PROJETO
DOM HELDER
CÂMARA

IMPACT ASSESSMENT REPORT

PROJETO
MONITORA

BRASÍLIA – DF
AUGUST 2022

Impact assessment report

Projeto Dom Hélder Câmara (PDHC II)

Realization:
Coordenação Geral de Inclusão Produtiva
Departamento de Estruturação Produtiva
Secretaria de Agricultura Familiar e Cooperativismo
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Authors:
Mario Lucio de Ávila
Mauro Eduardo Del Grossi
Mireya Eugenia Valência Perafán
Ludgero Cardoso Galli Vieira
Reinaldo José de Miranda Filho

Visual Communication:
Agência Cajuí

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EXECUTIVE SUMMARY

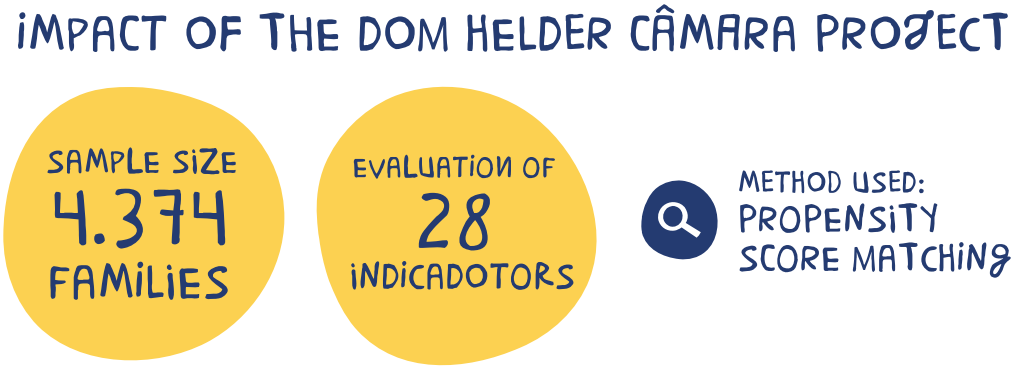
1. The Dom Helder Câmara Project (PDHC) positively impacted the lives of thousands of family farmers in the Brazilian semiarid region in different aspects. This is the conclusion of this impact evaluation of the project, after a rigorous process of statistical analysis.

2. The main purpose of PDHC is to reduce rural poverty and inequalities in the Brazilian semiarid region. The first observation is that the program has succeeded in assisting poor or extremely poor families in this region, providing technical assistance, rural extension and, for a portion of them, productive development funding.

3. The existence of poverty can be demonstrated by the average area of the establishments of beneficiary farmers, about 2 hectares, where 40% do not have the title or definitive ownership of the land and 75% have incomplete primary education or no education at all. The families assisted by PDHC have between two and four members (average of 3.4 persons per family); husbands and wives with an average age of 46 and 44 years, respectively; mostly two members active in agriculture, in most cases the couple (65%).

4. To evaluate the impact of PDHC, a significant sample of 4,374 families was conducted and an established method was used to evaluate 28 indicators: the Propensity Score Matching (PSM).

5. The sample size allowed assessments to be made both for the beneficiaries in general (hereafter, in this executive summary, identified as **BG**) and those who also received the productive development funding (**BF**), always compared to the performance of farmers who did not participate in the program, these being the control group for BG and the control group for BF (**CG** and **CF**, respectively), with a margin of error of up to 2.5%, up or down.



CAPTION

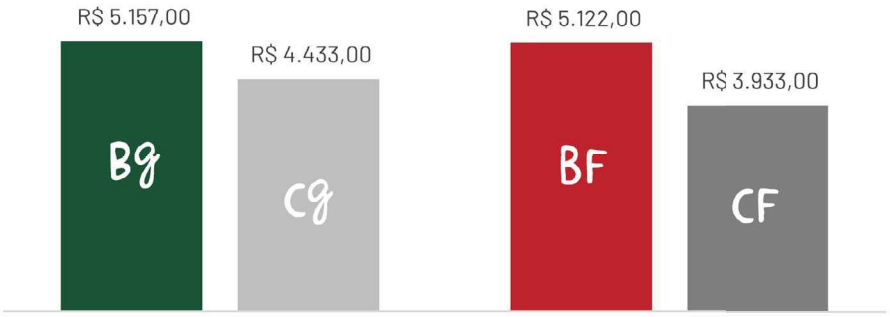
BG: BENEFICIARIES IN GENERAL

BF: BENEFICIARIES WHO RECEIVED FUNDING

CG: CONTROL GROUP FOR BG

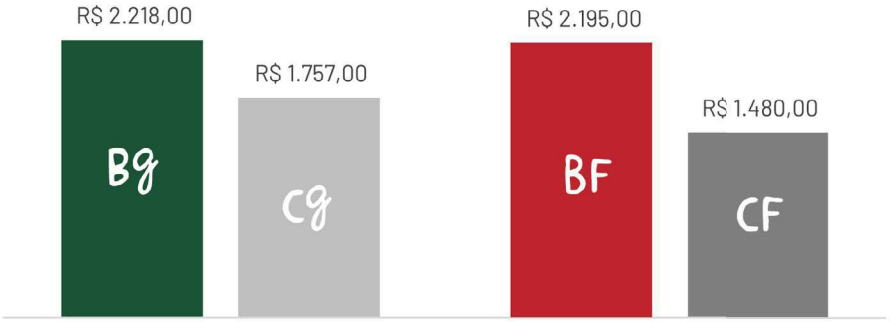
CF: CONTROL GROUP FOR BF

6. **Total Agricultural Income:** BG (average of R$5,157) showed income 16.3% higher than CG (average of R$4,433). In comparison to BF (average of R$5,122), the difference was even more significant, with income 30.2% higher than CF (average of R$3,933).



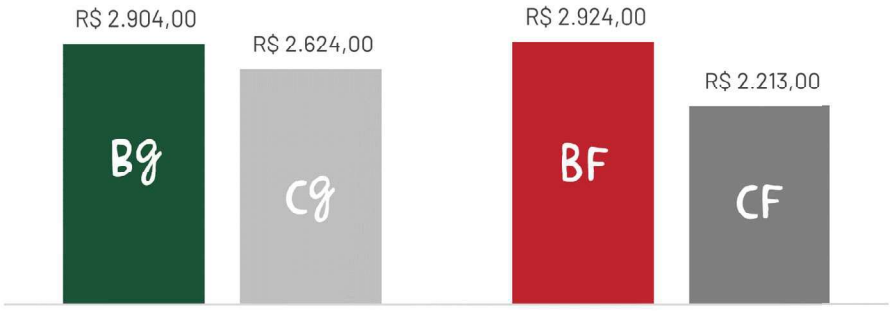
Renda Agropecuária Total

7. **Agricultural Sales Income:** BG (average of R$2,218) showed income 26.2% higher than CG (average of R$1,757). In comparison to the BF (average of R$2,195), the difference was even more significant, with income 48.3% higher than the CF (average of R$1,480).



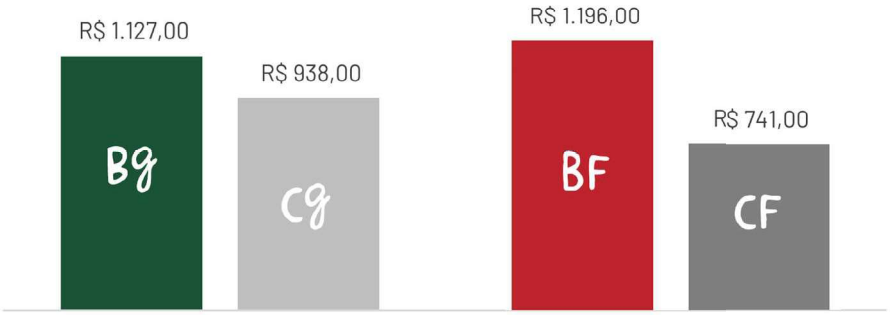
Renda Agropecuária Vendas

8. **Agricultural Income from self-consumption:** BG (average of R$2,904) showed income 10.7% higher than the CG (average of R$2,624). In comparison to the BF (average of R$2,924), the difference was even more significant, with income 32.2% higher than the CF (average of R$2,213).



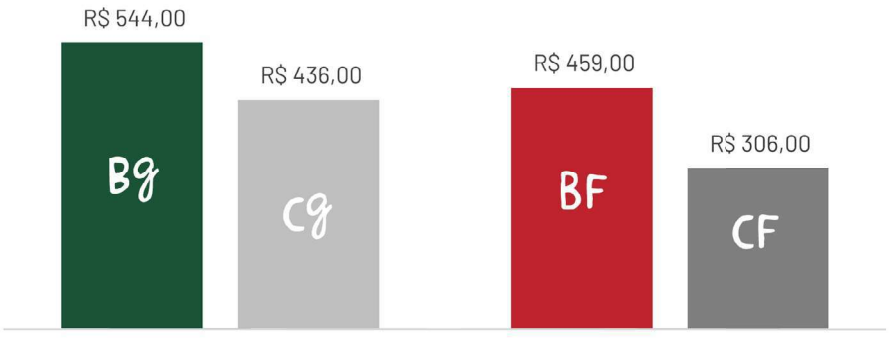
Renda Agropecuária do Autoconsumo

9. **Sales Income from Animal Production:** BG (average of R$ 1,127) showed income 20.1% higher than CG (average of R$ 938). In comparison to the BF (average of R$ 1,196), the difference was even more significant, with income 61.5% higher than the CF (average of R$ 741).



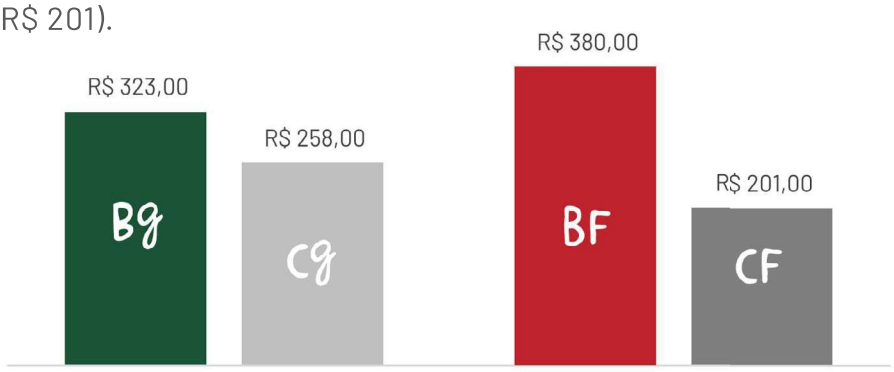
Renda Vendas da Produção Animal

10. **Sales Income from Animal Derivatives:** There were no significant differences between any of the comparisons. Considering only the observed values, BG presented an average income of R$ 544 and CG presented an average income of R$ 436. The average income of BF was R$ 459 and that of CF was R$ 306.



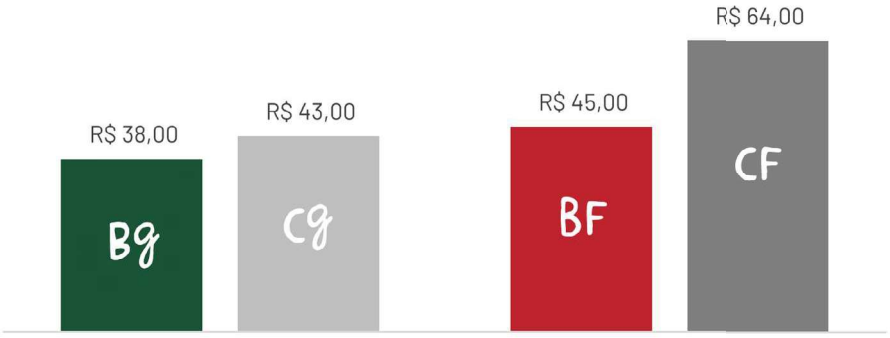
Renda Vendas dos Derivados da Produção Animal

11. **Sales Income from Vegetable Production:** BG (average of R$ 323) showed income 25.3% higher than CG (average of R$ 258). In comparison to the BF (average of R$ 380), the difference was even more significant, with income 89.5% higher than the CF (average of R$ 201).



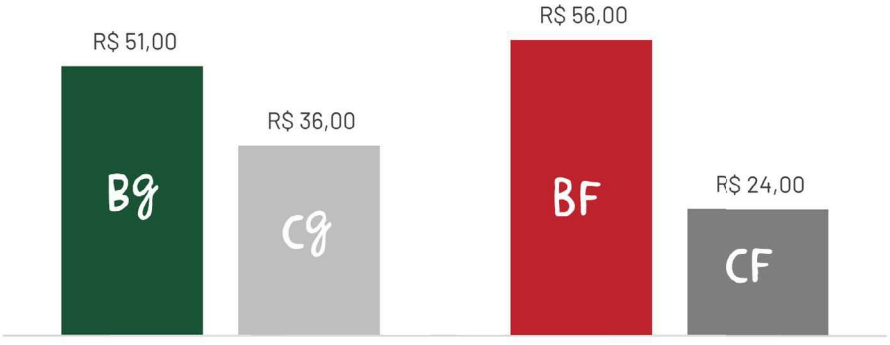
Renda Vendas da Produção Vegetal

12. **Sales Income from Vegetable Derivatives:** There were no significant differences between any of the comparisons. Considering only the observed values, BG had an average income of R$ 38 and CG had an average income of R$ 43. The average income of BF was R$ 45 and that of CF was R$ 64.



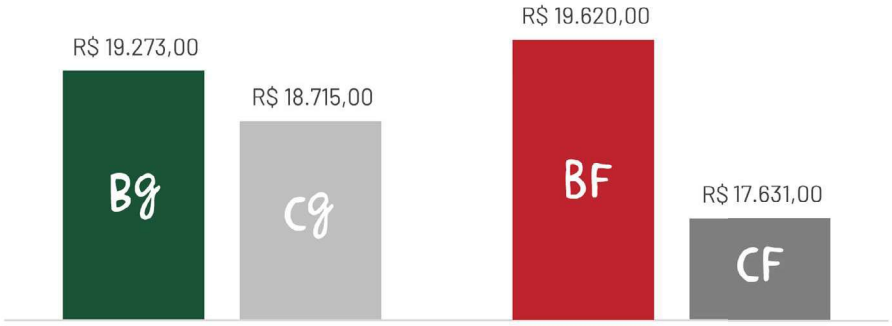
Renda Vendas dos Derivados da Produção Vegetal

13. **Sales Income from Nonagricultural Activities:** There were no significant differences between any of the comparisons. Considering only the observed values, BG presented average income of R$ 51 and CG presented average income of R$ 36. BF's average income was R$ 56 and that of CF was R$ 24.



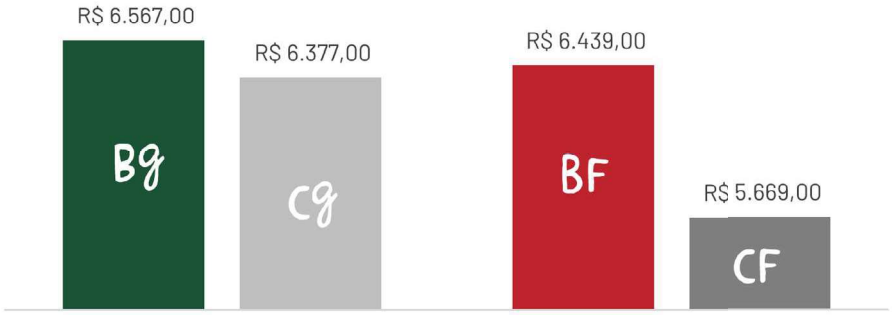
Renda Vendas das Atividades não agrícolas

14. **Total Annual Income:** There was no significant difference between BG (average of R$19,273) and CG (average of R$18,715). On the other hand, regarding BF (average of R$19,620), the difference was significant, with this group presenting an income 11.3% higher than the CF (average of R$17,631).



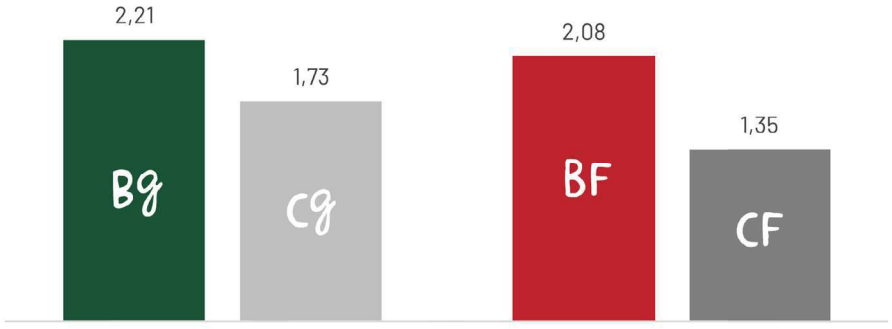
Renda Anual Total

15. **Annual Per Capita Income:** There was no significant difference between BG (average of R$6,567) and CG (average of R$6,377). On the other hand, regarding BF (average of R$6,439), the difference was significant, with this group presenting an income 13.6% higher than the CF (average of R$5,669).



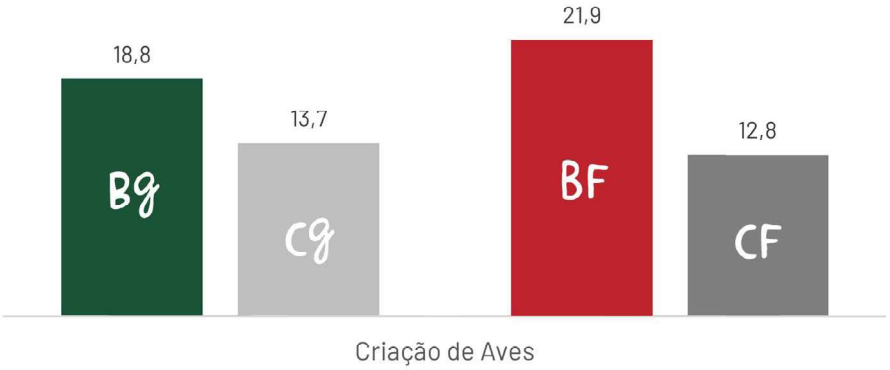
Renda Anual Per Capita

16. **Pig farming:** BG (average of 2.21 heads) had 28% more animals than CG (average of 1.73 heads). Regarding BF (average of 2.08 heads), the difference was even more significant, with a 54.8% higher breeding rate than the CF (average of 1.35 heads).



Criação de Suínos

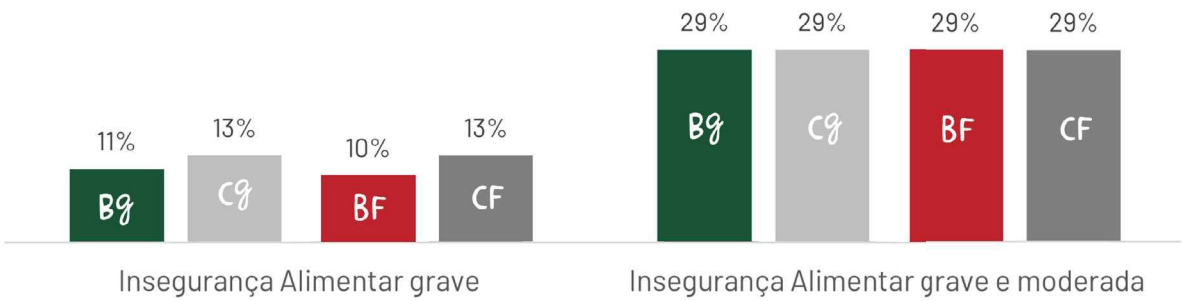
17. **Poultry Farming:** BG (average of 18.8 heads) had 37.2% more animals than CG (average of 13.7 heads). Regarding BF (average of 21.9 heads), the difference was even more significant, with a 70.6% higher breeding rate than the CF (average of 12.8 heads).



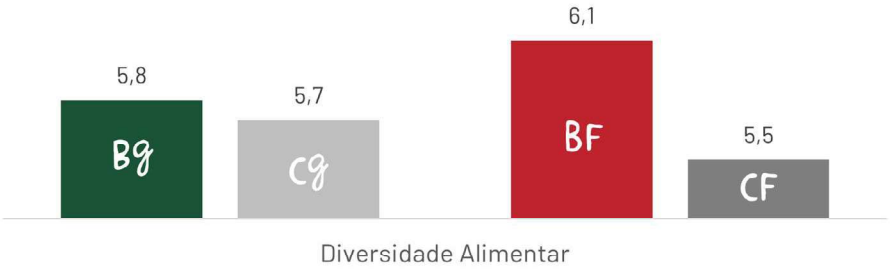
Criação de Aves

18. **Other Livestock:** PDHC had no effect on caprine herds (average heads of BG with 2.6 and CG with 2.5 and average heads of BF with 1.3 and CF with 1.4), ovine (average heads of BG with 2.6 and CG with 2.4 and average heads of BF with 1,5 and CF with 1.0), cattle (average heads of BG with 1.7 and CG with 1.8 and average heads of BF with 1.6 and CF with 1.6), horses, donkeys and mules (average heads of BG with 0.3 and CG with 0.3 and average heads of BF with 0.3 and CF with 0.3)

19. **Food Insecurity:** There was no difference between severe food insecurity between groups BG (11% of households) and CG (13% of households) and between BF (10% of households) and CF (13% of households). Similarly, there was also no difference between severe and moderate food insecurity between the BG (29% of households) and CG (29% of households) groups and between BF (29% of households) and CG (29% of households).

