across sites, with the majority aged 12–23 months (57.3%) and more boys (55.1%) than girls. Significant differences were observed in caregivers’ age (p=0.0090), household head age (p=0.0199), and respondent age (p=0.0165), with Bundabunda having a notably higher proportion of young caregivers aged 20–24 years. Most household heads were male (76.4%), though female-headed households were more prevalent in Rufunsa (32.6%). Access to regular income varied significantly (p=0.0023), with only 28.3% of households in Rufunsa reporting regular income compared to 70.4% in Nyangwena. Sanitation practices showed high reliance on pit latrines (95.5%) across all areas, with minimal access to flushing toilets.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | | Total  N(%) | Nyangwena  n(%) | Bundabunda  n(%) | Rufunsa  n(%) | p-Value |
| **Children aged 6-23 months** | | **89(100.00)** | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Children’s age in months | 6-8 | 17(19.10) | 3(11.11) | 4(25.00) | 10(21.74) | 0.1021 |
| 9-11 | 21(23.60) | 4(14.81) | 3(18.75) | 14(30.43) |
| 12-23 | 51(57.30) | 20(74.07) | 9(56.25) | 22(47.83) |
| Children’s gender | Male | 49(55.06) | 15(55.56) | 11(68.75) | 23(50.00) | 0.4335 |
| Female | 40(44.94) | 12((44.44) | 5(31.25) | 23((50.00) |
| Care givers’ age | 18-19 | 9(10.11) | 2(7.41) | 1(6.25) | 6(13.04) | 0.0090 |
| 20-24 | 27(30.34) | 14(51.85) | 0(0.00) | 13(28.26) |
| 25-29 | 27(30.34) | 6(22.22) | 5(31.25) | 16(34.78) |
| 30-34 | 16(17.98) | 3(11.11) | 8(50.00) | 5(10.87) |
| >35 | 10(11.24) | 2(7.41) | 2(12.50) | 6(13.04) |
| HH head age | *15-19* | 1 (1.18) | 0 (0.00) | 0 (0.00) | 1 (2.27) | 0.0199 |
| *20-24* | 11 (12.94) | 5 (19.23) | 0 (0.00) | 6 (13.64) |
| *25-29* | 17 (20.00) | 7 (26.92) | 0 (0.00) | 10 (22.73) |
| *30-34* | 20 (23.53) | 4 (15.38) | 4 (26.67) | 12 (27.27) |
| *35-39* | 7 (8.24) | 2 (7.69) | 2 (13.33) | 3 (6.82) |
| *40-44* | 11 (12.94) | 2 (7.69) | 4 (26.67) | 5 (11.36) |
| *45-49* | 7 (8.24) | 2 (7.69) | 3 (20.00) | 2 (4.55) |
| *50-54* | 2 (2.35) | 1 (3.85) | 0 (0.00) | 1 (2.27) |
| *55-59* | 4 (4.71) | 1 (3.85) | 1 (6.67) | 2 (4.55) |
| *60-64* | 1 (1.18) | 0 (0.00) | 1 (6.67) | 0 (0.00) |
| *65-69* | 1 (1.18) | 0 (0.00) | 0 (0.00) | 1 (2.27) |
| 70-74 | 1 (1.18) | 1 (3.85) | 0 (0.00) | 0 (0.00) |
| 75-79 | 2 (2.35) | 1 (3.85) | 0 (0.00) | 1 (2.27) |
| Respondent age | *18-19* | 9 (10.11) | 2 (7.41) | 1 (6.25) | 6 (13.04) | 0.0165 |
| *20-24* | 27 (30.34) | 14 (51.85) | 0 (0.00) | 13 (28.26) |
| *25-29* | 27 (30.34) | 6 (22.22) | 5 (31.25) | 16 (34.78) |
| *30-34* | 16 (17.98) | 3 (11.11) | 8 (50.00) | 5 (10.87) |
| *>35* | 10 (11.24) | 2 (7.41) | 2 (12.50) | 6 (13.04) |
| HH head gender | Male | 68(76.40) | 23(85.19) | 14(87.50) | 31(67.39) | 0.1181 |
| Female | 21(23.60) | 4(14.81) | 2(12.50) | 15(32.61) |
| HH with regular income | Yes | 39(43.82) | 19(70.37) | 7(43.75) | 13(28.26) | 0.0023 |
| No | 50(50.18) | 8(29.63) | 9(56.25) | 33(71.74) |
| HH toilet type | Flushing | 4(4.49) | 2(7.41) | 1(6.25) | 1(2.17) | 0.5455 |
| Pit | 85(95.51) | 25(92.59) | 15(93.75) | 45(97.83) |