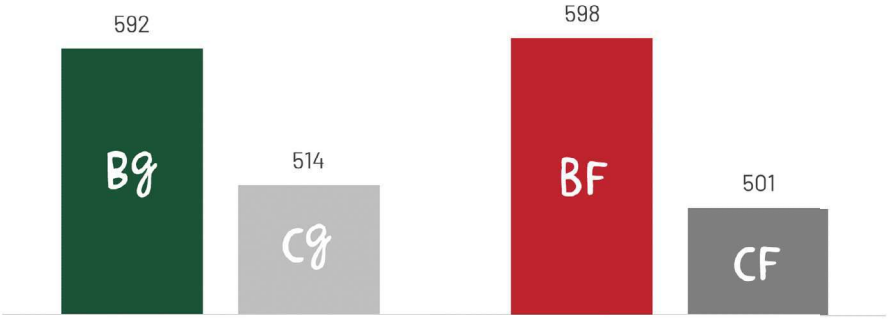


20. **Food Diversity:** BG (average of 5.8 points) showed diversity 2.6% higher than CG (average of 5.7 points). Regarding BF (average of 6.1 points), the difference was even bigger, with diversity 11.3% higher than in CF (average of 5.5 points).



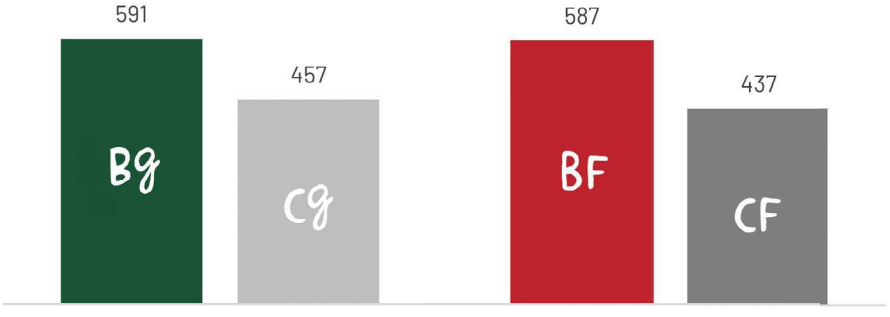
Diversidade Alimentar

21. **Access to Agrarian Policies Index:** BG (average of 591 points) presented access 29.3% higher than CG (average of 457 points). Regarding BF (average of 587 points), the difference was even bigger, with access 34.2% higher than the CF (average of 437 points).



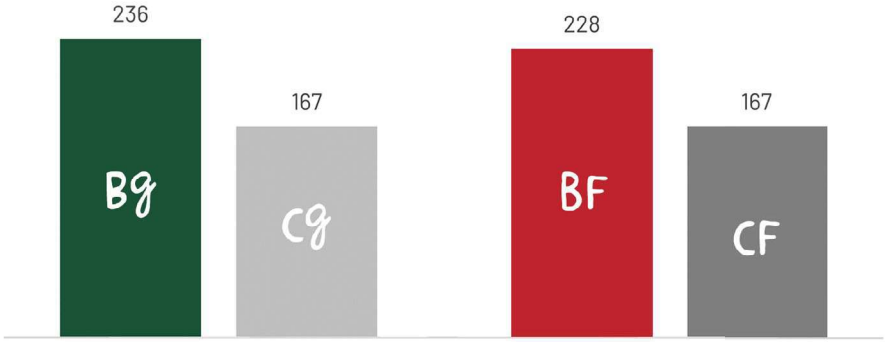
Índice de Acesso a Políticas Públicas

22. **Access to Agrarian Policies Index:** BG (average of 591 points) presented access 29.3% higher than CG (average of 457 points). Regarding BF (average of 587 points), the difference was even bigger, with access 34.2% higher than the CF (average of 437 points).



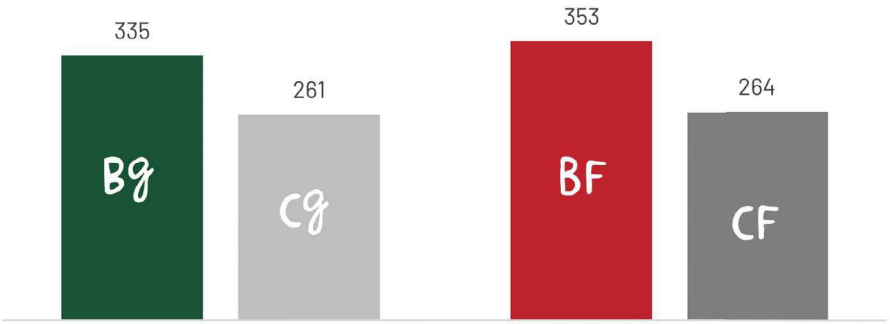
Índice de Acesso a Políticas Agrárias

23. **Associativity Index:** BG (average of 236 points) showed associativity 41.1% higher than CG (average of 167 points), while BF (average of 228 points) showed associativity 36.4% higher than CF (average of 167 points).



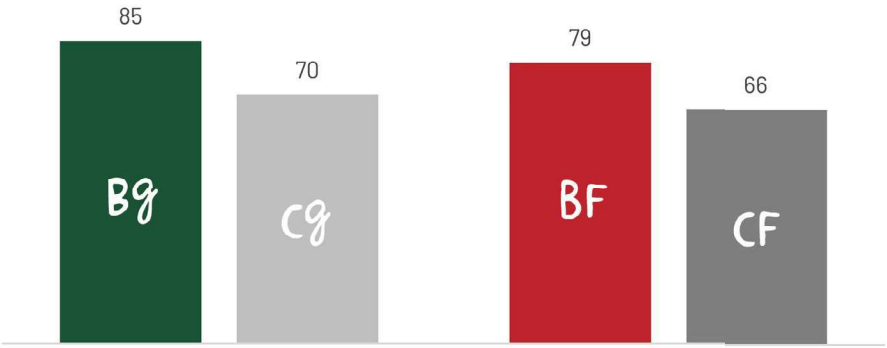
Índice de Associatividade

24. **Women's Participation Index:** BG (average of 335 points) showed participation 28.4% higher than CG (average of 261 points). Regarding the BF (average of 353 points), the difference was even bigger, with a 33.8% higher participation than the CF (average of 264 points).



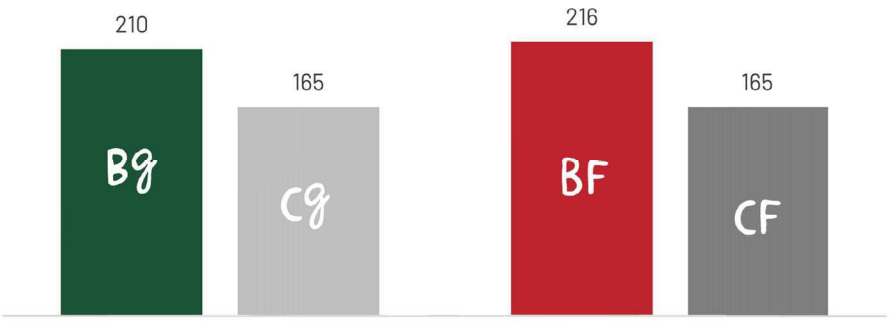
Índice de Participação de Mulheres

25. **Youth Participation Index:** BG (average of 85 points) showed 22.2% higher participation than CG (average of 70 points). There was no significant difference between BF (average of 79 points) and CF (average of 66 points).



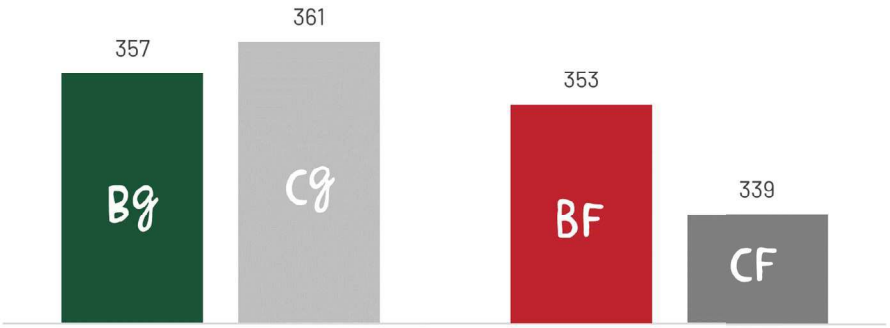
Índice de Participação de Jovens

26. **Women and Youth Participation Index:** BG (average of 210 points) showed participation 27.1% higher than CG (average of 165 points). Regarding the BF (average of 216 points), the difference was even bigger, with 30.7% more participation than the CF (average of 165 points).



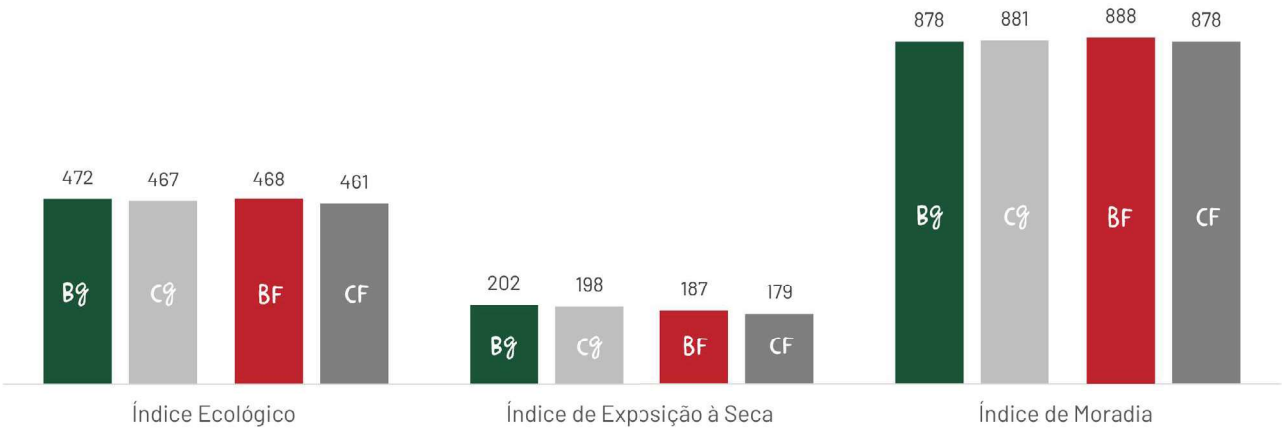
Índice de Participação de Mulheres e Jovens

27. **Multidimensional Poverty Index:** There was no significant difference between BG (average of 357 points) and CG (average of 361 points). On the other hand, regarding BF (average of 353 points), multidimensional poverty was 4.2% lower than CF (average of 339 points).



Índice de Pobreza Multidimensional

28. **Other Indices:** PDHC had no effect on the Ecological Index (point averages of BG with 472 and CG with 467 and point averages of BF with 468 and CF with 461), the Drought Exposure Index (point averages of BG with 202 and CG with 198 and point averages of BF with 187 and CF with 179) and the Housing Index (point averages of BG with 878 and CG with 881 and point averages of BF with 888 and CF with 878).



29. This impact evaluation demonstrates that PDHC achieved its intended goals, generating higher incomes, agricultural production, food diversity, access to public and agrarian policies, greater inclusion in associations, as well as inserting women and young people in the productive, commercial and communal activities of the family. This document also demonstrates that the impact of PDHC was even more promising within the group of beneficiaries that received productive incentives.

30. It can be concluded that technical assistance has changed the lives of family farmers in the Brazilian semiarid region for the better. Additionally, when technical assistance is associated with productive funding, the livelihood improvement is even more significant.

31. Finally, it is recommended to continue offering technical assistance and productive funding to the family farmers of the Brazilian semiarid region, as well as to carry out new studies complementing those presented here.

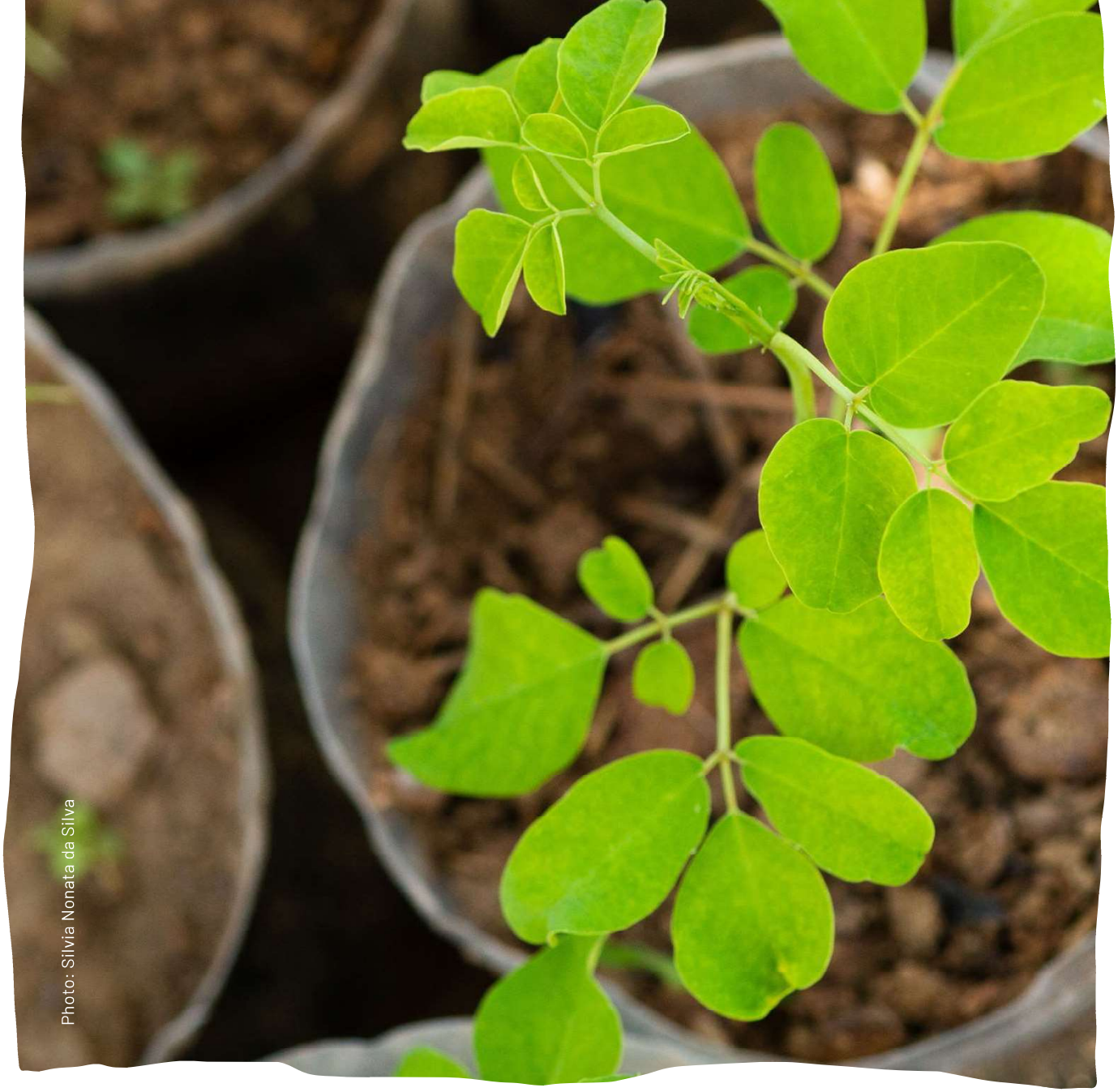


Photo: Silvia Nonata da Silva

1. INTRODUCTION

The main purpose of a project, program, or public policy for population development is to generate positive changes in certain aspects of the life of the beneficiary group, and in the rural environment, goals such as increased financial income, access to new markets, inclusion of women and young people in new productive activities, increased food security, among many others, are common. Therefore, there is a strong need for program managers and public policy makers to coordinate different actors and spheres of government in order to achieve the proposed results. At the end of this effort, there is the need to evaluate whether the project, program, or public policy has achieved its intended goals, thus generating learning and enabling public transparency, always based on solid evidence of these impact evaluations.

A robust impact evaluation seeks to assess whether the project, program, or public policy effectively had a causal effect on the beneficiary group, isolating the effects of conjuncture or other public actions. For example, if a project aims to promote the sale of vegetables produced by family farmers in a given region to municipal schools through the PNAE (National School Feeding Program), after a certain period of time since the implementation of the project and after the establishment of several control protocols for unwanted variations, a proper impact evaluation of this program would assess whether the average annual income of beneficiary agricultural units was significantly higher than the average annual income of agricultural units that did not join the project (control group). Therefore, an impact evaluation, if well outlined, assesses whether the increased income of beneficiary farm units can be directly attributable to the implemented project (that is, the project as a causal effect).

This document presents the impact evaluation of the Dom Helder Câmara Project (PDHC), developed by the Ministry of Agriculture, Livestock and Supply (MAPA), through the Secretariat of Family Agriculture and Cooperatives, and co-financed by the International Fund for Agricultural Development (FIDA). **The PDHC seeks to reduce the levels of poverty and inequality in the semi-arid region, qualifying producers to develop sustainable production and encouraging the reproduction of good practices, and has as its central axis the Technical Assistance and Rural Extension (ATER)**[1]. To assess the impact generated by PDHC in beneficiary families, 28 different dimensions were analyzed: (1) total agricultural and livestock income, (2) monetary agricultural and livestock income, (3) agricultural income from self-consumption, (4) monetary income from animal production, (5) monetary income from derivatives of animal production, (6) monetary income from vegetable production, (7) monetary income from crop production, (8) monetary income from non-agricultural activities, (9) total annual income, (10) annual income per capita, (11) number of pig heads, (12) number of poultry heads, (13) number of goat heads, (14) number of sheep heads, (15) number of bovine heads, (16) number of horses, donkeys and mules, (17) food insecurity, (18) food diversity, (19) ecological index, (20) index of access to public policies, (21) index of access to agricultural policies, (22) Associativity Index, (23) Women's Participation Index, (24) Youth Participation Index, (25) Women and Youth Participation Index, (26) Drought Exposure Index, (27) Housing Index, and (28) multidimensional poverty index.

[1] Source: https://www.gov.br/agricultura/pt-br/assuntos/agricultura-familiar/projeto-dom-helder-camara

Photo: Silvia Nonata da Silva

2. METHODOLOGY

The information on farming families was obtained through a sampling period between January and March 2022. The farming families benefiting from PDHC actions were selected through the registration of beneficiaries conducted by technical assistance organizations, regardless of whether public or private. The information on the farming families in the control group was obtained by cross-referencing the PRONAF Aptitudinal Declaration (DAP) database with the Unified Registry for Social Programs (Cadastro Único).

The sampling plan called for interviews with 4,948 families, but there was a sample loss, resulting in a total of 4,895 farmer families interviewed **(Figure 1 and ANNEX I)**. No interviews were conducted in Espírito Santo, as a low number of samples was drawn in this state, which would considerably increase the costs of the campaign to the detriment of the sample gain. Therefore, based on this reasoning and with the agreement of the Secretariat of Family Agriculture and Cooperativism (SAF/MAPA) and FIDA, no sampling was carried out in Espírito Santo.

After analyzing the information, we discarded the interviews of: members of the control group who declared they had received technical assistance from the Dom Helder Câmara Project; members of the control group who did not identify themselves as family farmers; members of the control group who declared they received productive incentives; and beneficiaries who were expected to receive technical assistance, but did not actually receive it. With this, the number of valid interviews fell to 4,374, with 1,637 of them being revisits from 2018 and 2,737 from expansion of the sample.

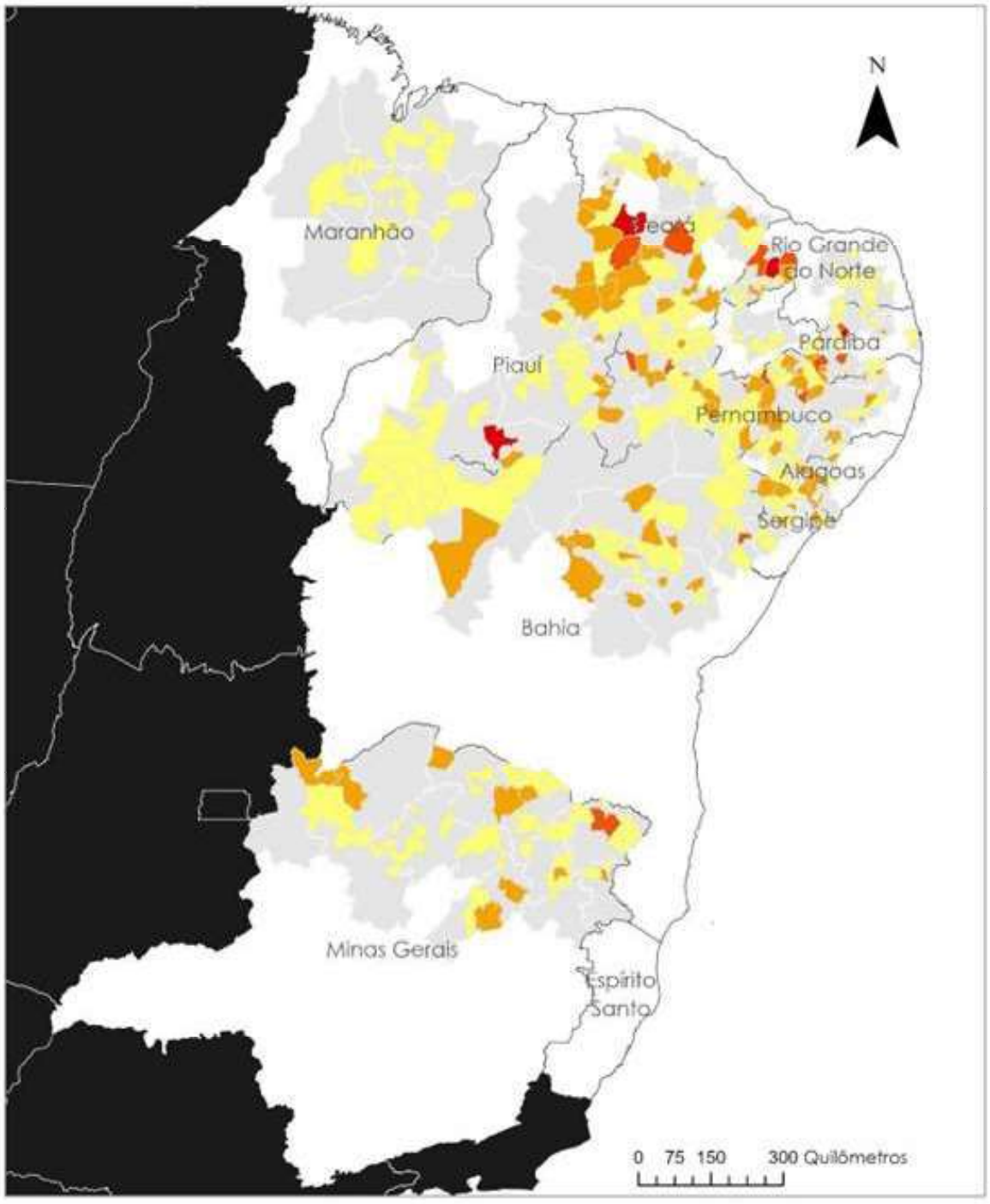


Figure 1 | Map with the total number of interviews conducted per municipality (public and private companies)

According to information obtained from the Technical Assistance Management System (SGA) of the National Agency for Technical Assistance and Rural Extension (ANATER), the population of the beneficiary group comprises 54,039 families[2]. The population of the control group was taken from CadÚnico and indicated a universe of about 500,000 families. Using these population sizes, the sample sizes were obtained according to equation 1.

$$n = \frac{Z^2 S_x^2 N}{Z^2 S_x^2 + e^2(N-1)}$$

where: ***n*** is the number of households in the sample (sample size), ***Z*** is the critical value that corresponds to the desired confidence level, ***Sx*** is the sample standard deviation, e is the margin of error or maximum tolerable error, and ***N*** is the population size.

The sample standard deviation estimates (*Sx*) were calculated based on the total annual income measured through a previous survey conducted in 2018. Subsequently, considering the final sample size (*n*) of 4,374 interviews, a desired degree of confidence (*Z*) of 1.96 (95%), the margin of error (*e*) obtained in this sample was 2.5%, up or down.

For the impact evaluation, we employed the Propensity Score Matching (PSM[3]), which tested the impact of PDHC on beneficiaries. The PSM allows estimating the causal effects of a treatment after pairing the sample units of each group (in this case, the PDHC beneficiaries and the control group) using a set of covariates. The covariates used for the matching were: (i) **the state in which the farm is located;** (ii) **the area of the farm;** (iii) **the number of family members engaged in agricultural activities;** (iv) **whether the farm is composed only by the family head or by a couple (head and spouse);** and (v) **whether technical assistance services were provided by public or private companies**[4].

After the pairing of households as established above, the impact of PDHC was evaluated for each of the following 28 variables/indices: (1) total agricultural income, (2) monetary agricultural income, (3) agricultural income from self-consumption, (4) monetary income from livestock production, (5) monetary income from derivatives of livestock production, (6) monetary income from crop production, (7) monetary income from crop production, (8) monetary income from non-agricultural activities, (9) total annual income, (10) annual income per capita, (11) number of pig units, (12) number of poultry units, (13) number of goat units, (14) number of sheep units, (15) number

[2] Informação referente a agosto/2022.
[3] Para maiores detalhes veja Guo e Fraser, 2014.
[4] The reason is that the private companies started their assistance work later.

of cattle units, (16) number of horse, donkey and mule units, (17) food insecurity, (18) food diversity, (19) ecological index, (20) access to public policies index, (21) access to agrarian policies index, (22) Associativity Index, (23) Women's Participation Index, (24) Youth Participation Index, (25) Women and Youth Participation Index, (26) Drought Exposure Index, (27) Housing Index, and (28) Multidimensional Poverty Index.

Finally, five points should be highlighted about the PSM procedures. First, for each of the 28 variables/indices above, two impact evaluations were conducted, being (i) one between the control group and the beneficiaries group (in this case, the beneficiaries who received only technical assistance or those who received both technical assistance and productive incentive were considered) and the other (ii) between the control group and the beneficiaries group (in this case, only the beneficiaries who received both technical assistance and productive incentives were considered). This procedure resulted in 56 PDHC impact evaluation tests. Second, for each of the 56 impact evaluation tests, a new pairing between sample units was made according to PSM. Third, because the pairings were performed before each of the 56 tests, the mean and standard deviation values of a given variable (e.g., total annual income) differed between the case i and case ii control groups presented in the first section of this paragraph. Fourth, a t-test for dependent samples was used to assess the impact of PDHC after the pairing of the agricultural units. Five, after the pairing of farm units, a chi-square (X^2) test was used to compare the proportions of households with severe food insecurity or moderate or severe food insecurity between the control and beneficiary groups.

Photo: Silvia Nonata da Silva

3. GENERAL CHARACTERIZATION OF THE SAMPLE

After these exclusions, 4,374 valid interviews remained, of which 1,764 were of actual project beneficiaries and 2,610 of farmers who did not receive any type of technical assistance **(Table 1)**.

Table 1 | Number of valid questionnaires for impact assessment

TYPE OF COMPANY	BENEFICIARIES	CONTROL	TOTAL
Public	621	1.016	1.637
Private	1.143	1.594	2.737
Total	**1.764**	**2.610**	**4.374**

Most of the interviewed families showed sociocultural identification with family farming, followed by quilombolas, for both the control and beneficiary groups (Table 2). The results of sociocultural identification, as well as others, also demonstrate a great similarity of background between the control and beneficiary groups, which makes the results of the impact evaluation even more reliable.

Table 2 | Sociocultural identification of the community of the interviewed families, values in percentages of families

SOCIOCULTURAL IDENTIFICATION	FAMILIES INTERVIEWED (%)	
	CONTROL	BENEFICIARIES
Family farming	85,6	85,2
Fundo de pasto	0,8	0,5
Indigenous	1,7	2,7
Fishermen	1,2	1,4
Settlement project	3,9	1,9
Quilombolas	9,9	13,3
Another identity	2,4	0,4

Note: in this question there was the possibility to select more than one option. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

The main productive activities developed in the establishments of the interviewed families were agricultural production, irrigated horticulture and caprine, ovine and free-range poultry farming, both for the control group and the beneficiary group **(Table 3)**. In addition to these activities, pig and cattle farming also showed productive importance for both groups interviewed.

Table 3 | Main productive activities in the households of the interviewed families, values in percentages of families

MAIN PRODUCTIVE ACTIVITIES	FAMILIES INTERVIEWED (%)	
	CONTROL	BENEFICIARIES
Beekeeping (extraction of honey, propolis, pollen, wax, etc.)	2,9	4,5
Goat, sheep, poultry	65,4	74,4
Aquaculture (fish, oysters, shrimp, etc.)	1,8	2,6
Agricultural production, irrigated horticulture	72,3	73,5
Extractivism	4,8	4,4
Processing of beekeeping products	0,2	0,1
Processing of goat, sheep and poultry products	0,7	1,0
Processing of aquaculture products	0,2	0,1
Fruit Processing	2,1	2,2
Cassava processing and production of derivatives	3,9	4,3
Crafts and other non-agricultural activities	1,1	2,7
Artisanal Fishing	1,0	1,3
Cattle breeding	29,3	30,8
Pig Farming	31,7	38,4
Other activities (agricultural and non-agricultural)	5,7	4,6

Note: in this question there was the possibility to select more than one option. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

Among the families that have a PRONAF Aptitudinal Declaration (DAP), almost all of the DAP are of the main type, with about 96.3% for the control group and 95.2% for the group of beneficiaries, followed by DAP Woman **(Table 4)**.

Table 4 | Socio-cultural identities of the community of the interviewed families, values in percentages of families

TYPE OF DAP	FAMILIES INTERVIEWED (%)	
	CONTROL	BENEFICIARIES
Type of DAP: Main	96,3	95,2
Type of DAP: Woman	4,2	7,0
Type of DAP: Youth	0,3	0,2
Type of DAP: Special	0,5	0,7

Note: in this question there was the possibility to select more than one option. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

Most families have between two and four members, with an average of 3.4 people per family **(Figure 2)**, and most of them are between 30 and 59 years old **(Figure 3)**. Compared to the northeastern age pyramid (IBGE-SIDRA, 2022, table 6407), it can be inferred that the interviewees are a little younger.

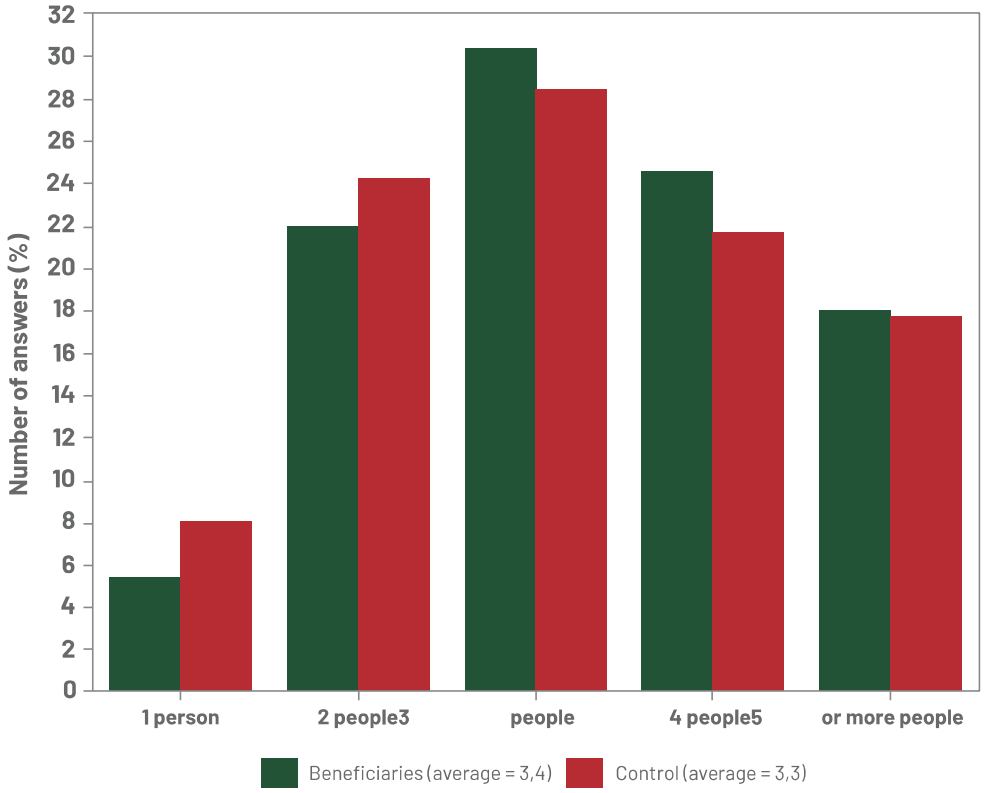
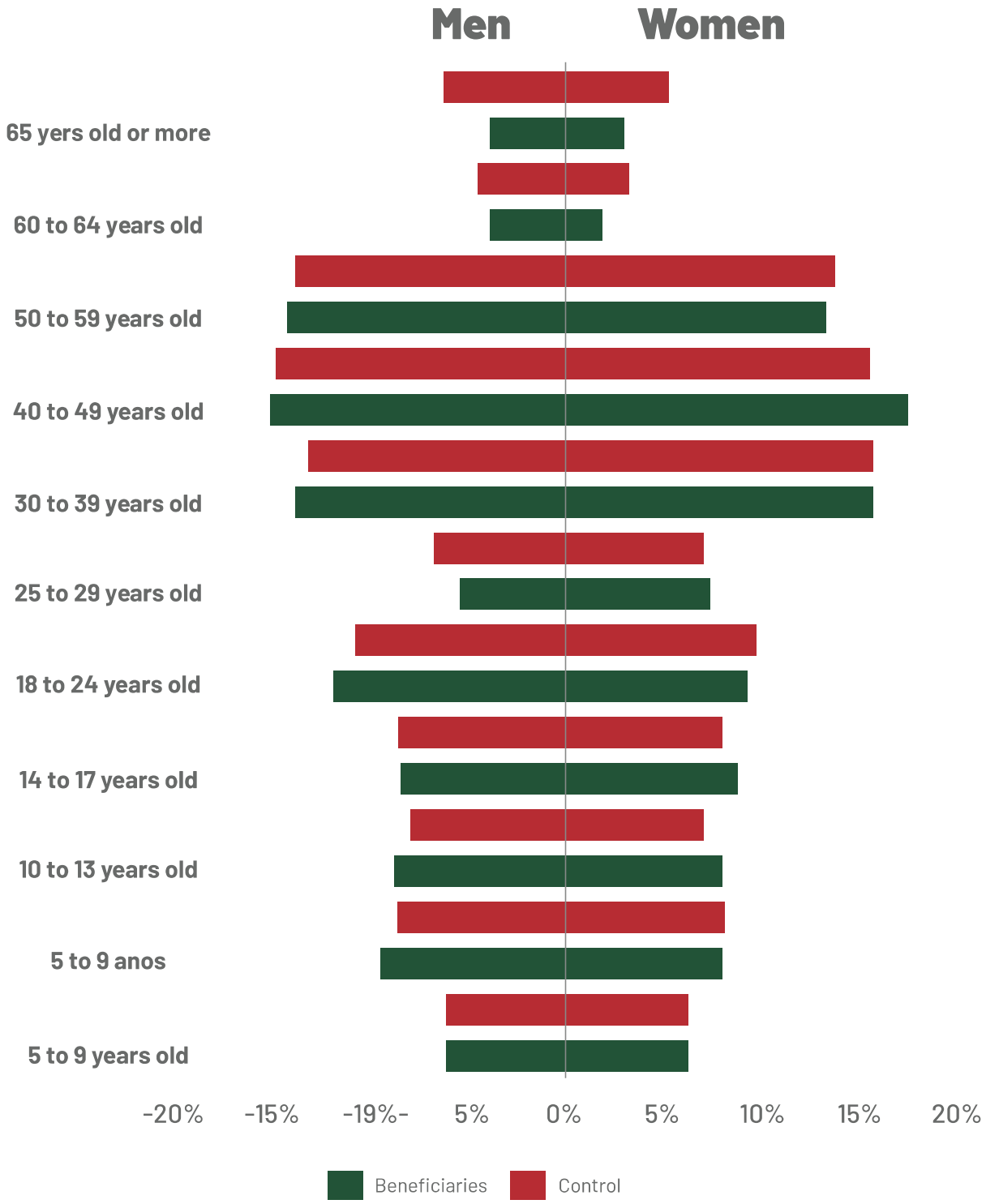


Figure 2 | Number of people belonging to the interviewed families according to the sample group (control and beneficiaries)

Photo 1 | Farming families in Olivedos-PB (top and center-left) and Flores-PE (center-right) and family handicraft production in Cabaceiras-PB (bottom)



Source: PDHC 2021, all family members

Figure 3 | Age pyramid of the members of the interviewed families, according to the sample group. Control group= red; Beneficiary group= green

Photo 2 | Farming families in Verdejante-PE (top) and Barra-BA (center-left and center-right) and coconut self-consumption in Morro do Chapéu-PB (bottom)

The average age of the household heads is 46 for the beneficiaries and 47 for the control group, and that of the spouses is 44 **(Figure 4)**.

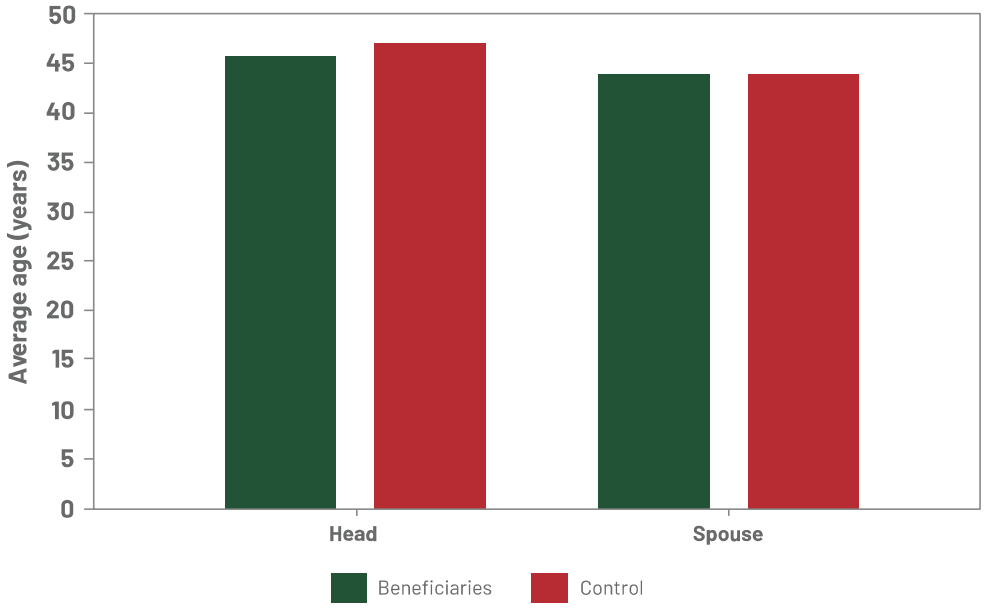


Figure 4 | Average age of household head and spouse according to the sample group (control and beneficiaries)

Most families have two members active in farming, but it is also common to find families where only one member is engaged in farming **(Figure 5)**. In most families, the activity is carried out by the couple, but in about 30% it is carried out only by the head of the household **(Figure 6)**.

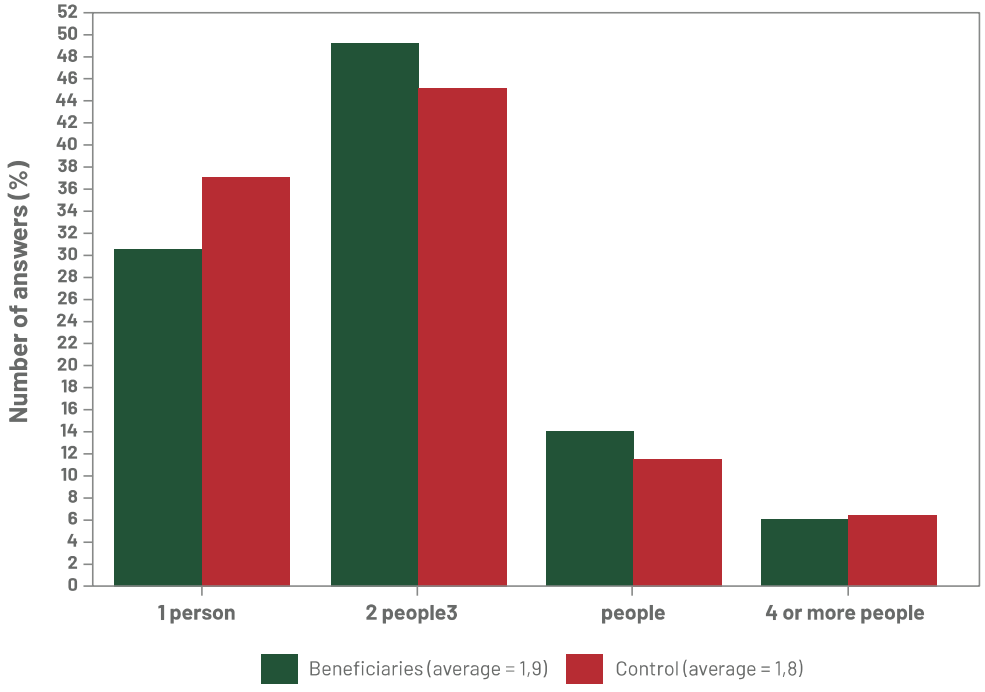


Figure 5 | Number of members dedicated to agricultural activities according to the sample group (control and beneficiaries)

Photo 3 | Farming families in Sobral-CE (top), Morro do Chapéu-BA (center-left and center-right) and in Bela Vista do Maranhão-MA and Anajatuba-MA (bottom-left and bottom-right)

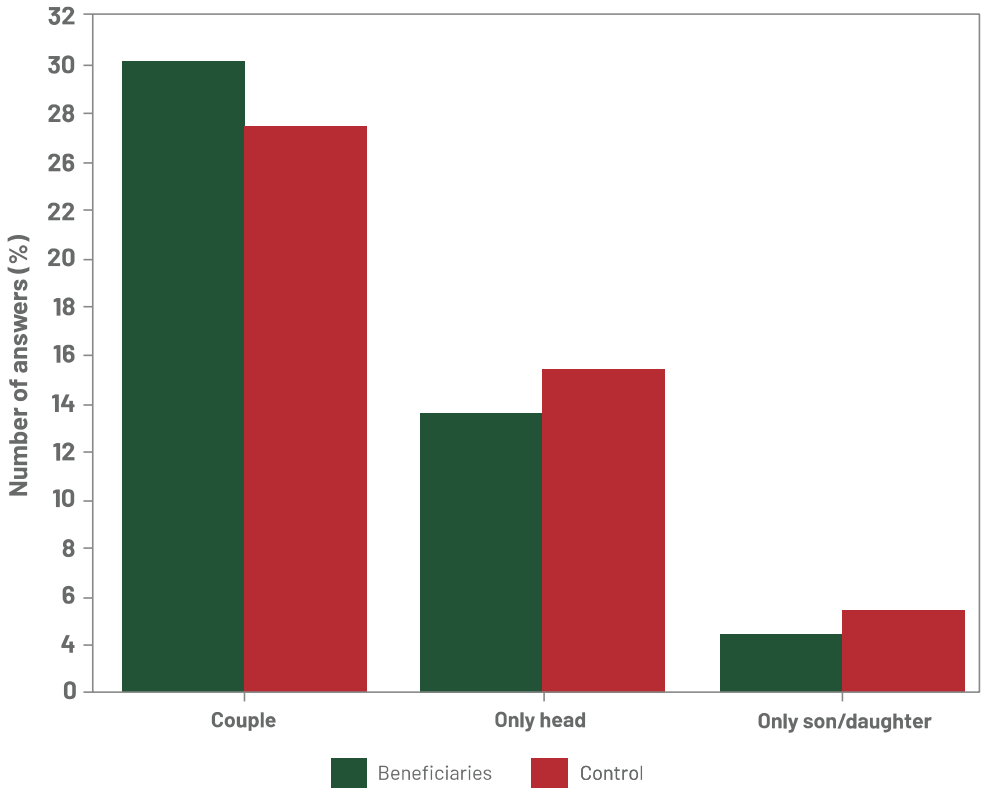


Figure 6 | Responsible for the farming activities of the family according to the sample group (control and beneficiaries)

The Dom Helder Câmara project has been successful in reaching the most vulnerable families, which is visible in the level of education of the heads of households: almost three out of four do not have complete primary education or even no education at all **(Figure 7)**.