HH: Household

**Dietary diversity and other Feeding indicators among children aged 6-23 months**

The table summarizes complementary feeding practices among 89 children aged 6–23 months across Nyangwena, Bundabunda, and Rufunsa in Rufunsa District. Overall, only 8.99% of children met the Minimum Dietary Diversity (MDD), with no significant difference between sites (p=0.8501). Similarly, 31.5% met the Age-Appropriate Minimum Meal Frequency (MMF), with Bundabunda showing the lowest compliance (18.8%). Minimum Acceptable Diet (MAD) was met by only 8.99% of children, with slightly higher rates in Bundabunda (18.8%), though the difference was not statistically significant (p=0.2517). Iron-rich or fortified food consumption was low (10.1%), with none of the children in Bundabunda consuming such foods. Consumption of cowpea and soybean meals was nearly negligible across all sites. Among infants aged 6–8 months, 77.8% had received complementary foods, with full compliance in Bundabunda but slightly lower rates in Nyangwena (66.7%) and Rufunsa (72.7%). Overall, feeding practices remain suboptimal across all communities, with no significant geographic differences in the core complementary feeding indicators.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable |  | Total  N(%) | Nyangwena  n(%) | Bundabunda  n(%) | Rufunsa  n(%) | P-Value\* |
| **Children aged 6-23 months** | | **89(100.00)** | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Met Minimum Dietary Diversity | Yes | 8(8.99) | 2(7.41) | 2(12.50) | 4(8.70) | 0.8501 |
| No | 81(91.01) | 25(92.59) | 14(87.50) | 42(91.30) |
| Met Age Appropriate Minimum Meal Frequency | Yes | 28(31.46) | 9(33.33) | 3(18.75) | 16(34.78) | 0.4815 |
| No | 61(60.54) | 18(66.67) | 13(81.25) | 30(65.22) |
| Met Minimum Acceptable Diet | Yes | 8(8.99) | 1(3.70) | 3(18.75) | 4(8.70) | 0.2517 |
| No | 81(91.01) | 26(96.30) | 13(81.25) | 42(91.30) |
| Consumed micronutrients (iron) | Yes | 9(10.11) | 5(18.52) | 0(0.00) | 4(8.70) | 0.1384 |
| No | 80(89.89) | 22(81.48) | 16(100.00) | 42(91.30) |
| Consumed cowpea meal | Yes | 1(1.12) | 1(3.70) | 0(0.00) | 0(0.00) | 0.3172 |
| No | 88(98.88) | 26(96.30) | 16(100.00) | 46(100.00) |
| No | 58(65.17) | 24(88.87) | 8(50.00) | 26(56.52) |
| Consumed Soybean meal | Yes | 1(1.12) | 0(0.00) | 0(0.00) | 1(2.17) | 0.6267 |
| No | 88(98.89) | 27(100.00) | 16(100.00) | 45(97.83) |
| No | 58(65.17) | 19(70.37) | 4(25.00) | 35(76.09) |
| Infants aged 6-8 years who received complementary foods | **Total** | **18(100.00)** | **3(100.00)** | **4(100.00)** | **11(100.00)** | 0.4880 |
| Yes | 14(77.78) | 2(66.67) | 4(100.00) | 8(72.73) |
| No | 4(22.22) | 1(33.33) | 0(0.00) | 3(27.27) |

\*Kruskal-Wallis equality-of-populations rank test

**Cowpea and Soybean in Households with Children aged 6-23 months**

The table presents household-level data on the production and preparation of cowpea and soybean across Nyangwena, Bundabunda, and Rufunsa in Rufunsa District. Overall, 16.9% of households grew cowpea, with the highest proportion in Bundabunda (31.3%), though differences were not statistically significant (p=0.1321). However, cowpea preparation in household meals showed significant variation (p=0.0061), with Bundabunda and Rufunsa reporting higher usage (62.5% and 63.0%, respectively) compared to Nyangwena (25.9%). Methods of cowpea preparation included boiling with maize grits (20.2%), making soup (16.9%), and using as relish (7.9%). Notably, only 34.8% of households prepared cowpea specifically for children, with significantly lower rates in Nyangwena (11.1%) compared to Bundabunda (50%) and Rufunsa (43.5%) (p=0.0078). Soybean cultivation was minimal (8.99%) and not significantly different across sites (p=0.8501). Despite low production, soybean preparation in household meals was significantly higher in Bundabunda (62.5%) than in Nyangwena (14.8%) and Rufunsa (19.6%) (p=0.001). Soybeans were most commonly prepared as flour (34.8%), soup (30.4%), or porridge (21.7%). Preparation of soybeans for children also showed a significant difference (p=0.001), with Bundabunda reporting the highest proportion (75%) compared to 29.6% in Nyangwena and 23.9% in Rufunsa.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | | | | | Total | | Nyangwena | Bundabunda | Rufunsa | p-Value |
| **HHs n(%)** | | | | | **89(100.00)** | | **27(100.00)** | **16(100.00)** | **46(100.00)** |  |
| Grow cowpea n(%) | | | | Yes | 15(16.85) | | 2(7.41) | 5(31.25) | 8(17.39) | 0.1321 |
| No | 74(83.15) | | 25(92.59) | 11(68.75) | 38(82.61) |
| Prepare Cowpea in HH meals n(%) | | | | yes | 46(51.69) | | 7(25.93) | 10(62.50) | 29(63.04) | 0.0061 |
| no | 43(48.31) | | 20(74.07) | 6(37.50) | 17(36.96) |
|  | | Whole, boiled with maize gritsa | | | 18(20.22) | | 5(71.43) | 6(60.00) | 7(24.14) |
|  | | Mashed & prepared as soup | | | 15(16.85) | | 1(3.70) | 1(10.00) | 13(44.83) |
|  | | Whole, boiled as relish | | | 7(7.87) | | 0(0.00) | 1(10.00) | 6(20.69) |
|  | | Otherb | | | 6(6.74) | | 1(3.70) | 2(20.00) | 3(10.34) |
| Prepare Cowpea for children n(%) | | | | yes | 31 (34.83) | | 3 (11.11) | 8 (50) | 20 (43.48) | 0.0078 |
| no | 58 (65.17) | | 24 (88.89) | 8 (50) | 26 (56.52) |
| Grow soybean n(%) | | | | Yes | 8(8.99) | 2(7.41) | | 2(12.50) | 4(8.70) | 0.8501 |
| No | 81(91.01) | 25(92.59) | | 14(87.50) | 42(91.30) |
| Prepare Soybean in HH meals n(%) | | | | yes | 23() | 4() | | 10() | 9() | 0.001 |
| no | 66() | 23() | | 6() | 37() |
|  | Flour | | | | 8(34.78) | 2(50.00) | | 4(40.00) | 2(22.22) | 0.5186 |
|  | Soup | | | | 7(30.43) | 1(25.00) | | 2(20.00) | 4(44.44) |
|  | Porridge | | | | 5(21.74) | 1(25.00) | | 2(20.00) | 2(22.22) |
|  | otherc | | | | 3(13.05) | 0(0.00) | | 2(20.00) | 1(11.11) |
| Prepare soybean for children | | | Yes | | 31(34.83) | 8(29.63) | | 12(75.00) | 11(23.91) | 0.001 |
| No | | 58(65.17) | 19(70.37) | | 4(25.00) | 35(76.09) |

HH: Household; aLarge milled maize grits also known samp in Zambia; bUsed for flavor and sold for income; cCooking oil, flavor, source of income