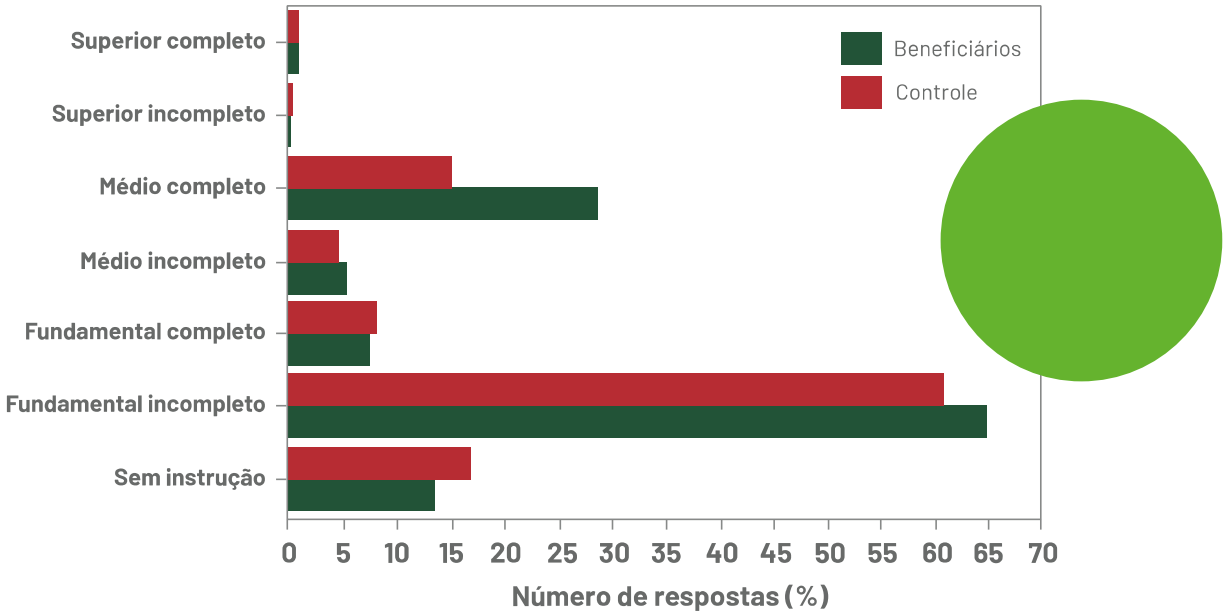


Figure 7 | Level of education of the heads of household according to the sample group (control and beneficiaries

This project's success can also be observed by the size of the establishments: the average area of the beneficiaries' establishments is 4.6 ha and that of the control group, 4.4 ha, both with an average area of 2 ha **(Figure 8)**.

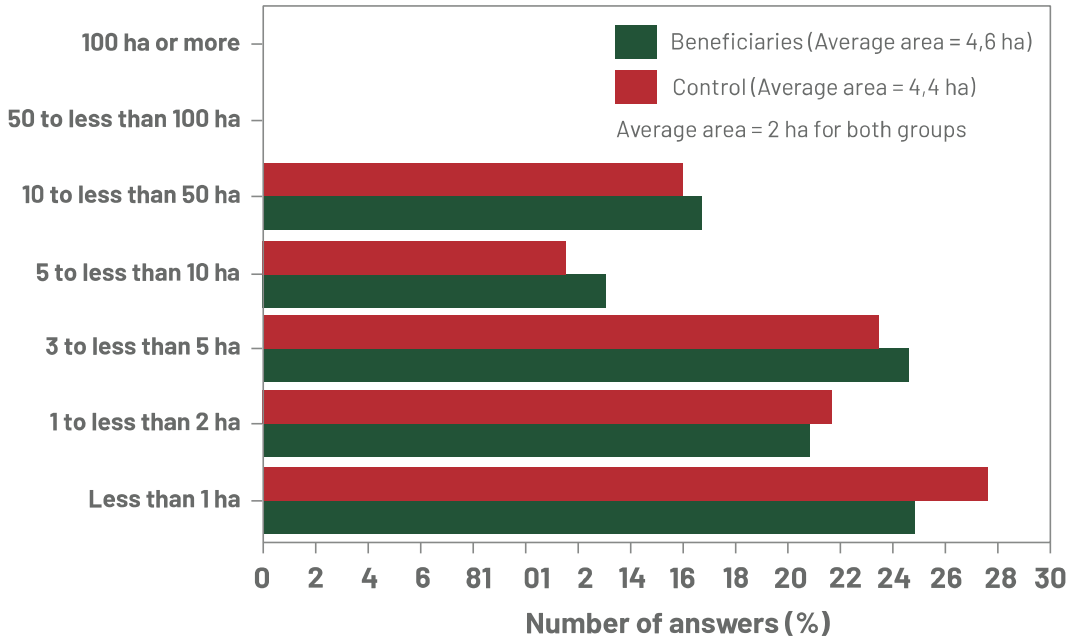


Figure 8 | Establishment size according to area and sample group (control and beneficiaries)

In addition to having small areas, approximately four out of ten farmers do not have land title or tenure, and thus have precarious access to cultivated land **(Figure 9)**.

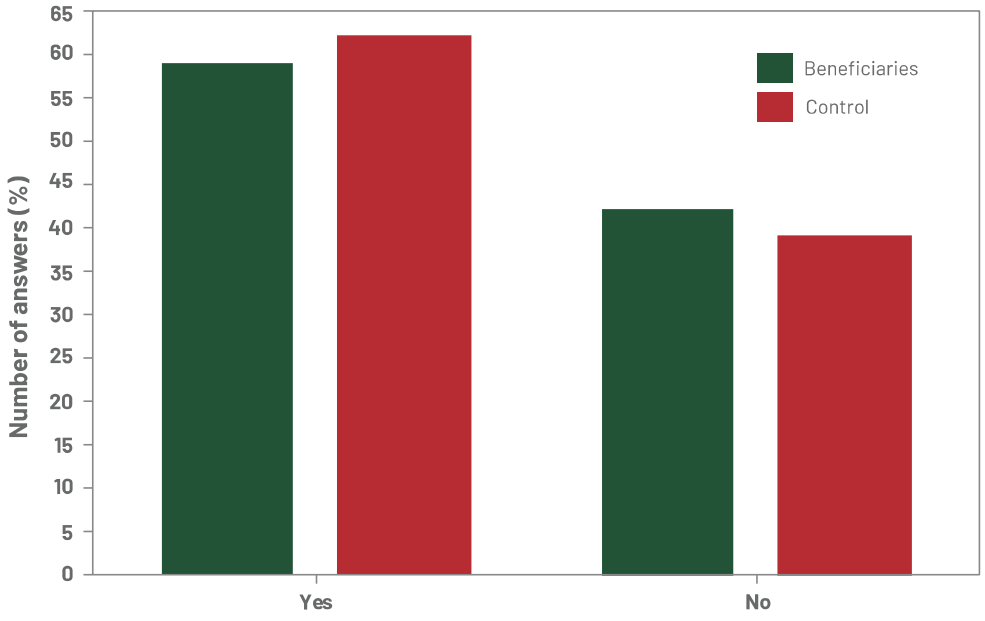


Figure 9 | Establishments with land tenure according to the sample group (control and beneficiaries)

Regarding the effects of drought on the interviewed families, 20.4% of the farmers in the control group and 20.2% of the farmers in the beneficiary group had to sell their assets to face drought in the last five years. Regarding garbage collection, only 31.2% of the farmers in the control group and 23.9% of the farmers in the beneficiary group rely on waste collection provided by municipal systems.

Regarding the agricultural practices used in the year prior to the interview, both groups use irrigation in a similar way, but differ somewhat in the use of watering, this practice being slightly higher in the beneficiaries' group **(Table 5)**.

Table 5 | Use of some agricultural practices by farmers in the year before the interview

PRACTICES	CONTROL (%)	BENEFICIARIES (%)
Use of irrigation	6,3	6,9
Use of watering	18,0	25,4

Note: in this question there was the possibility to select more than one option. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

In both groups, control and beneficiary, the use of cisterns is the main source of water for the households, followed by wells or springs **(Table 6)**. The general water distribution network (public network) is present in only 25.6% of the houses in the control group and in 25.3% of the houses in the beneficiary group.

Table 6 | Main sources of water for the households

WATER SOURCES	CONTROLE (%)	BENEFICIÁRIOS (%)
Rede geral de distribuição (rede pública)	35,6	25,3
Poço ou nascente (cacimba, cacimbão, amazonas, chafariz)	34,2	46,8
Cisterna	57,1	66,7
Riacho, lagoa, açude, barragem, aguada	15,4	14,5
Caminhão pipa	31,2	34,9
Other sources	8,0	6,0

Note: in this question there was the possibility to select more than one option. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

The main participation of beneficiary families in activities developed by PDHC were in early mobilization meetings; in visits to establishments and when answering individual reports; and in collective activities, such as meetings, visits, courses, etc. **(Table 7)**.

Table 7 | Main participations of the beneficiary families in activities developed by PDHC

ACTIVITIES	BENEFICIARIES (%)
Initial mobilization meeting	
Community diagnosis and productive project	43,3
Collective activities, such as meetings, visits, courses, etc.	58,7
On-site visits and individual reports	69,3
Other activities	0,1

Note: in this question there was the possibility to select more than one option.

About 46 percent of PDHC beneficiaries reported that they received suggestions from technical assistance for improvements in their establishments, such as new production practices, activities or ways to manage the business, and 69.7 percent of these families strongly approved of these suggestions **(Table 8)**. Among the farmers who received such suggestions, 64.3% of them implemented at least one of the proposals that were suggested to them.

Table 8 | Farmers who received suggestions from technical assistance for improvements in their establishment and the level of approval of the suggestions received

EVALUATION	BENEFICIARIES (%)
Received Suggestions	45,9
Liked it a lot	69,7
Liked it a bit	8,5
Liked it, but it could be better	19,5
Didn't like it	2,2

Photo 4 | Watermelon harvesting in Jaguarari-BA (top) and pig farming in Nina Rodrigues-MA (bottom)

Photo 5 | Orchard in Morro do Chapéu-BA (top) and family interviewed in Flores-PE (bottom)

Between 2018 and 2021, for 62.7% of beneficiaries, the PDHC rural technical assistance service received by families did not help in the sale of products in new markets. On the other hand, 23.7% of beneficiaries reported that PDHC helped in selling their products at street fairs **(Table 9)**.

Regarding products that were not previously produced, the rural technical assistance service oriented PDHC beneficiary families to produce poultry and pigs, mainly **(Table 10)**. About 21.5% of the families stated that they did not produce anything new and 35.5% stated that they did not receive such orientations.

Concerning the implementation of new income-generating activities promoted by the orientation of the rural technical assistance service in PDHC beneficiary families, poultry/eggs, honey, provision of agricultural services and handicrafts were the main ones adopted **(Table 11)**. On the other hand, 65.9% of the families stated that they did not start a new activity.

Table 9 | Support from the technical assistance service in the commercialization of the farmers' production between the years 2018 and 2021

NEW MARKETS	BENEFICIARIES (%)
Yes, it helped selling to the School Feeding Program (PNAE)	5,2
Yes, it helped selling at the Food Acquisition Program (PAA)	5,2
Yes, it helped selling at fairs	23,7
Yes, it helped selling in the Solidarity Economy Network	1,2
Yes, it helped selling in Rural Tourism	0,8
Yes, it helped selling of Organic Products	6,5
Yes, it helped selling in other markets	10,8
Yes, it helped selling through the Internet (WhatsApp, Instagram, Facebook, etc.)	4,0
Could not inform	8,8
Did not assist in expanding the market	62,7

Note: in this question there was the possibility to select more than one option.

Table 10 | Production of a new product among PDHC beneficiaries

NEW PRODUCTS	BENEFICIARIES (%)
Ovine	10,1
Caprine	7,7
Poultry	19,2
Pig	12,9
Fish	2,3
Roots (cassava and others)	2,9
Animal fodder	5,7
Fruit	4,6
Honey	4,0
Productive backyards	8,8
Did not produce anything new	21,5
Did not receive orientation	35,5

Note: in this question there was the possibility to select more than one option.

Table 11 | Families who started engaging in new income-generating activities

NOVAS ATIVIDADES	BENEFICIÁRIOS (%)
Craftsmanship	10,1
Service provision (sewing, etc.)	7,7
Bread	19,2
Sweets and jam	12,9
Milk	2,3
Cheese	2,9
Poultry and eggs	5,7
Fruit pulps or juices	4,6
Honey	4,0
Agricultural services provision	8,8
Tourism	21,5
Other activities	35,5
Did not start a new activity	65,9

Note: in this question there was the possibility to select more than one option.

After the beginning of the Dom Helder Câmara Project, one (13.8% of the families), two (0.2% of the families) or three (0.1% of the families) of the women in the beneficiaries' households started a new income-generating activity. About one-third of the women also gained greater autonomy or empowerment in decision-making, especially within families and communities, although 61.2% of the interviewees reported that women did not gain greater autonomy **(Table 12)**.

Table 12 | Women with greater autonomy or empowerment in decision-making after the beginning of PDHC

LOCATION	BENEFICIARIES (%)
In families	33,5
In communities	12,5
In associations	9,8
In unions	3,8
In women's groups	5,0
No greater autonomy	61,2

Note: in this question there was the possibility to select more than one option.

The results also show that, after Dom Helder, about one third of the women also gained more power in decisions about production, mainly in productive activities and in the commercialization of production, although 63.4% of the interviewees reported that women did not gain greater autonomy **(Table 13)**.

Table 13 | Women with greater decision-making power over production after the start of PDHC

WOMEN WITH DECISION-MAKING POWER	BENEFICIARIES (%)
In productive activities	32,4
In the commercialization of production	18,7
In the administration of the productive activity resources	13,7
In managing family resources	18,1
No greater autonomy	63,4

Note: in this question there was the possibility to select more than one option.

Photo: Silvia Nonata da Silva

With Dom Helder's actions, the time women dedicate to productive work (raising animals, processing, crafts, agriculture, among other activities) increased for 27.7% of beneficiary families, while for 71.3% there were no changes **(Table 14)**. As for women's time devoted to domestic work and general care (cooking, washing clothes, sewing, caring for children and the elderly, among other activities), there was an increase in 14.7% of beneficiary families, while for 81.8% there was no change **(Table 14)**.

Finally, 53.1 percent of the families affirmed that the individual activities of PDHC had adequate and flexible schedules, which ensured the participation of women. Regarding young people, only 3% and 0.2% of beneficiaries had one or two young people (between 15 and 29 years of age) in the household, respectively, who started a new financial income-generating activity.

Table 14 | Changes in women's working hours with PDHC

ACTIVITY	BENEFICIARIES (%)
Na produção	
increased	27,7
decreased	1,0
did not change	71,3
In domestic work	
increased	14,7
decreased	3,5
did not change	81,8

After the beginning of PDHC, considering the years 2018 to 2021, agricultural production increased for 30.7 percent of the beneficiaries. About half of the beneficiaries stated no increase, and for 12.6% of them, there was a reduction in production **(Table 15)**. Regarding the effect of the coronavirus pandemic on production, 53.4% of farmers stated that their productions remained the same, 12.5% stated that production decreased and then returned to normal, and 25.3% stated that production decreased and did not return to normal **(Table 16)**.

Table 15 | Effects of PDHC technical assistance on volume produced from 2018 to 2021

EFFECT ON PRODUCTION	BENEFICIARIES (%)
Increased over the period	30,7
by up to 25%	12,9
by more than 25% and less than 50%)	10,3
by half (50%)	5,2
by more than half (over 50%)	2,3
Decreased in the period	12,6
Did not increase	49,4
Could not answer	7,3

Table 16 | Effect of the coronavirus pandemic on production

EFFECT ON PRODUCTION	BENEFICIARIES (%)
Production decreased, but returned to normal	12,5
Production decreased and did not return to normal	25,3
Production remained the same	53,4
Could not answer	8,8

After the beginning of PDHC activities, 20.7% of the beneficiary families had some member that had access to some type of rural credit (for example, Pronaf, Agroamigo, Microcrédito and Pronamp). The families also started to adopt certain technologies, such as balanced animal feed, livestock management techniques (vaccination, etc.) and intercropping **(Table 17)**.

Table 17 | Practices adopted after the beginning of PDHC activities

TECHNOLOGIES EMPLOYED	BENEFICIARIES (%)
Balanced animal feed	24,6
Quality seeds and seedlings	9,0
Seedling production techniques	4,1
Started storing fish in freezers	0,7
Started using high-quality breeding stock	8,0
Started using 1-day-old chicks with good origin and vaccinated	6,7
Growing legumes and protein bank to feed livestock	2,4
Intercropping	11,3
Preserve and/or restore the native vegetation	5,7
Started using manure or biofertilizers	6,3
Adopted composting techniques	4,8
Started using natural pesticides to fight plagues and diseases	4,7
Localized irrigation techniques	3,1
Soil and water conservation techniques	4,9
Techniques for coexistence with the semi-arid region	5,8
Cattle management techniques (vaccination, etc.)	14,1
Adoption of social technology (cistern, biodigester, etc.)	2,2
Increased care and production in productive backyards	7,9
Improved craftsmanship techniques	2,8
Sewing service techniques	3,0
Stopped using/buying genetically modified feed	2,1
Stopped using pesticides	6,6
Adopted other technologies	45,0

Note: in this question there was the possibility to select more than one option

For 32.2% of the beneficiaries, their productive infrastructure (such as hen houses, sheds, pigsties, sties, machinery, equipment, and others) improved after receiving the PDHC's rural technical assistance, while 59% said there was no improvement **(Table 18)**. Regarding the effect of PDHC on livestock (cattle, goats, sheep, etc.), 31.8% of the beneficiaries said there had been improvements, while 58.7% said there had been no improvement **(Table 18)**.

Table 18 | Effect of PDHC on the productive infrastructure and livestock by the beneficiaries

INFRASTRUCTURE	BENEFICIÁRIOS (%)	
	EFFECT ON INFRASTRUCTURE	EFFECT ON LIVESTOCK
Improved by	32,2	31,8
10%	8,7	9,4
20%	6,5	8,4
35%	4,8	5,3
50%	8,4	6,3
100%	3,4	2,1
more than double	0,3	0,3
No improvement	59,0	58,7
Could not answer	8,8	9,5

About 31.4% of the beneficiaries state that they received information about federal government programs or other programs from the PDHC technical assistance service, with Fomento Produtivo (Productive Development Funding), the Garantia Safra (Crop Warranty), the federal government's Emergency Aid, and Bolsa Família (Family Allowance) being the most publicized **(Table 19)**.

Regarding the effect of PDHC on family income, 31.1% of the beneficiaries stated that their income increased after their families received the rural technical assistance, while for 50% of them there was no increase **(Table 20)**.

Table 19 | Information on public programs provided to PDHC beneficiaries

INFORMATION ON PROGRAMS AND POLICIES	BENEFICIARIES (%)
Yes, received information	31,4
Productive Development Funding	19,3
Emergency aid from Federal Government	13,6
Bolsa Família (Family Allowance)	12,8
Continuous Cash Benefits (BPC)	3,4
Retirement or Alimony	5,1
Garantia Safra (Crop Warranty)	16,3
"Light for all"	4,3
"Water for all" Program (cisterns, 2ª water)	7,6
Rural Women Productive Organization	3,6
Rural Worker Documentation	4,3
Bolsa Verde Program	1,6
Other Programs	0,0

Note: in this question there was the possibility to select more than one option.

Table 20 | Effects of PDHC on household income

INCOME	BENEFICIARIES (%)
Increased by	31,1
less than 25%	13,2
more than 25% and less than half	11,6
half (50%)	5,4
doubled or more (100% ou mais)	0,8
Did not increase	50,0
Income worsened because of the pandemic	6,5
Could not answer	12,4

After receiving technical assistance from PDHC, the families started consuming other food groups, such as eggs, legumes, grains, roots and white tubers, meat, poultry, and fish **(Table 21)**.

Vegetable production, animal production, and their by-products are the most present activities in the interviewed families **(Table 22)**, and the number of farmers who consume these products themselves is higher than those who commercialize them.

Table 21 | Types of food that the families started to consume in larger quantities after the beginning of PDHC

FOOD GROUPS	BENEFICIARIES (%)
Grains, roots and white tubers	34,8
Legumes	35,5
Seeds and oilseeds	6,4
Milk and dairy products	20,7
Meat, poultry and fish	33,4
Eggs	40,3
Dark green leafy vegetables	9,4
Fruits and vegetables rich in vitamin C	23,3
Other vegetables	14,8
Other fruits	18,6

Note: in this question there was the possibility to select more than one option.

Table 22 | Presence of producers with agricultural activities

PRODUCTION	CONTROL (%)	BENEFICIARIES (%)	BENEFICIARIES WITH FUNDING (%)
Animal Production	**78**	**87**	**87**
for commercialization	43	53	58
for self-consumption	70	80	78
Animal derivatives	**69**	**77**	**75**
for commercialization	20	26	27
for self-consumption	68	75	73
Vegetable production	**87**	**89**	**89**
for commercialization	23	25	29
for self-consumption	86	89	88
Vegetable derivatives	**30**	**38**	**36**
for commercialization	3	4	6
for self-consumption	30	37	36
Total Production	**97**	**98**	**97**
for commercialization	61	69	75
for self-consumption	96	97	97

Note: Cells filled in green indicate higher absolute values for the control group, the total beneficiary group, or the group of beneficiaries who received funding.