**Post COVID 19 lock down effect on households with children aged 6-23 months**

The table summarizes the post-COVID-19 lockdown effects on households with children aged 6–23 months in Nyangwena, Bundabunda, and Rufunsa, with specific implications for child feeding practices. Despite the critical nutrition window for this age group, 77.5% of households did not experience increased food production, potentially limiting access to diverse and sufficient foods for young children. Irrigation water access—a key factor in ensuring year-round food availability—was significantly higher in Nyangwena (81.5%) than Rufunsa (50.0%), which may influence household food security and the variety of foods fed to children. Access to agricultural extension services, hired labor, and cash for inputs remained low across all areas, possibly constraining household capacity to grow nutrient-rich foods like legumes and vegetables vital for complementary feeding. A significant majority (80.9%) of households reported food price increases, further limiting affordability and access to diverse food items required to meet minimum dietary diversity and acceptable diet standards. Although 14.6% of households reported increased income, this was disproportionately concentrated in Nyangwena (29.6%) and absent in Bundabunda (0%), suggesting unequal economic recovery and capacity to purchase nutritious foods for children. Only 19.1% reported using alternative food options, and social protection coverage remained minimal, with just 9% receiving COVID-19-specific support. The limited agricultural recovery, economic strain, and weak safety nets post-lockdown likely constrained the ability of households to provide age-appropriate, frequent, and diverse meals to children aged 6–23 months, heightening the risk of undernutrition in this vulnerable group.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | | Total  N=89 | Nyangwena  n=27 | Bundabunda  n=16 | Rufunsa  n=46 | p-value |
| **Production** |  |  |  |  |  |  |
| Production increased | Yes | 20(22.47) | 9(33.33) | 1(6.25) | 10(21.74) | 0.1218 |
| No | 69(77.53) | 18(66.67) | 15(93.75) | 36(78.26) |
| Extension services accessed | Yes | 9(10.11) | 3(11.11) | 1(6.25) | 5(10.87) | 0.8531 |
| No | 80(89.89) | 24(88.89) | 15(93.75) | 41(89.13) |
| Irrigation water access | Yes | 55(61.80) | 22(81.48) | 10(62.50) | 23(50.00) | 0.0292 |
| No | 34(38.20) | 5(18.52) | 6(37.50) | 23(50.00) |
| Hired labor | Yes | 11(12.36) | 5(18.52) | 1(6.25) | 5(10.87) | 0.4554 |
| No | 78(87.64) | 22(81.48) | 15(93.75) | 41(89.13) |
| Cash for inputs availability | Yes | 25(28.09) | 9(33.33) | 2(12.50) | 14(30.43) | 0.3026 |
|  | No | 64(71.91) | 18(66.67) | 14(87.50) | 32(69.57) |  |
| Low input agriculture option | Yes | 48(53.93) | 13(48.15) | 12(75.00) | 23(50.00) | 0.1765 |
| No | 41(46.07) | 14(51.85) | 4(25.00) | 23(50.00) |
| **Distribution** |  |  |  |  |  |  |
| Food price increase experience | Yes | 72(80.90) | 22(81.48) | 12(75.00) | 38(82.61) | 0.7993 |
| No | 17(19.10) | 5(18.52) | 4(25.00) | 8(17.39) |
| Imported Food  Substitution | Yes | 12(13.48) | 3(11.11) | 2(12.50) | 7(15.22) | 0.8785 |
| No | 77(86.52) | 24(88.89) | 14(87.50) | 39(84.78) |
| **Consumption** |  |  |  |  |  |  |
| Income increased | Yes | 13(14.61) | 8(29.63) | 0(0.00) | 5(10.87) | 0.0179 |
| No | 76(85.39) | 19(70.37) | 16(100.00) | 41(89.13) |
| Alternative food option | Yes | 17(19.10) | 7(25.93) | 3(18.75) | 7(15.22) | 0.5353 |
| No | 72(80.90) | 20(74.07) | 13(81.25) | 39(84.78) |
| **Cross cutting/External drivers** |  |  |  |  |  |  |
| Social Protection | FISP | 11(12.36) | 5(18.52) | 2(12.50) | 4(8.70) | 0.218 |
| CST | 5(5.62) | 0(0.00) | 1(6.25) | 4(8.70) |
| None | 72(80.90) | 22(81.48) | 12(75.00) | 38(82.61) |
| SFP | 1(1.12) | 0(0.00) | 1(6.25) | 0(0.00) |
| Social Protection was for COVID 19 | Yes | 8(8.99) | 0(0.00) | 2(12.50) | 6(13.04) | 0.1504 |
| No | 81(91.01) | 27(100.00) | 14(87.50) | 40(86.96) |

Association between meeting MDD and background characteristics

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable |  | Meeting MDD | | | |  |
|  | Did not meet MDD | | Met MDD | |  |
|  | No | % | No | % | p-value |
| Total children aged 6-23 months | Total | 81 | 100 | 8 | 100 |  |
| Age of children in months | *12-23* | 45 | 55.56 | 6 | 75 | 0.2372 |
|  | *6-8* | 15 | 18.52 | 1 | 12.5 |  |
|  | *6-9* | 1 | 1.23 | 0 | 0 |  |
|  | *9-11* | 20 | 24.69 | 1 | 12.5 |  |
| Met MMF | *No* | 57 | 70.37 | 4 | 50 | 0.2392 |
|  | *Yes* | 24 | 29.63 | 4 | 50 |  |
| Met MAD | *No* | 77 | 95.06 | 4 | 50 | 0.0001 |
|  | *Yes* | 4 | 4.94 | 4 | 50 |  |
| Consumed micronutrients | *No* | 75 | 92.59 | 5 | 62.5 | 0.0074 |
|  | *Yes* | 6 | 7.41 | 3 | 37.5 |  |
| Consumed cowpeas |  |  |  |  |  |  |
| Consumed soyabeans |  |  |  |  |  |  |
| Aged 6-8 months received complementary food |  |  |  |  |  |  |
| Gender of children | *Female* | 38 | 46.91 | 2 | 25 | 0.2372 |
|  | *Male* | 43 | 53.09 | 6 | 75 |  |
| Age of caregiver |  |  |  |  |  |  |
| Household factors |  |  |  |  |  |  |
| Age of household head | *15-19* | 1 | 1.23 | 0 | 0 | 0.9478 |
|  | *20-24* | 10 | 12.35 | 1 | 12.5 |  |
|  | *25-29* | 18 | 22.22 | 2 | 25 |  |
|  | *30-34* | 19 | 23.46 | 1 | 12.5 |  |
|  | *35-39* | 6 | 7.41 | 1 | 12.5 |  |
|  | *40-44* | 10 | 12.35 | 1 | 12.5 |  |
|  | *45-49* | 6 | 7.41 | 2 | 25 |  |
|  | *50-54* | 2 | 2.47 | 0 | 0 |  |
|  | *55-59* | 4 | 4.94 | 0 | 0 |  |
|  | *60-64* | 1 | 1.23 | 0 | 0 |  |
|  | 65-69 | 1 | 1.23 | 0 | 0 |  |
|  | 70-74 | 1 | 1.23 | 0 | 0 |  |
|  | 75-79 | 2 | 2.47 | 0 | 0 |  |
| Age of respondent | *18-19* | 7 | 8.64 | 2 | 25 | 0.9055 |
|  | *20-24* | 26 | 32.1 | 1 | 12.5 |  |
|  | *25-29* | 24 | 29.63 | 3 | 37.5 |  |
|  | *30-34* | 16 | 19.75 | 0 | 0 |  |
|  | *>35* | 8 | 9.88 | 2 | 25 |  |
| Gender of HH head | *Male* | 62 | 76.54 | 6 | 75 | 0.9223 |
|  | *Female* | 19 | 23.46 | 2 | 25 |  |
| HH with regular income | *No* | 44 | 54.32 | 6 | 75 | 0.2635 |
|  | *Yes* | 37 | 45.68 | 2 | 25 |  |
| Level of education of household head |  |  |  |  |  |  |
| Toilet type | *Pit* | 77 | 95.06 | 8 | 100 | 0.5225 |
|  | *Flush* | 4 | 4.94 | 0 | 0 |  |
| Grow cowpea | *No* | 68 | 83.95 | 6 | 75 | 0.5212 |
|  | *Yes* | 13 | 16.05 | 2 | 25 |  |
| Prepare Cowpea in HH meals |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Prepare Cowpea for children | *No* | 53 | 65.43 | 5 | 62.5 | 0.8689 |
|  | *Yes* | 28 | 34.57 | 3 | 37.5 |  |
| Grow soybean | *No* | 74 | 91.36 | 7 | 87.5 | 0.7175 |
|  | *Yes* | 7 | 8.64 | 1 | 12.5 |  |
| Prepare soybean in HH meals |  |  |  |  |  |  |
| Prepare Soybean for children | *No* | 53 | 65.43 | 5 | 62.5 | 0.8689 |
|  | *Yes* | 28 | 34.57 | 3 | 37.5 |  |
| Community & Society factors |  |  |  |  |  |  |
| Production increased | *No* | 62 | 76.54 | 7 | 87.5 | 0.4812 |
|  | *Yes* | 19 | 23.46 | 1 | 12.5 |  |
| Extension services accessed | *No* | 72 | 88.89 | 8 | 100 | 0.3227 |
|  | *Yes* | 9 | 11.11 | 0 | 0 |  |
| Income increased | *No* | 70 | 86.42 | 6 | 75 | 0.3856 |
|  | *Yes* | 11 | 13.58 | 2 | 25 |  |
| Hired labor | *No* | 70 | 86.42 | 8 | 100 | 0.2682 |
|  | *Yes* | 11 | 13.58 | 0 | 0 |  |
| Food price increase experience | *No* | 16 | 19.75 | 1 | 12.5 | 0.6206 |
|  | *Yes* | 65 | 80.25 | 7 | 87.5 |  |
| Cash for inputs availability | *No* | 56 | 69.14 | 8 | 100 | 0.0654 |