Self-consumption also represents an important source of non-monetary income for all the interviewed groups (i.e. financial resources that families save due to on-farm production). For example, 30% of the value of animal production (with an average value of R$ 516) and 84% of the value of the vegetable production by-products (with an average value of R$ 271) were destined for family consumption for the beneficiaries who received incentives and for the control group, respectively **(Table 23)**.

Table 23 | Share of production for self-consumption in the total value of production

PRODUCTION	CONTROL		BENEFICIARIES		BENEFICIARIES WITH FUNDING	
	PART (%)	VM (R$)	PART (%)	VM (R$)	PART (%)	VM (R$)
Animal production	29	541	32	576	30	516
Animal by-products	49	677	45	622	48	576
Vegetable production	74	961	71	1115	59	1096
Vegetable production by-products	84	271	85	318	78	297

Note: Part = respondents' participation in %; VM = average value in Reais obtained by the families through self-consumption. Cells filled in green indicate higher absolute values for the control group, the group of all beneficiaries, or the group of beneficiaries who received funding.

The most common types of production among the respondents were poultry, eggs, beans, corn, hogs, fruits, and vegetables. For example, 65% of the control group, 75% of the beneficiary group, and 76% of the beneficiary group that received incentives produced poultry **(Table 24)**. Regarding income gain through self-consumption, the main items were poultry, eggs, beans, corn, and bovine milk **(Table 24)**.

Photo: Silvia Nonata da Silva

Table 24 | Main types of production performed by producers and their impact on the value (consumption and sales) of family production

PRODUCTION	FREQUENCY AMONG PRODUCERS			AVERAGE SELF-CONSUMED VALUE		
	Contr (%)	Benef (%)	BenefF (%)	Contr (%)	Benef (%)	BenefF (%)
Poultry	62	72	72	261	297	311
Eggs	62	71	71	309	318	309
Beans	67	68	62	384	360	291
Corn	54	60	60	279	303	287
Fruits	20	29	30	20	44	47
Hogs	23	26	22	134	140	127
Vegetables	19	23	26	29	40	48
Pumpkins	19	21	20	25	22	20
Watermelon	17	18	13	28	32	29
Bovine milk	17	16	15	331	263	232
Caprine	9	9	5	50	50	27
Ovines	8	8	6	46	42	25
Cassava	4	6	11	13	33	58
Honey	2	3	1	3	3	2
Cheese	3	2	2	25	23	23
Bovine	2	2	2	43	39	21
Goat milk	0.5	1	0.5	5	13	10

Note: Contr = control group; Benef = total beneficiary group; BenefF = group of beneficiaries who received funding. Cells filled in green indicate higher absolute values for the control group, group of all beneficiaries, or group of beneficiaries who received funding.

Photo: Silvia Nonata da Silva

4. RESULTADOS

A summary of the core information and results obtained from the impact assessment using the PSM, including all variables and indices used, is presented in **Chart 1**. Later, the tests performed for each variable and index are presented more thoroughly.

Chart 1 | Summary of the results of the Propensity Score Matching analysis for each variable and index used

VARIABLES/INDICES	GROUPS	AVERAGE B/BF	AVERAGE C	DIF	EFEITO (%)	P
Income Variables (unit: R$)						
Total Agricultural and Livestock Income	C x B	5.157,03	4.433,02	724,00	16,33	**0,0000**
	C x BF	5.121,83	3.932,96	1.188,88	30,23	**0,0000**
Monetary Agricultural Income	C x B	2.217,93	1.757,22	460,71	26,22	**0,0001**
	C x BF	2.194,73	1.480,07	714,66	48,29	**0,0001**
Agricultural ncome from Self-consumption	C x B	2.904,17	2.624,24	279,93	10,67	**0,0012**
	C x BF	2.923,99	2.212,59	711,40	32,15	**0,0000**
Animal Production	C x B	1.127,02	938,44	188,58	20,09	**0,0116**
	C x BF	1.196,49	740,86	455,64	61,50	**0,0001**
Animal derivatives	C x B	543,57	435,52	108,05	24,81	**0,0813**
	C x BF	458,76	305,96	152,80	49,94	**0,0613**

VARIABLES/INDICES	GROUPS	AVERAGE B/BF	AVERAGE C	DIF	EFEITO (%)	P
Vegetable Production	C x B	322,84	257,73	65,11	25,26	**0,0400**
	C x BF	380,30	200,67	179,63	89,52	**0,0008**
Vegetable derivatives	C x B	37,77	43,41	-5,63	-12,98	0,6412
	C x BF	44,75	64,11	-19,36	-30,20	0,4180
Non-agricultural activities	C x B	51,11	35,62	15,49	43,48	0,1957
	C x BF	56,32	24,31	32,01	131,67	**0,0653**
Total Annual Income	C x B	19.273,16	18.714,99	558,17	2,98	0,1842
	C x BF	19.619,88	17.631,49	1.988,39	11,28	**0,0017**
Annual Per Capita Income	C x B	6.567,41	6.377,31	190,10	2,98	0,2491
	C x BF	6.439,44	5.669,20	770,24	13,59	**0,0014**
Variáveis de Produção (unidade: número de cabeças)						
Swine	C x B	2,210	1,726	0,484	28,02	**0,0010**
	C x BF	2,084	1,347	0,737	54,75	**0,0004**
Poultry	C x B	18.770	13.684	5.086	37,17	**0,0000**
	C x BF	21.906	12.837	9.069	70,65	**0,0000**
Caprine	C x B	2.555	2.498	0.057	2,27	0,8682
	C x BF	1.320	1.431	-0.111	-7,76	0,7397
Ovine	C x B	2.583	2.372	0.210	8,86	0,4524
	C x BF	1.542	1.035	0.507	48,94	**0,0744**
Bovine	C x B	1.696	1.800	-0.104	-5,75	0,4854
	C x BF	1.614	1.591	0.024	1,48	0,9208
Horses, donkeys and mules	C x B	0.319	0.314	0.005	1,61	0,8422
	C x BF	0.311	0.258	0.054	20,92	0,1591
Brazilian Food Insecurity Scale (unit: percentage of cases)						
Severe Insecurity	C x B	11%	13%	-	-1%	0,297
	C x BF	10%	13%	-	-2%	0,149
Severe + Moderate Insecurity	C x B	29%	29%	-	0%	0,783
	C x BF	29%	29%	-	0%	0,932

VARIABLES/INDICES	GROUPS	AVERAGE B/BF	AVERAGE C	DIF	EFEITO (%)	P
Indices (unit: points)						
Food Diversity	C x B	5,811	5,664	0,146	2,58	**0,0089**
	C x BF	6,096	5,475	0,621	11,35	**0,0101**
Ecological Index	C x B	472,41	466,88	5,53	1,18	**0,0999**
	C x BF	467,80	460,74	7,06	1,53	0,2127
Access to Public Policies Index	C x B	592,33	514,29	78,04	15,17	**0,0000**
	C x BF	598,41	500,97	97,45	19,45	**0,0000**
Access to Agrarian Policies Index	C x B	590,70	456,99	133,71	29,26	**0,0000**
	C x BF	586,98	437,30	149,68	34,23	**0,0000**
Associativity Index	C x B	236,32	167,46	68,87	41,12	**0,0000**
	C x BF	228,12	167,23	60,89	36,41	**0,0000**
Women's Participation Index	C x B	335,00	260,83	74,18	28,44	**0,0000**
	C x BF	352,68	263,59	89,09	33,80	**0,0000**
Youth Participation Index	C x B	85,33	69,81	15,52	22,23	**0,0103**
	C x BF	78,56	66,35	12,21	18,39	0,1899
Women and Youth Participation Index	C x B	210,18	165,33	44,85	27,13	**0,0000**
	C x BF	215,63	164,99	50,64	30,69	**0,0000**
Drought Exposure Index	C x B	202,32	197,77	4,55	2,30	0,3718
	C x BF	186,98	178,79	8,19	4,58	0,3024
Housing Index	C x B	878,28	881,37	-3,09	-0,35	0,5675
	C x BF	888,38	878,11	10,27	1,17	0,2587
Multidimensional Poverty Index	C x B	356,85	361,05	-4,20	-1,16	0,3133
	C x BF	353,18	339,05	14,13	4,17	**0,0274**

Note: B = beneficiary group (with and without funding); BF = group of beneficiaries that received funding; C = control group; Dif = difference between the averages of the control and beneficiary groups (B ou BF); P = significance of difference obtained using the t-test for dependent samples after the PSM. Values in red = significance under 0.05. Values in green = significance between 0.05 and 0.10. Cells filled in green indicate higher absolute values for the control group or beneficiary group.

Photo: Silvia Nonata da Silva

TESTIMONIALS OF PDHC BENEFICIARIES (KEYWORD: "DOM HELDER")

"I benefited from the Dom Helder project. It's a great thing, and my production has now increased a lot. We hope that more will come".

"The Dom Helder project has helped me invest in my own farming and I've built a pigsty. I really enjoyed participating in the project.

"The Dom Helder project was very good. We didn't have a shelter for the chickens during winter here".

" It taught us how to improve our crops, how to fight the plagues in the field without using pesticides."

"I participated in the project and today I can see a very good result, the incentive to the production in the farms, with chickens and bees. I really appreciate this project and the incentive it offers to us farmers".

"It was good, very good. I have nothing to complain about, there was no lack of technical assistance, we had visitation here from the start until the very end. We also visited the agricultural field in Petrolina. For me it was incredible, I liked it very much."

Agricultural Income

The agricultural income of the PDHC beneficiary farmers and the control group was calculated using three formats: (i) Agricultural monetary income (sales component), (ii) agricultural income from self-consumption and (iii) total agricultural income (sum of the two previous ones). The agricultural monetary income considered all the financial profit throughout the year of 2021 obtained from the sale of the agricultural unit's products of animal or vegetable origin. The agricultural income from self-consumption considered the financial expenses avoided during the year 2021 through the consumption of animal or vegetable products produced on the farm.Lastly, the total agriculture income consists of the sum of the incomes obtained in the sales component and the monetized value of the part of the production that is consumed by the family.

The PDHC had a significant impact on the total agricultural income of the project beneficiaries **(Figure 10)**. While the beneficiaries presented an average annual agricultural income of R$5,157, the control group presented an average annual income of R$4,433. Therefore, PDHC provided an increase in the total agricultural income of the beneficiaries of **16.3%** (about R$ 724 more than the control group).

The impact of PDHC was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 10)**. In this case, while the beneficiaries had an average annual income of R$5,122, the control group had an average annual income of R$3,933, showing an increase in the total agricultural income of the beneficiaries with funding of **30.2%** (about R$1,189 more than the control group).

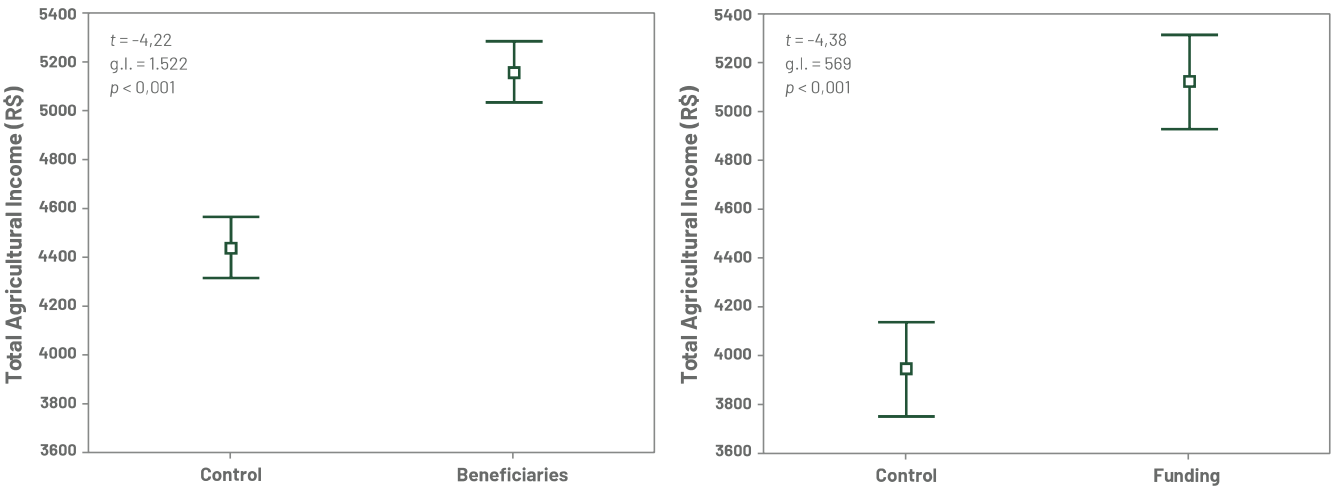


Figure 10 | Mean, standard error and t-test results for samples dependent on total agricultural income between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Isolating the monetary component of agricultural revenues, the positive impact of PDHC on project beneficiaries is also evident **(Figure 11)**. While the beneficiaries had an average annual income of R$2,218, the control group had an average annual income of R$1,757. Therefore, PDHC provided an increase in the monetary component of the beneficiaries' agricultural income of **26.2%** (about R$ 461 more than the control group).

Similar to the total agricultural income, the impact of the PDHC on the monetary component of agricultural income was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 11)**.In this case, while the beneficiaries presented an average annual revenue of R$2,195, the control group presented a value of R$1,480, showing an increase in agricultural income for the beneficiaries with funding of **48.3%** (about R$715 more than the control group).

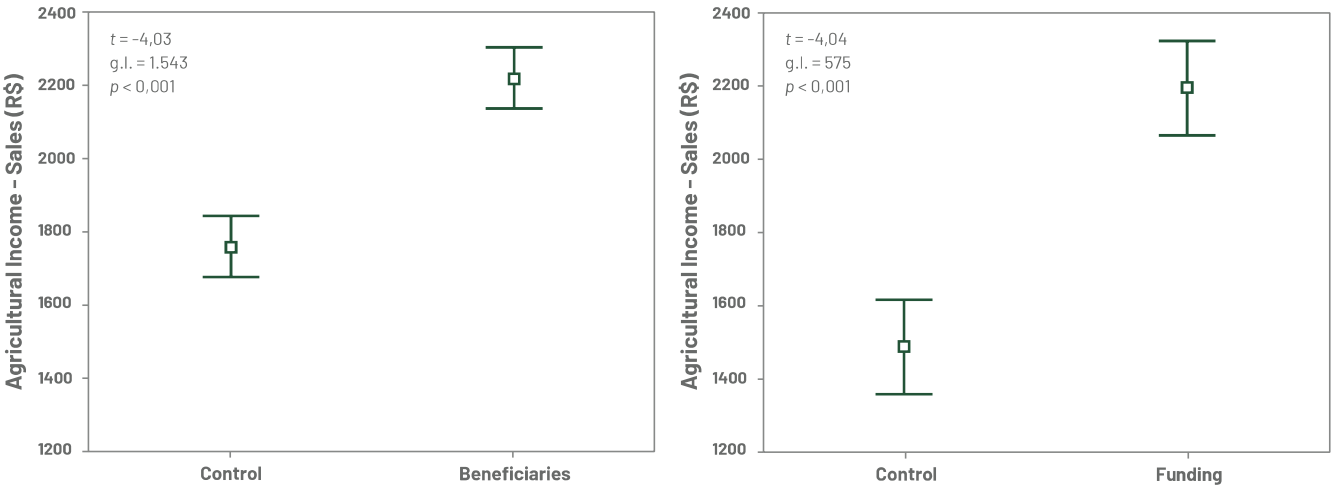


Figure 11 | Mean, standard error and t-test results for samples dependent on agricultural income, in its monetary component (sales), between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers through Propensity Score Matching. g.l. = degrees of freedom

Photo 6 | Pig farming in Fernando Pedroza-RN (top-right), corn plantation in Avelino Lopes-PI (top-left) and vegetable plantation and bean harvest in Formoso-MG (bottom-right and bottom-left)

Photo 7 | Vegetable production in Icó-CE

Municipality: **Tamboril-PI**

Municipality: **Curral Novo do Piauí-PI**

Municipality: **Pacoti-CE**

Municipality: **Poço Verde-SE**

Municipality: **Russas-CE**

Municipality: **Verdejante-PE**

Vídeo 1 | Filmed testimonies of PDHC beneficiaries on self-consumption and animal production (amateur and remote filming, following safety protocols against covid, conducted by survey agents during interviews in 2022)

Photo 8 | Goat farming in Custódia-PE (top), cassava plantation in Inhapi-AL (center) and corn and bean plantation in Bela Vista do Piauí-PI (bottom)

Finally, isolating the non-monetary component of agricultural production, the positive impact of PDHC on the project beneficiaries is also evident **(Figure 12)**. While the beneficiaries presented an average annual income equivalent to R$2,904, the control group presented a value of R$2,624.Therefore, the PDHC provided an improvement in the consumption component for the beneficiaries of **10.7%** (about R$280 more than the control group).

Similar to the total agricultural income and its monetary component, the impact of PDHC on the non-monetary component of agricultural production was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 12)**. In this case, while the beneficiaries who received the funding presented an average annual income of R$2,924, the control group presented a value of R$2,213, showing an increase in agricultural production intended for feeding their families of **32.2%** (about R$711 more than the control group).

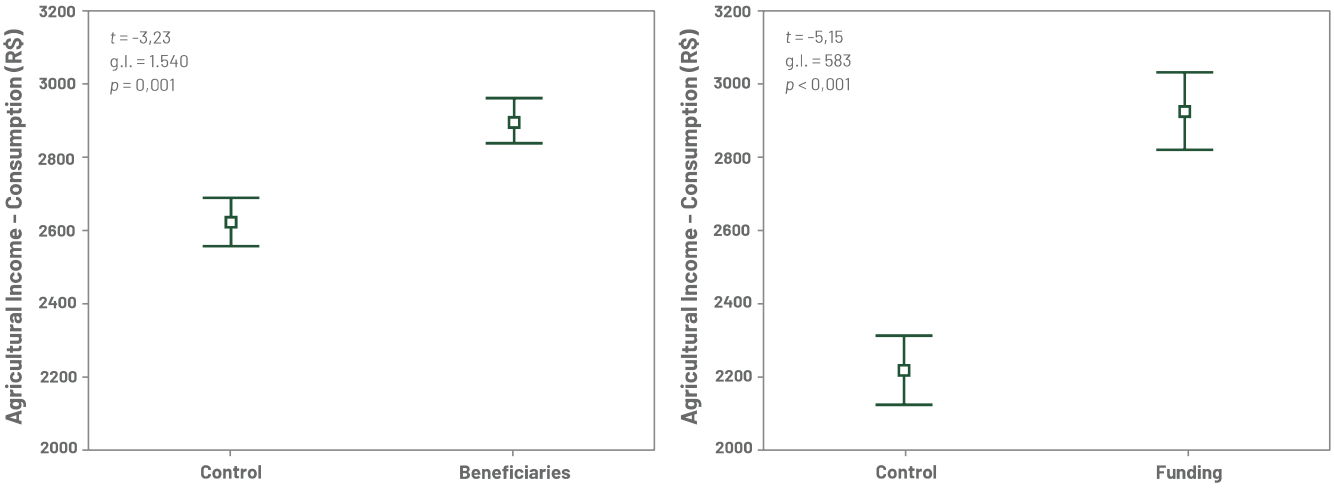


Figure 12 | Mean, standard error and t-test results for samples dependent on farm income from self-consumption, between control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers by Propensity Score Matching. g.l. = degrees of freedom

Photo 9 | Chive production in Jacobina do Piauí-PI (top left), vegetable production in Comercinho-MG (top right), poultry production in Formoso-MG (bottom left) and fruit trees in São Raimundo Nonato-PI (bottom right)

Income from Animal Production and derivatives

To calculate the monetary income from the sales of livestock production and the derivatives of livestock production (e.g., the sale of milk and eggs) the financial revenues throughout the year of 2021 were considered. PDHC showed a significant impact on livestock production income **(Figure 13)**. While the beneficiaries had an average annual income of R$1,127, the control group had an average annual income of R$938.Therefore, PDHC provided a significant increase in the beneficiaries' livestock production income of **20.1%** (about R$ 189 more than the control group).

Photo: Silvia Nonata da Silva

The impact of PDHC was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 13)**. In this case, while the beneficiaries presented an average annual income of R$ 1,196, the control group presented an average value of R$ 741, showing an increase in income from livestock production by the beneficiaries with funding of **61.5%** (about R$ 456 more than the control group).

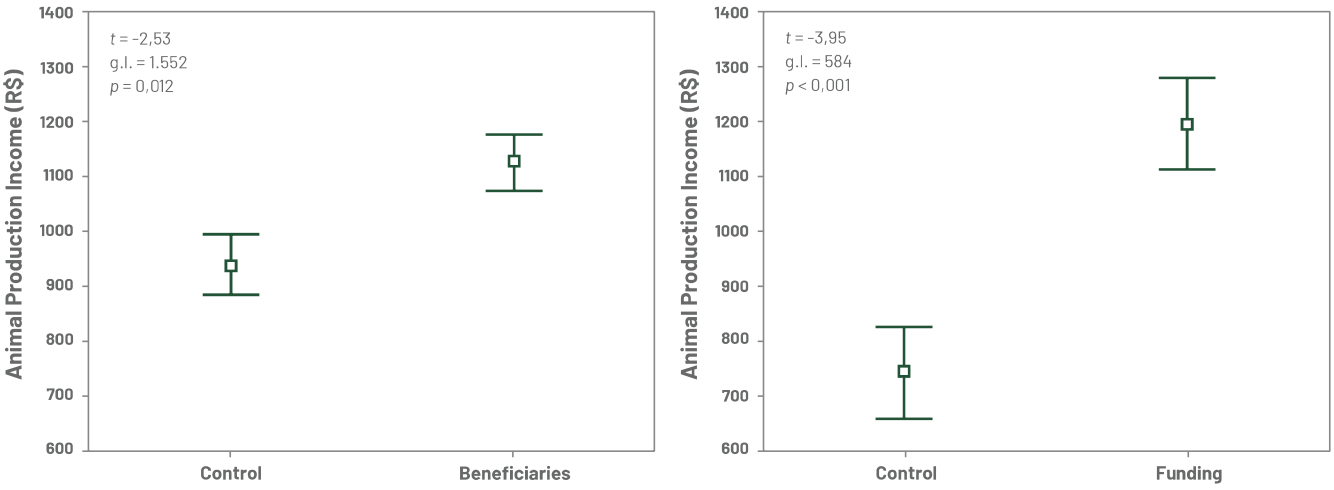


Figure 13 | Mean, standard error and t-test results for samples dependent on animal production income between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Concerning income from derivatives of livestock production, PDHC did not show a significant effect in the group of beneficiaries **(Figure 14)**. Despite higher income values observed in the beneficiary group (average annual income of R$544) than in the control group (average annual income of R$436), which could suggest an impact of PDHC of 24.8% (about R$108 more than the control group), this difference cannot be considered significant at a 5% significance level (t = -1.74; p = 0.081). On the other hand, a less conservative evaluation, adopting a significance level of 10%, could, in this case, demonstrate a positive effect of PDHC on income from derivatives of animal production in the group of beneficiaries.

Similarly, PDHC also did not show a significant effect on income from derivatives of animal production among the beneficiaries who received funding from the project **(Figure 14)**. Despite higher income values observed in the beneficiary group (average annual income of R$ 459) than in the control group (average annual income of R$ 306), which could suggest an impact of PDHC of 49.9% (about R$ 153 more than the control group), this difference cannot be considered significant at a 5% significance level (t = -1.87; p = 0.061). On the other hand, a less conservative evaluation, adopting a significance level of 10%, could demonstrate a positive effect of PDHC on income

from derivatives of animal production in the group of beneficiaries that received funding from the project.

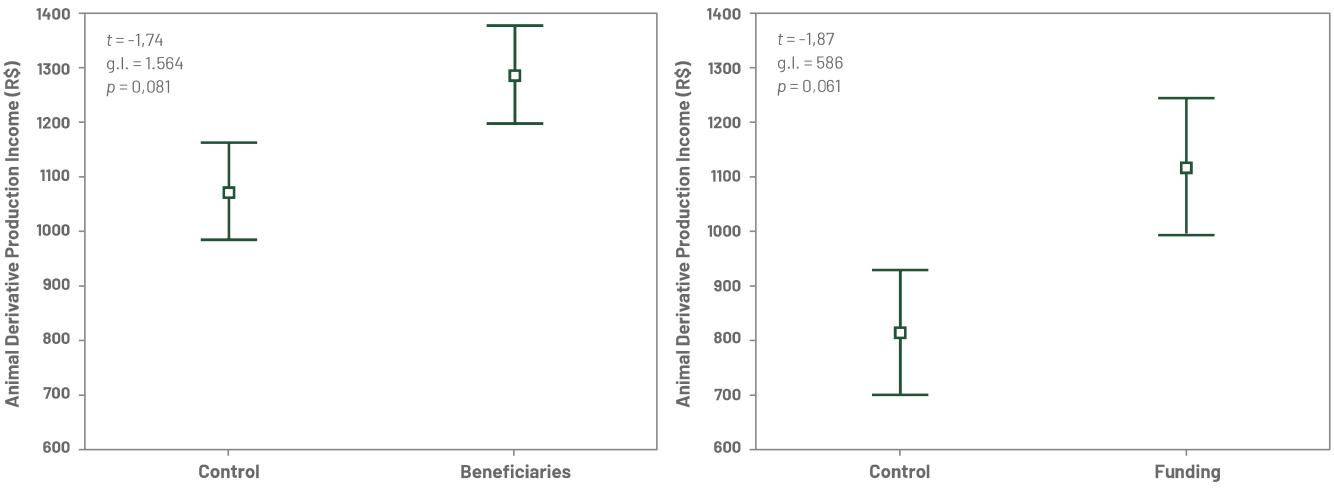


Figure 14 | Mean, standard error and t-test results for samples dependent on income from animal derived products between control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

TESTIMONIALS OF PDHC BENEFICIARIES (KEYWORD: "LEARNING")

"It improved a lot because they explain what we have to do, that we should sell the chicken herd, for example. When the hens got sick, they explained. It was very good when they came to teach us...".

"I learned a lot about chicken farming. They explained how to do maintenance, how to keep it clean, and if a chicken gets sick, I have to take it away from the others."

"Participating in the association, people came to explain how the project was and to look for people who were interested in the project, and we had the technician from Emater. It was very good because we increased productivity and had a better income at the time of the project."

"There are people that come and explain a lot of things to us; it's a very pleasant day, they teach us how to deal with the cattle, vegetables, and everything. It's a very productive day."

"They had a meeting with us, they explained. It was very good, very productive. The chickens had eggs, it was very good."

Photo 10 | Caprine and ovine production in Encanto-RN and Jatobá-PE, poultry production in Encanto-RN and Jatobá-PE, swine production in Jacinto-MG and Fernando Pedroza-RN, and fish production in Chapada Gaúcha-MG

Photo 11 | Honey production in Barra-BA (top) and cheese production in Padre Paraíso-MG (bottom)

Income from Vegetable Production and derivatives

For the calculation of the monetary income from the sales of vegetable production and the derivatives of vegetable production (for example, the sale of rapadura, molasses, fruit jelly, and manioc flour), the revenues from these products throughout the year of 2021 were considered. PDHC had a significant impact on income from vegetable production **(Figure 15)**. While the beneficiaries had an average annual income of R$323, the control group had an average annual income of R$258. Therefore, PDHC provided an increase in the beneficiaries' vegetable production income of 25.3% (about R$ 65 more than the control group).

The impact of PDHC was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 15)**. In this case, while the beneficiaries had an average annual income of R$ 380, the control group had an average of R$ 201, showing an increase in income from vegetable production by beneficiaries with funding of 89.5% (about R$ 180 more than the control group).

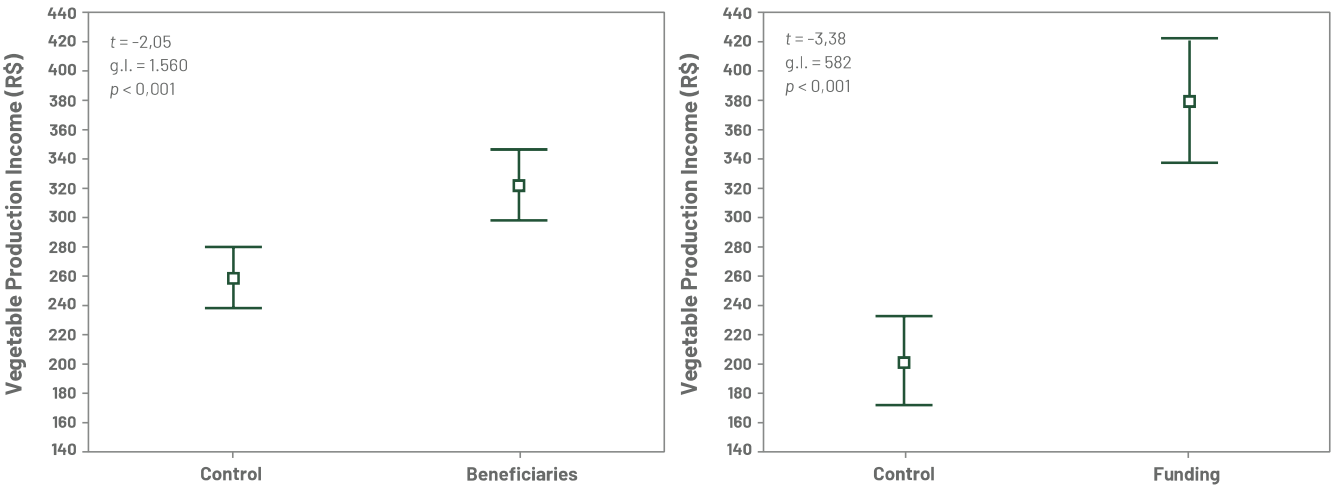


Figure 15 | Mean, standard error and t-test results for samples dependent on income from vegetable production between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Municipality:
Moreilandia-PE

Municipality:
Pedro Laurentino-PI

Municipality:
Propriá-SE

Vídeo 2 | Filmed testimonies of PDHC beneficiaries on vegetable production and non-agricultural income (amateur and remote filming, following safety protocols against covid, conducted by research agents during interviews in 2022)

Photo 12 | Vegetable garden in Arapiraca-AL (top) and palm plantation in Cubati-PB (bottom)

Photo 13 | Fields in Floresta do Piauí-PI (top) and in São Raimundo Nonato-PI (bottom)

Photo 14 | Corn plantation in Riacho Frio-PI (top left) and pumpkin storage in Almenara-MG (top right), garlic in Rio Pardo de Minas-MG (bottom left) and corn and beans in Flores-PE (bottom right)

Regarding income from the derivatives of vegetable production (Figure 16), PDHC did not present a significant effect in either the group of beneficiaries (t = 0.47; p = 0.641) or the group of beneficiaries who received funding from the project (t = 0.81; p = 0.418), perhaps because this type of production was not stimulated by technical assistance.

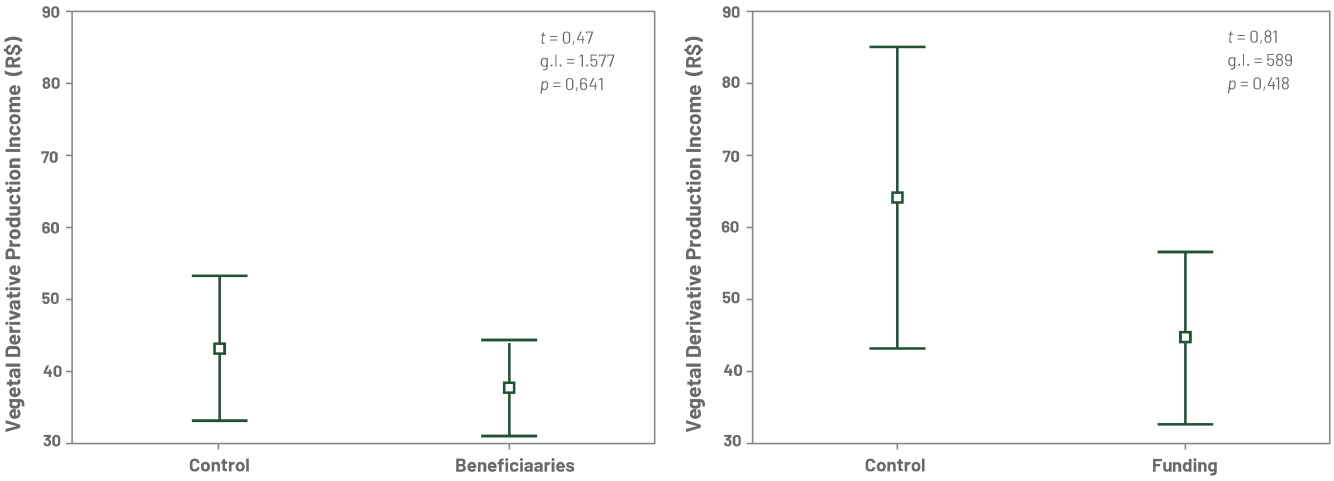


Figure 16 | Mean, standard error, and t-test results for samples dependent on income from vegetable derived products between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Income from Non-Agricultural Activities

To calculate the monetary income from non-agricultural activities (e.g. handicrafts and tourism), the financial revenues resulting from these activities over the year of 2021 were considered. PDHC did not show a significant effect on the beneficiary group **(Figure 17)**. Despite the higher income values observed in the beneficiary group (average annual income of R$51) compared to the control group (average annual income of R$36), which could suggest an effect of PDHC of 43.5% (about R$15 more than the control group), this difference cannot be considered significant at a 5% significance level (t = -1.29; p = 0.1961).

Similarly, PDHC also did not show a significant effect on income from non-agricultural activities in the group of beneficiaries who received funding **(Figure 17)**. Despite the higher income values observed in the beneficiary group (average annual income of R$56) compared to the control group (average annual income of R$24), which could suggest a PDHC effect of 131.7% (about R$323 more than the control group), this difference also cannot be considered significant at a 5% significance level (t = -1.85; p = 0.065). On the other hand, a less conservative evaluation, adopting a significance level of 10%, could demonstrate a positive effect of PDHC on monetary income from non-agricultural activities in the group of beneficiaries that received funding from the project.

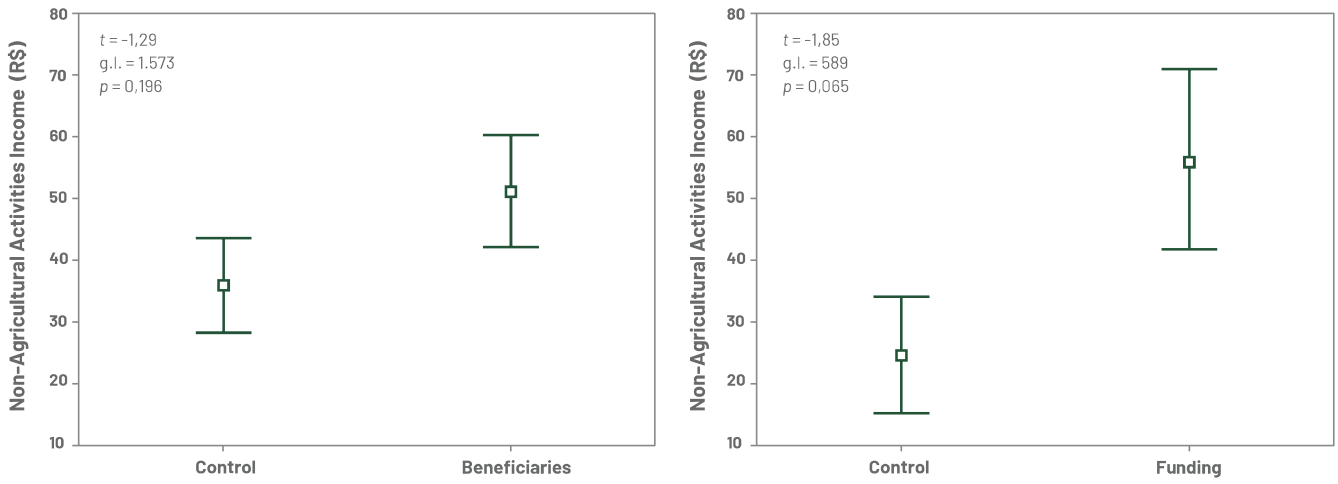


Figure 17 | Mean, standard error and t-test results for samples dependent on monetary income from non-agricultural activities between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 15 | Manioc flour production in Mata Verde-MG (top), Almenara-MG (center left) and Jacinto-MG (bottom) and clean bean stock in Avelino Lopes-PI (center right)

Photo: Silvia Nonata da Silva

Total Annual and Annual Per Capita Incomes

The total annual income was calculated by adding the monetary income (sales component) and the self-consumption income derived from the various activities performed by the producers (for example, sales of animal production, sales of animal by-products, sales of vegetable production, sales of vegetable by-products, non-agricultural production, temporary external work, permanent external work, Bolsa Família, emergency aid, retirement, alimony, etc.) obtained throughout the year of 2021 by all the members of the agricultural unit. The annual per capita income, on the other hand, consists of the value of the total annual income divided by the number of members of the agricultural unit.

Regarding total annual income, PDHC did not show a significant effect on the group of beneficiaries **(Figure 18)**. Despite the higher income values observed in the beneficiary group (average annual income of R$19,273) compared to the control group (average annual income of R$18,715), which could suggest a PDHC effect of 3% (about R$558 more than the control group), this difference cannot be considered significant at a 5% significance level ($t = -1.33$; $p = 0.184$).

On the other hand, the impact of PDHC was significant when comparing the control and beneficiary groups that received funding from the project **(Figure 18)**. In this case, while the beneficiaries presented an average annual income of R$19,620, the control group presented an average of R$17,631, showing an increase in the total annual income of the beneficiaries with funding of **11.3%** (about R$1,988 more than the control group).

Photo 16 | Handicrafts in Peritoró-MA (top), Independência-CE (bottom left) and Groaíras-CE (bottom right)

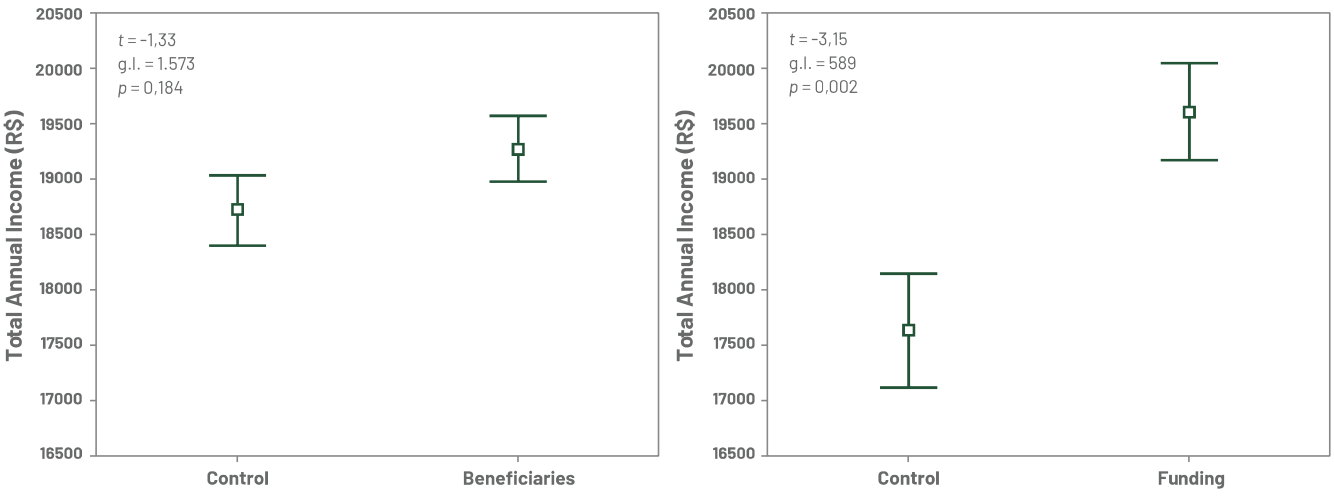


Figure 18 | Mean, standard error and t-test results for samples dependent on total annual income between control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Regarding annual income per capita, PDHC also did not show a significant effect on the group of beneficiaries **(Figure 19)**. Despite the higher income values observed in the beneficiary group (average annual income of R$6,567) compared to the control group (average annual income of R$6,377), which could suggest a PDHC effect of 3% (about R$190 more than the control group), this difference cannot be considered significant at a 5% significance level (t = -1.15; p = 0.249).

On the other hand, the impact of PDHC was significant when comparing the control groups with the beneficiaries who received funding from the project **(Figure 19)**. In this case, while the beneficiaries had an average annual per capita income of R$6,439, the control group had an average of R$5,669, showing an increase in the annual per capita income of the beneficiaries with funding of **13.6%** (about R$770 more than the control group).

Photo 17 | Handicrafts in Irauçuba-CE (left) and in Rio Pardo de Minas-MG (right)

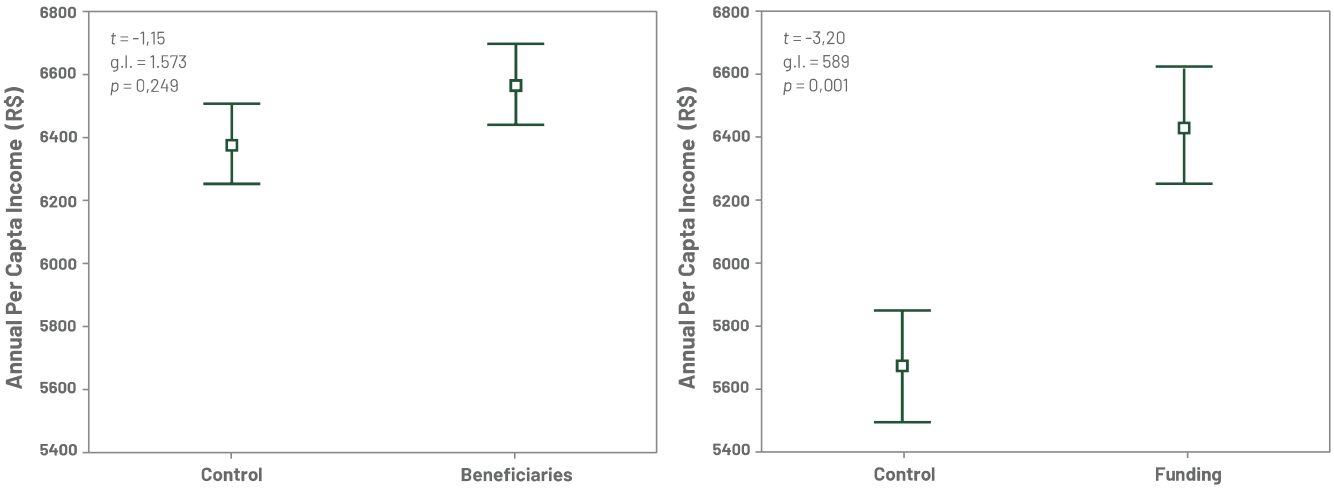


Figure 19 | Mean, standard error and t-test results for samples dependent on total annual income between control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

TESTIMONIALS OF PDHC BENEFICIARIES
(KEYWORD: "FEED")

"(with the project) I bought a cutter machine to make the cows' feed, and I built a little house to put the motor under. The cows are much better. During drought the feed for the cattle improved a lot".

"(with the project) I bought the chickens and material to make the chicken enclosure. I bought feed. They had meetings, they visited us at home, they visited us daily and they were always here; I liked it very much."