|  | *Yes* | 25 | 30.86 | 0 | 0 |  |
| Imported Food  Substitution | *No* | 71 | 87.65 | 6 | 75 | 0.3202 |
|  | *Yes* | 10 | 12.35 | 2 | 25 |  |
| Alternative food option | *No* | 65 | 80.25 | 7 | 87.5 | 0.6206 |
|  | *Yes* | 16 | 19.75 | 1 | 12.5 |  |
| Low input agriculture option | *No* | 37 | 45.68 | 4 | 50 | 0.8161 |
|  | *Yes* | 44 | 54.32 | 4 | 50 |  |
| Irrigation water access | *No* | 29 | 35.8 | 5 | 62.5 | 0.1404 |
|  | *Yes* | 52 | 64.2 | 3 | 37.5 |  |
| Social Protection | *farmer\_input\_support\_* | 9 | 11.11 | 2 | 25 | 0.1868 |
|  | *None* | 66 | 81.48 | 6 | 75 |  |
|  | *school\_feeding\_progra* | 1 | 1.23 | 0 | 0 |  |
|  | *social\_cash\_transfer* | 5 | 6.17 | 0 | 0 |  |
| Social Protection was for Covid 19 |  |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | | Model 1 | | Adjusted model | |
|  | | OR(95%CI) | p-value | OR(95%CI) | p-value |
| Total Children aged 6-23 months | |  |  |  |  |
| Met MMF | |  |  |  |  |
| Met MAD | |  |  |  |  |
| Consumed Micronutrients | |  |  |  |  |
| Consumed Cowpea | |  |  |  |  |
| Consumed Soybean | |  |  |  |  |
| Aged 6-8 months received complementary foods | |  |  |  |  |
| Age of children in months | 6-8 |  |  |  |  |
| 9-11 |  |  |  |  |
| 12-23 |  |  |  |  |
| Gender of children | Male |  |  |  |  |
| Female |  |  |  |  |
| Age of caregiver | 18-19 |  |  |  |  |
| 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| >35 |  |  |  |  |
| Household factors | |  |  |  |  |
| Age of household head | 15-19 |  |  |  |  |
| 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| 35-39 |  |  |  |  |
| 40-44 |  |  |  |  |
| 45-49 |  |  |  |  |
| 50-54 |  |  |  |  |
| 55-60 |  |  |  |  |
| 60+ |  |  |  |  |
| Age of respondent | 20-24 |  |  |  |  |
| 25-29 |  |  |  |  |
| 30-34 |  |  |  |  |
| 35-39 |  |  |  |  |
| 40-44 |  |  |  |  |
| 45-49 |  |  |  |  |
| 50-54 |  |  |  |  |
| 55-60 |  |  |  |  |
| 60+ |  |  |  |  |
| Gender of HH head | Male |  |  |  |  |
| Female |  |  |  |  |
| HH with regular income | Yes |  |  |  |  |
| No |  |  |  |  |
| Level of education of household head |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Toilet type | flushing |  |  |  |  |
| Pit |  |  |  |  |
| Grow cowpea |  |  |  |  |  |
| Prepare Cowpea in HH meals | |  |  |  |  |
|  | Whole, boiled with maize gritsa |  |  |  |  |
| Mashed & prepared as soup |  |  |  |  |
| Whole, boiled as relish |  |  |  |  |
| Otherb |  |  |  |  |
| Prepare Cowpea for children | Yes |  |  |  |  |
| No |  |  |  |  |
| Grow soybean | Yes |  |  |  |  |
| No |  |  |  |  |
| Prepare soybean in HH meals | Yes |  |  |  |  |
| No |  |  |  |  |
|  | Flour |  |  |  |  |
| Soup |  |  |  |  |
| Porridge |  |  |  |  |
| Feed |  |  |  |  |
| otherc |  |  |  |  |
| Prepare Soybean for children | Yes |  |  |  |  |
| No |  |  |  |  |
| Community & Society factors | |  |  |  |  |
| Production increased |  |  |  |  |  |
| Extension services accessed |  |  |  |  |  |
| Income increased |  |  |  |  |  |
| Hired labor |  |  |  |  |  |
| Food price increase experience |  |  |  |  |  |
| Cash for inputs availability |  |  |  |  |  |
| Imported Food  Substitution |  |  |  |  |  |
| Alternative food option |  |  |  |  |  |
| Low input agriculture option |  |  |  |  |  |
| Irrigation water access |  |  |  |  |  |
| Social Protection |  |  |  |  |  |
| Social Protection was for Covid 19 |  |  |  |  |  |

Best Fit Model