"At the time when we started to participate, we were having a very big problem with our chickens dying; when we joined, someone came to our house, explained it well, gave suggestions for some remedies. (The problem) practically disappeared, hardly any chickens die, so it was an important point. Also the pigs with balanced feed, how to do the cleaning, it was very important to help us."

"It was important concerning the chicken feed, because it taught me that by giving broken corn I would have more return, it taught me to plant grass to help with the chicken feed. I liked it very much, even though I didn't even receive the funding."

"For me it was very rewarding, because with the money I bought 3 breeding stock, and the other part I used to buy feed for the animals"

Photo: Silvia Nonata da Silva

Photo 18 | Rural properties in Capitão Enéas-MG (top) and in Coração de Jesus-MG (right)

Cattle: Pigs, Poultry, Caprine, Ovine, Bovine and Equine, Assine and Mule

For the evaluation of the size of the herds (pigs, poultry, goats, sheep, cattle and horses, donkeys and mules), the number of heads existing in the agricultural units on December 31, 2021 was considered. Regarding the number of pigs, PDHC showed a significant impact **(Figure 20)**. While the beneficiaries had an average number of 2.21 heads, the control group had an average of 1.73 heads. Therefore, we can state that PDHC provided an increase in the number of pigs of the beneficiaries by 28% (about 0.48 head more than the control group).

The impact of PDHC was even greater when comparing the control groups with the beneficiaries who received funding from the project **(Figure 20)**. In this case, while the beneficiaries had an average number of 2.08 heads, the control group had an average of 1.35 heads, showing an increase in the number of pig heads of the beneficiaries with funding of 54.8% (about 0.74 head more than the control group).

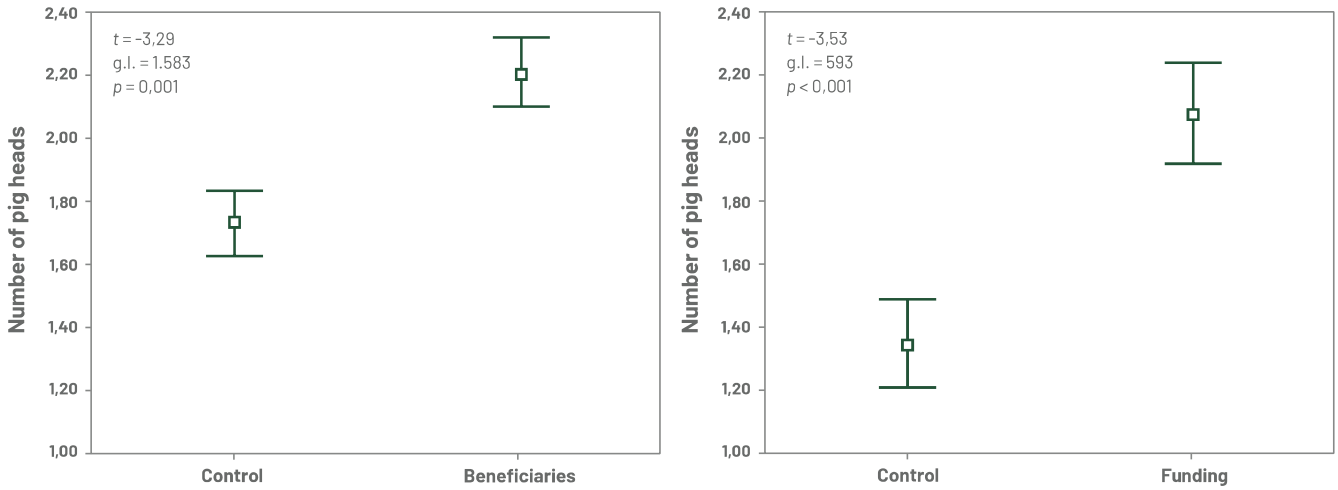


Figure 20 | Mean, standard error and t-test results for samples dependent on the number of pig heads between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Concerning the number of poultry, PDHC also showed a significant impact **(Figure 21)**. While the beneficiaries had an average number of 18.8 heads, the control group had an average of 13.7 heads. Therefore, PDHC provided an increase in the number of poultry heads of the beneficiaries of 37.2% (about 5.1 heads more than the control group).

The impact of PDHC was even greater when comparing the control groups with the beneficiaries who received funding from the project **(Figure 21)**.In this case, while the

beneficiaries had an average number of 21.9 heads, the control group had an average of 12.8 heads, showing an increase in the number of poultry heads of the beneficiaries with funding of 70.6% (about 9.1 heads more than the control group).

Photo 19 | Pig farming in Aroeiras do Itaim-PI (top left), Monte Alegre de Sergipe-SE (top right), Olivedos-PB (bottom left) and in Juazeiro do Norte-CE (bottom right)

Municipality: **Tacaratu-PE**

Municipality: **Assunção-PB**

Municipality: **Crato-CE**

Video 3 | Filmed testimonies of PDHC beneficiaries on pig and poultry farming(amateur and remote filming, following safety protocols against covid, conducted by research agents during interviews in 2022)

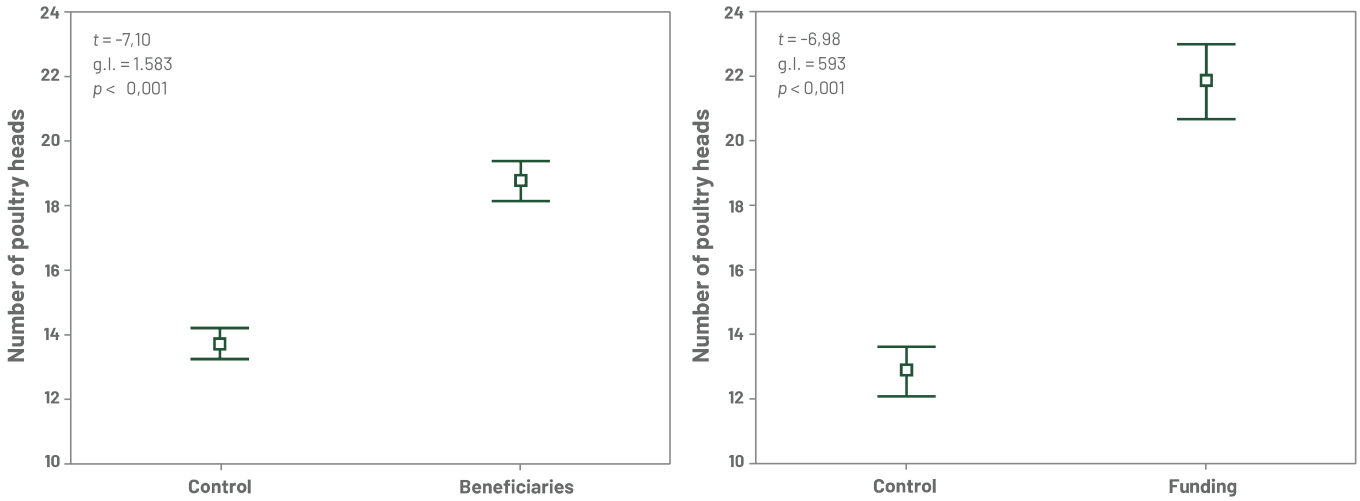


Figure 21 | Mean, standard error and t-test results for samples dependent on the number of poultry heads between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 20 | Poultry farming in Russas-CE

Photo 21 | Poultry farming in Vargem Grande do Rio Pardo-MG (top) and Crato-CE (bottom)

Regarding the number of goats **(Figure 22)**, PDHC did not show a significant effect in neither the group of beneficiaries (t = -0.17; p = 0.868) nor in the group of beneficiaries who received project fomentation (t = 0.33; p = 0.740).

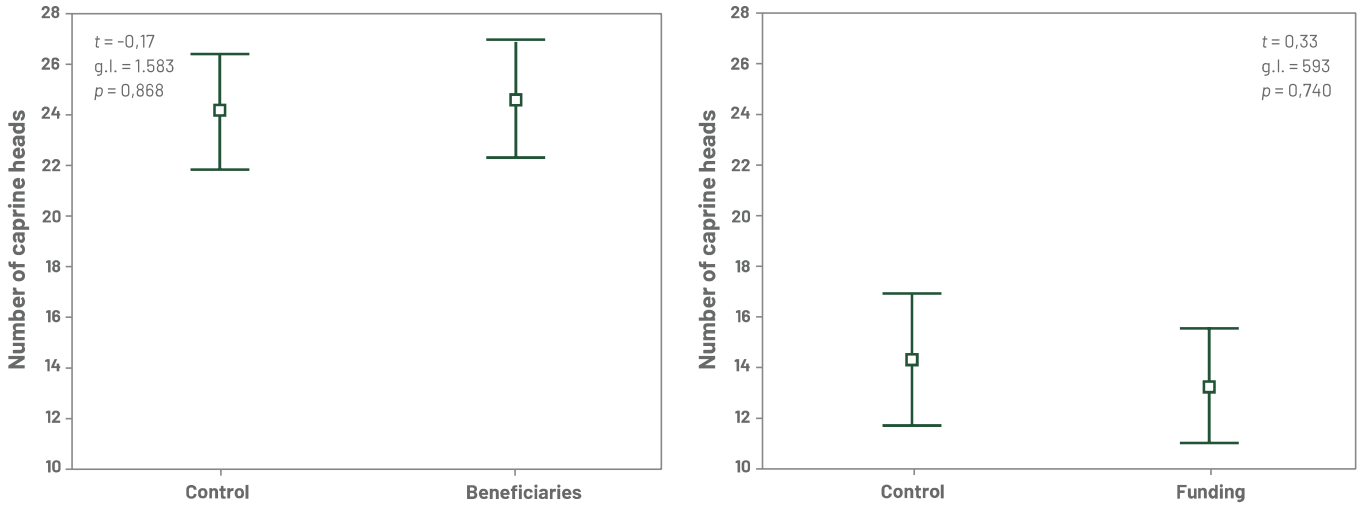


Figure 22 | Mean, standard error and t-test results for dependent samples of caprine heads numbers between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Regarding the number of sheep **(Figure 23)**, PDHC also did not show a significant effect in the group of beneficiaries (t = -0.75; p = 0.452), nor in the group of beneficiaries who received funding from the project (t = -1.79; p = 0.074).

Despite the higher values in the number of sheep observed in the group of beneficiaries who received project funding (average of 1.5 heads) compared to the control group (average of 1 head), which could suggest an effect of PDHC of 48.9% (about 0.51 head more than the control group), this difference cannot be considered significant at a significance level of 5% **(Figure 23)**. On the other hand, a less conservative evaluation, adopting a significance level of 10%, could demonstrate a positive effect of PDHC on the number of sheep heads in the group of beneficiaries that received funding from the project.

Photo 22 | Caprine farming in Carnaíba-PE (top left), in Russas-CE (top right), in Andorinha-BA (bottom left) and in São Raimundo Nonato-PI (bottom right)

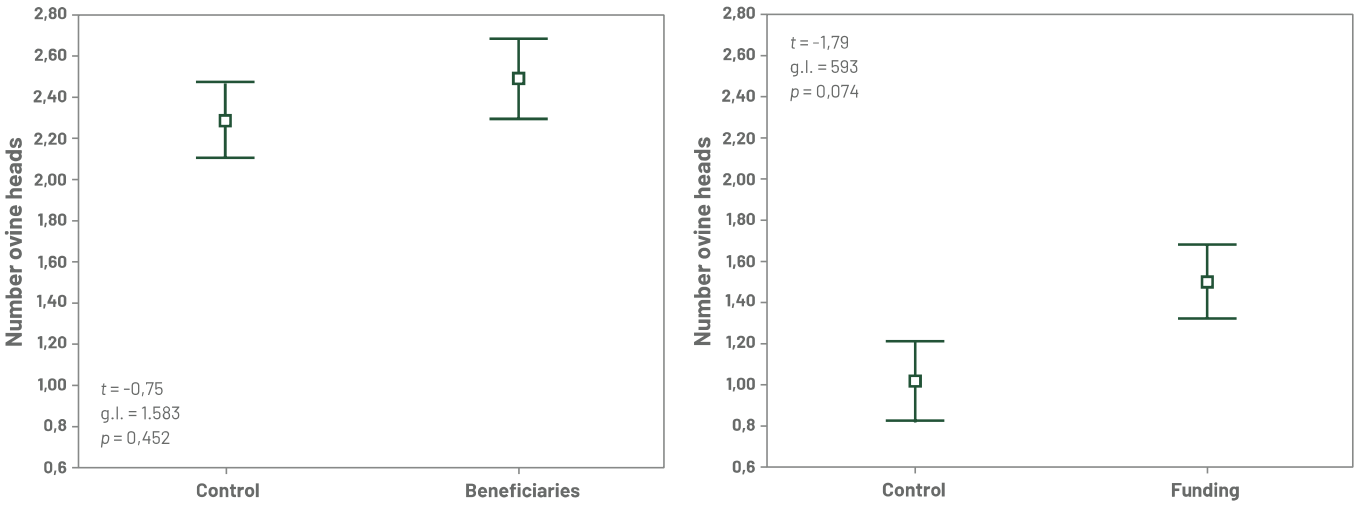


Figure 23 | Mean, standard error and t-test results for samples dependent on the number of ovine heads between the control and beneficiary groups (left chart) and control and beneficiary groups receiving funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l.= degrees of freedom

Concerning the number of horses, donkeys and mules **(Figure 24)**, PDHC did not have a significant effect in either the group of beneficiaries (t = -0.20; p = 0.842) or the group of beneficiaries who received funding from the project (t =-1.41; p = 0.159).

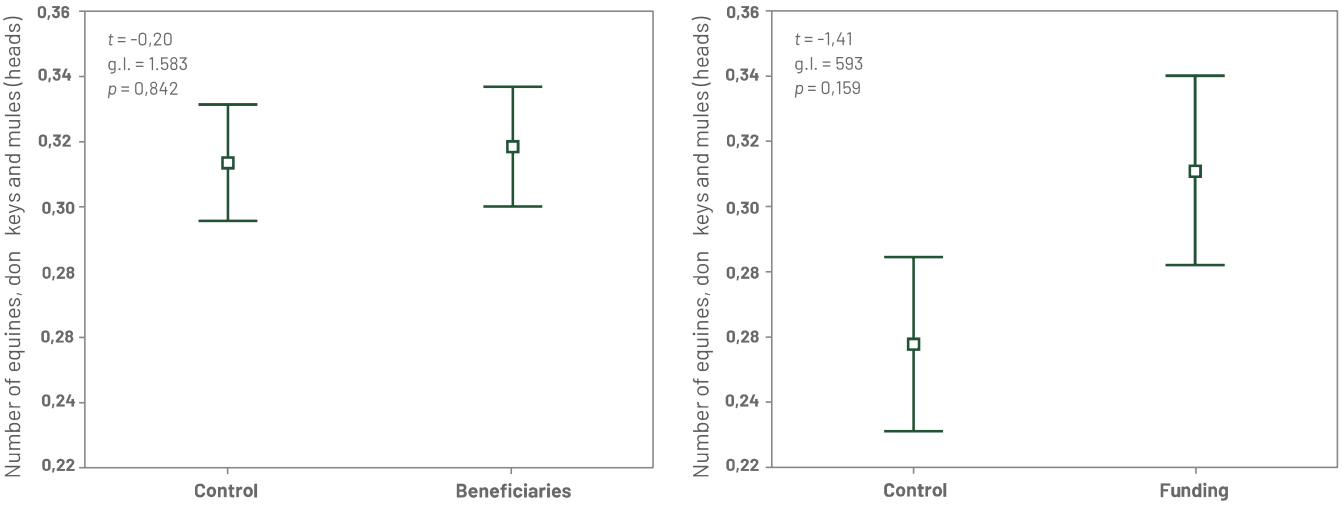


Figure 24 | Mean, standard error and t-test results for samples dependent on the number of equines, donkeys and mules between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 24 | Equines, donkeys and mules in Natuba-PB (top), in Tangará-RN (bottom left) and in Riacho Frio-PI (bottom right)

Finally, in relation to the number of cattle **(Figure 25)**, PDHC did not show a significant effect either in the group of beneficiaries (t = 0.70; p = 0.485) or in the group of beneficiaries who received project funding (t =-0.10; p = 0.921).

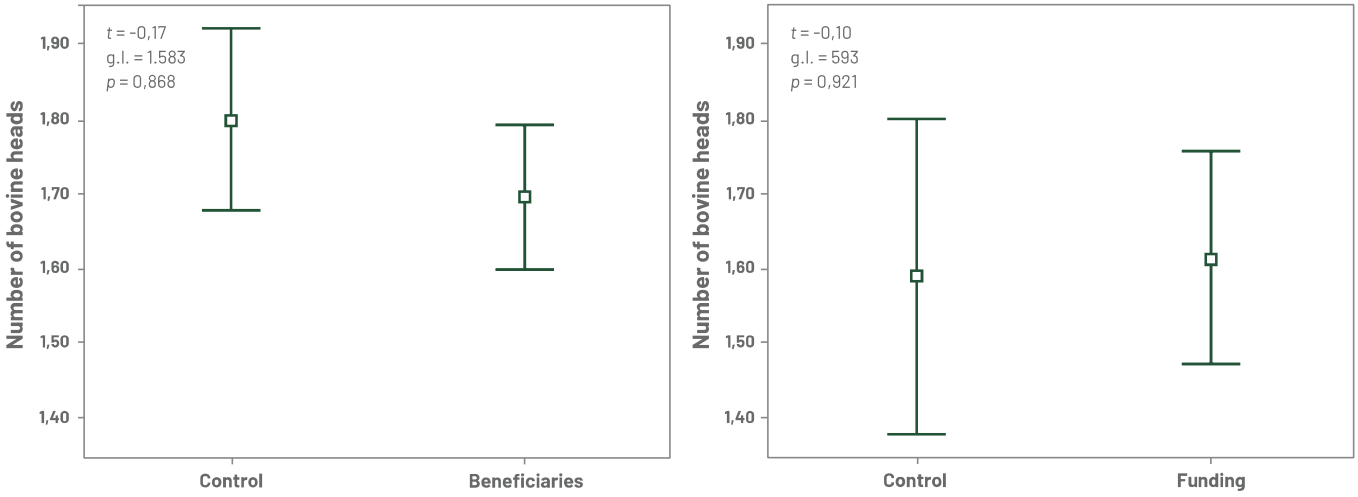


Figure 25 | Mean, standard error and t-test results for samples dependent on the number of bovine heads between the control and beneficiary groups (left chart) and control and beneficiary groups that received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 25 | Cattle in São José do Egito-PE (left) and in Santa Maria do Salto-MG (right)

Municipality:
Juazeiro do Norte - CE

Municipality:
Russas-CE

Municipality:
Iguaracy-PE

Municipality:
Poço Verde-CE

Video 4 | Filmed testimonies of PDHC beneficiaries on poultry, caprine and ovine farming (amateur and remote filming, following safety protocols against covid, conducted by research agents during interviews in 2022)

TESTIMONIALS FROM PDHC BENEFICIARIES (KEYWORD: "ACQUISITIONS/PURCHASES")

"The project really helped. I built a chicken coop. I had a few chickens, and I bought more. It was very helpful."

"I bought sheep, it helped a lot in the family nutrition. It was a very good help indeed.

"We bought five herds, and they are in the pigsty. We can raise them slowly".

"For me the money from the project was very good, we bought a brand new cow and a little calf. Soon after, I started to make cheese with the milk, and with it I started to breed pigs. This project was a blessing in my life".

"I bought two heifers to produce milk to sell and for my own consumption."

Food Insecurity and Food Diversity

Food insecurity was measured using the Brazilian Scale of Food Insecurity (EBIA), limited to eight initial questions for adults, as practiced by FAO[5]. From the scale, households with severe food insecurity (six to eight positive responses) and those with moderate or severe insecurity (four to eight positive responses) were identified.

In all tests, PDHC had no impact on food insecurity, either for beneficiaries in general or for those who received the productive fomentation **(Chart 2)**. Probably the main reason why the levels of food security between PDHC beneficiaries and the control group did not differ stemmed from the exceptional conditions of 2021. That year, the federal government allocated an emergency aid of R$ 600.00 a month to a large part of those enrolled in the Unified Registry (CadÚnico), as a way to minimize the effects of the pandemic. As the control group sample was drawn from CadÚnico, many of the farmers interviewed were benefited by this emergency aid due to covid (76% of the control sample), which ensured better food security conditions.

According to the II National Survey on Food Insecurity in the Context of the Covid-19 Pandemic in Brazil, published in 2022, there is a record of severe food insecurity for 22.6% of these farmers, much higher than that recorded in this impact evaluation, revealing that the conditions of the control group were more favorable than the vast majority of northeastern farmers **(Chart 2)**.

Chart 2 | Result of the chi-square test (X^2) comparing the proportion of food insecure households (EBIA) among the control group (C), the groups of beneficiaries with and without funding (B) and beneficiaries who received funding (BF)

VARIABLES/INDICES	GROUPS	AVERAGE B/BF	AVERAGE C	EFFECT (%)	P
Severe Food nsecurity	C x B	11%	13%	-1%	0.297
	C x BF	10%	13%	-2%	0.149
Severe + Moderate Food Insecurity	C x B	29%	29%	0%	0.783
	C x BF	29%	29%	0%	0.932

Note 1: n = 1.566 pairs.
Note 2: Cells filled in green indicate higher absolute values for the control group or beneficiary group

[5] See for example FAO's SOFI-2022 report, available at: https://www.fao.org/publications/sofi/en/

Regarding the food diversity scale, PDHC showed a significant impact **(Figure 26)**. While the beneficiaries presented an average of 5.81, the control group presented an average of 5.66. Therefore, PDHC provided an increase in the beneficiaries' food diversity scale of 2.6% (about 0.15 more than the control group).

The impact of PDHC was even greater when comparing the control and beneficiary groups who received funding from the project **(Figure 26)**. In this case, while the beneficiaries had an average number of 6.10, the control group had an average value of 5.47, showing an increase in the food scale of the beneficiaries with funding of 11.3% (about 0.62 more than the control group).

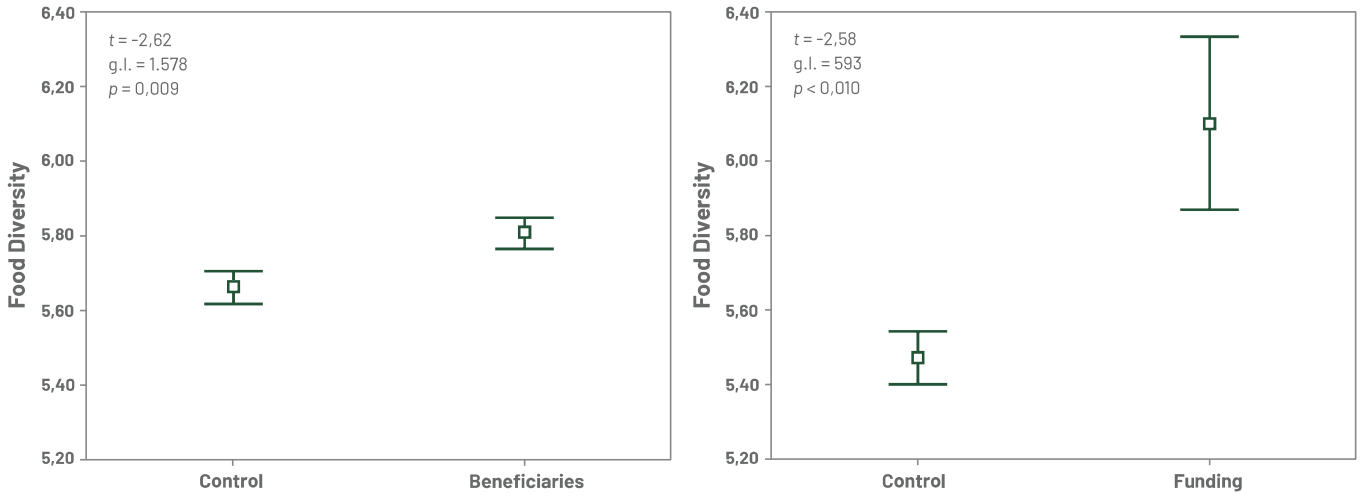


Figure 26 | Mean, standard error and t-test results for samples dependent on the food diversity scale between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 26 | Papaya production in São Raimundo Nonato-PI (top left), grain storage in Calumbi-PE (top right) and onions in Coronel Murta-MG (bottom)

Photo 27 | Pumpkin production in São Raimundo Nonato-PI (photo above) and bean harvest in Júlio Borges-PI (photo below)

Ecological Index (iEco)

To assess whether PDHC influenced the adoption of good ecological practices among project beneficiaries, an ecological index (iEco), explained in **ANNEX II**, adapted from the PROCASE Project (2021), was used. The iEco was based on the questions in the FIDA questionnaire **(ANNEX III)** that indicate an adequate ecological practice (or not) on the farm, such as use of fires, pesticides and chemical fertilizers; disposal of household waste; conservation of riparian zones; among others. Thus, the higher the iEco value, the better the indicator of use of good ecological practices on the farm.

Photo 28 | Productive backyard in Comercinho-MG

In relation to iEco, PDHC did not show a significant effect in the beneficiaries group **(Figure 27)**. Despite the higher values observed in the beneficiaries group (average of 472 points) compared to the control group (average of 567 points), which would indicate the adoption of good ecological practices among the beneficiaries, this difference cannot be considered significant at a 5% significance level ($t = -1.65$; $p = 0.100$). However, it should be pointed out that in a less conservative evaluation, adopting a significance level of 10%, the results indicate that the beneficiary group would present better ecological practices.

On the other hand, although the beneficiaries who received funding also had higher iEco values (average of 468 points) compared to the control group (average of 461 points), this difference cannot be considered significant at a significance level of 5 or 10% ($t = -1.25$; $p = 0.213$) **(Figure 27)**.

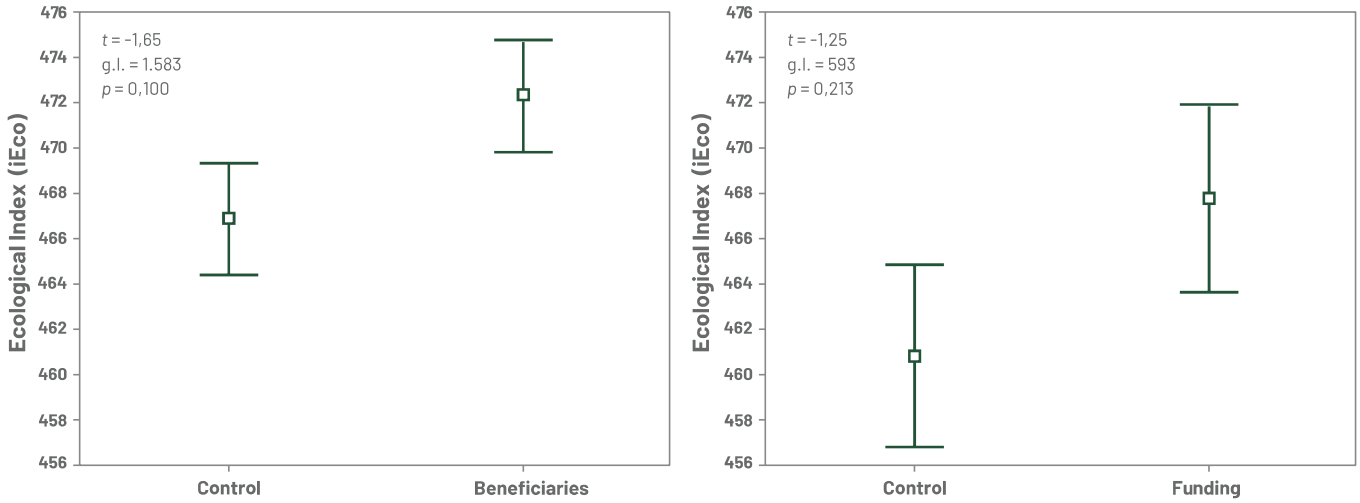


Figure 27 | Mean, standard error and t-test results for samples dependent on the ecological index (iEco) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' responses to each question that makes up iEco (types of agricultural practices, destination of empty pesticide containers, destination of household waste and preservation status of riparian areas), by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 3**.

Chart 3 | Summary of the variables that make up the Ecological Index by number of families (in percentage) of the control group and the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Types of Agricultural Practices		
Use of fires	26,9	30,0
Use of agrotoxins or pesticides	11,2	10,0
Use of chemical fertilizers	9,0	8,4
Use of organic compound	7,4	9,6
Use of manure	39,1	45,8
Use of residual crops	23,2	28,6
Disposal of empty agrochemical packaging		
Returned at collection stations	1,3	1,4
Buried, burned or thrown in the environment	98,0	98,2
Reuse of empty packaging	90,5	91,6

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Household waste disposal		
Recycled	10,0	11,4
Buried or burned	74,3	79,0
Discarded in the environment	6,7	6,9
Separate organic waste for composting	15,7	15,1
Preservation of riparian forests		
Water surfaces	11,2	12,2
Creeks	13,5	12,4
Water springs	2,5	2,1

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Access to Public Policies Index (iAPP)

To assess whether PDHC influenced the beneficiary families to access public policies, an Access to Public Policies Index (iAPP) was used, explained in **ANNEX II**, adapted from the PROCASE Project (2021).The iAPP was obtained through the questions in the FIDA questionnaire **(ANNEX III)** that indicate access to 32 types of public policies and participation in associations. Thus, the higher the iAPP value, the better the indicator of access to public policies in the agricultural unit.

In relation to iAPP, PDHC showed a significant impact **(Figure 28)**. While the beneficiaries had an average score of 592, the control group had an average score of 514. Therefore, PDHC provided an increase in beneficiaries' access to public policies of 12.2% (about 78 points more than the control group).

The impact of PDHC was even greater when comparing the control groups with the beneficiaries who received funding from the project **(Figure 28)**. In this case, while the beneficiaries presented an average number of 598 points, the control group presented an average of 501 points, showing an increase in access to public policies of 19.5% (about 97 points more than the control group).

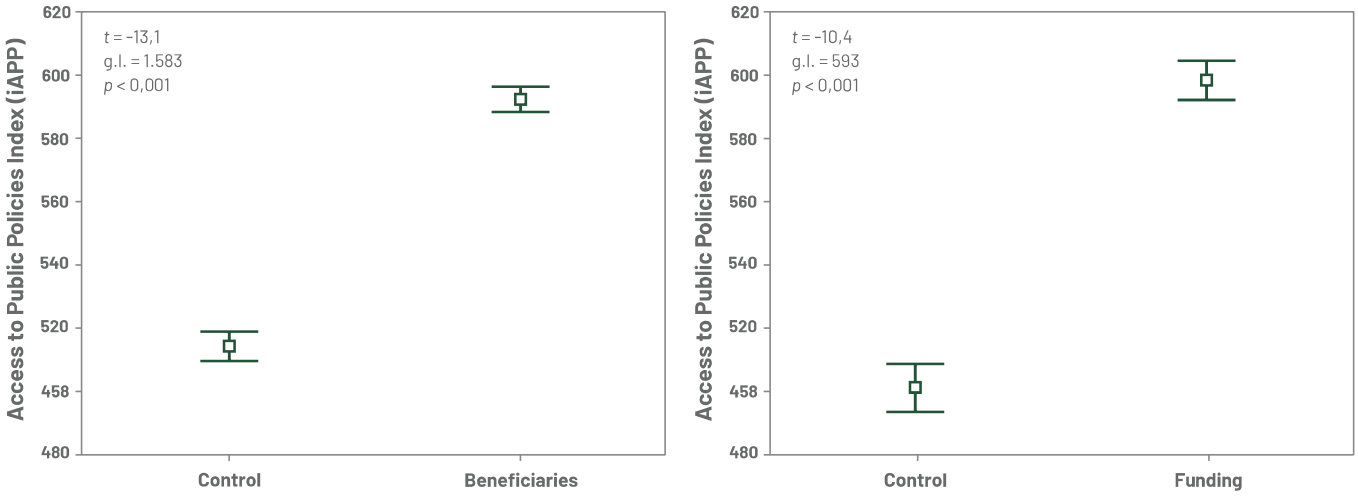


Figure 28 | Mean, standard error and t-test results for samples dependent on the Access to Public Policies Index (iAPP) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers through Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' answers for each question that makes up the iAPP (whether they have DAP, whether they participate in any association, the types of benefits/policies they access, and their access to the different types of public services), by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 4**.

Chart 4 | Summary of the variables that make up the Access to Public Policies Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Has DAP and participates in an Association		
DAP - Aptitude Declaration for family farmers	81,2	92,9
Association	48,2	65,2
Access to Benefits		
A - Retirement, Social Security	27,7	21,4
B – Unemployment insurance	2,4	2,1
C – Bolsa Família (Family allowance), Bolsa Escola (School Allowance), cartão alimentação (food card), auxílio gás (gas allowance), food basket, scholarship, Educa mais Brasil, Inglês sem fronteiras (educational programs)	69,1	75,0

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
D – Jovem aprendiz, Pronatec, Sisutec, Sisu, Prouni, FIES pós-graduação (labor and student programs)	1,3	1,1
E– Free pass, senior card, Driver's license with economical value	1,0	0,9
F – "Living without limits", "Health is priceless", "Stork Network" Programs	1,1	0,9
G – Electricity with economical value	53,3	51,5
H – "My house, my life" "My better house" Programs	4,0	4,4
I – "Light for rural areas" Program	6,3	6,0
J – "Light for All" Program	27,7	23,7
K – Water Cistern for human consumption - 1° water	49,5	55,3
L – Water cistern for production - 2ª water	7,5	12,4
M – Technical assistance and rural extension (ATER)	4,1	21,2
N – Rural Credit	9,1	13,4
O – National Program for the Strengthening of Family Farming (PRONAF)	14,8	21,0
P – Food Acquisition Program (PAA)	2,7	4,0
Q – National School Meals Program (PNAE)	4,2	3,9
R – Garantia Safra (Crop Warranty)	39,5	51,1
S – Brazil without Poverty Program (PBSM)	0,8	0,7
T – Rural Insurance	0,3	0,4
U – Family farming Insurance – SEAF	0,7	1,0
V – Land reform and land credit	1,5	2,0
W – Rural Poverty Reduction Program	0,3	0,4
X – Individual Micro-Entrepreneur (MEI)	0,8	0,4
Y – Emergency Aid in calamities - Drought Allowance	2,5	2,6
Z – Family Health Program (PSF)	71,4	69,3

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
AA – Defense Insurance	1,1	3,0
AB – State Water Supply System	23,0	18,6
AC – Water for Human Consumption in Water Tank Trucks	32,9	39,8
AD – Programa Fomento Rural (Rural incentives program)	0,3	11,9
AE – Emergency Aid due to covid	75,8	81,0
AE – Other program/benefit	2,2	3,2
Access to Public Services		
Health Agent	91,1	90,2
PSF/presence of a physician in the community/district	78,2	81,0
School bus	73,2	74,2
Public Transportation	25,9	26,1
Public Security	31,5	30,5

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Access to Agrarian Policies Index (iAPA)

To assess whether PDHC influenced the beneficiary families in accessing agrarian policies, an Access to Agrarian Policies Index (iAPA) was used, explained in ANNEX II, calculated with the same methodology as in PROCASE Project (2021).The iAPA was obtained through the questions in the FIDA questionnaire **(ANNEX III)** that indicate access to productive benefits, such as agricultural financing, cisterns for human production, crop guarantees, rural insurance, PAA, PNAE, among others. Thus, the higher the iAPA value, the better the indicator of access to agrarian policies at the agricultural unit.

In relation to iAPA, PDHC had a significant impact **(Figure 29)**. While the beneficiaries had an average of 591 points, the control group had an average of 457 points. Therefore, PDHC provided an increase in beneficiaries' access to agrarian policies of 29.3% (about 134 points more than the control group).

The impact of PDHC was even greater when comparing the control groups with the beneficiaries who received funding from the project **(Figure 29)**. In this case, while the beneficiaries presented an average number of 587 points, the control group presented an average of 437 points, showing an increase in access to agrarian policies of 34.2% (about 150 points more than the control group).

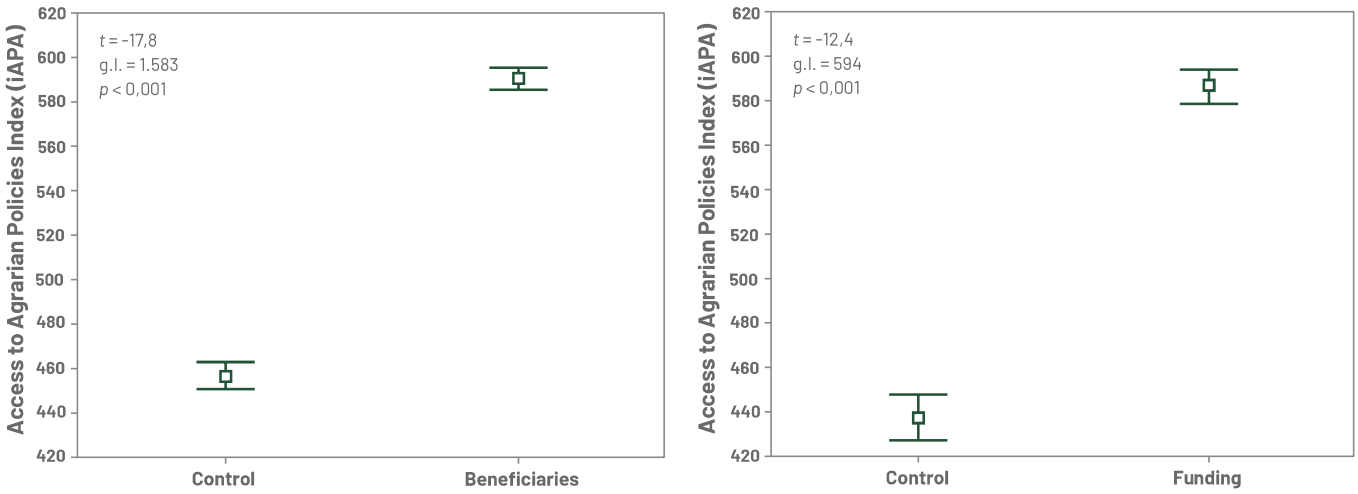


Figure 29 | Mean, standard error and t-test results for samples dependent on the Access to Agrarian Policies Index (iAPA) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' answers for each question that makes up the iAPA (if they have DAP, if they participate in any association, and the types of benefits/agricultural policies they access), by control group and beneficiary group (including both those who received and those who did not receive funding), is shown in **Chart 5**

Chart 5 | Summary of the variables that make up the Access to Agrarian Policies Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Has DAP and participates in an Association		
DAP - Aptitude Declaration for family farmers	81,2	92,9
Association	48,2	65,2
Access to Benefits		
L – Water cistern for production - 2ª water	7,5	12,4
M – Technical assistance and rural extension (ATER)	4,1	21,2
N – Rural Credit	9,1	13,4
O – National Program for the Strengthening of Family Farming (PRONAF)	14,8	21,0
P – Food Acquisition Program (PAA)	2,7	4,0
Q – National School Meals Program (PNAE)	4,2	3,9
R – Garantia Safra (Crop Warranty)	39,5	51,1
T – Rural Insurance	0,3	0,4
U – Family Farming Insurance (SEAF)	0,7	1,0
V – Land reform, Land credit	1,5	2,0
X – Individual Micro Entrepreneur (MEI)	0,8	0,4

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Associativity Index (iAssoc)

To evaluate if PDHC influenced the beneficiary families to associate in community actions, an Associativity Index (iAssoc) was used, explained in **ANNEX II**, calculated according to the PROCASE Project methodology (2021). The iAssoc was obtained through the questions in the FIDA questionnaire **(ANNEX III)** that indicate participation in community activities, such as collective work, organized social movements, movements linked to churches and unions, among others. Thus, the higher the iAssoc value, the better the indicator of participation in community activities on the agricultural unit.

In relation to iAssoc, PDHC showed a significant impact **(Figure 30)**. While the beneficiaries had an average score of 236, the control group had an average score of 167. Therefore, PDHC provided an increase in the number of associations in community activities by beneficiaries of 41.1% (about 69 points more than the control group).

Similarly, the impact of PDHC was also significant when comparing the control groups with the beneficiaries who received funding from the project, although this effect was somewhat smaller than that observed in the previous case, which considered all beneficiaries **(Figure 30)**. Thus, while the beneficiaries with funding had an average of 228 points, the control group had an average of 167 points, showing an increase in the number of associations in community activities by beneficiaries with funding of 36.4% (about 61 points more than the control group).

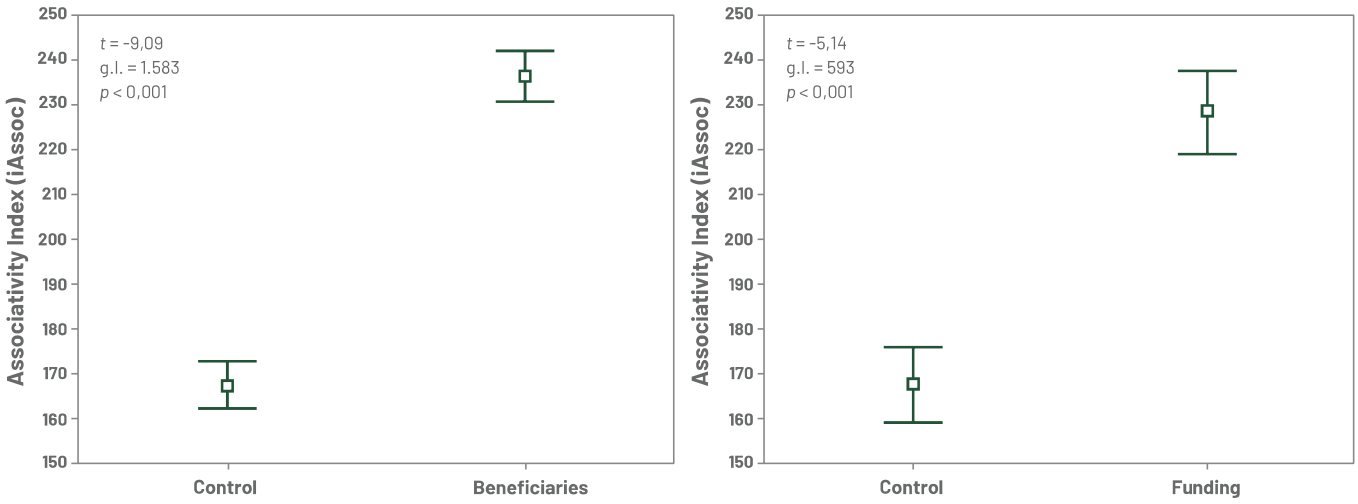


Figure 30 | Mean, standard error and t-test results for samples dependent on the Associativity Index (iAssoc) between the control group and beneficiaries (left chart) and control group and beneficiaries who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

On average, each PDHC beneficiary family has 1.33 associations in community activities (standard error 1.31), while the control group had an average value of 0.95 associations (standard error 1.22). The answers of the interviewed families for each question that makes up the iAssoc are presented in **Chart 6** and **Chart 7**.

Chart 6 | Summary of the variables that make up the Associativity Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
If you have already participated in community, neighborhood, farmer, or cooperative associations	38,4	51,6
If you have already participated in collective or community work	12,0	17,9
If you have ever participated in an organized social movement	3,6	6,0
If you have participated in church-related movements	11,7	15,3
If you have ever participated in unions	29,0	41,4
If you have participated in other activities (clubs, sports and social associations, etc.)	0,7	0,8
Processes the production through the association	1,9	3,2
Commercializes the production through the association	1,6	2,5

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Chat 7 | Summary of two variables that make up the Associativity Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Knowledge of meetings held in the last year:		
Doesn't Know	57,3	41,2
Did not have	15,3	20,2
Had	27,5	38,6
Frequency of meeting attendance in the last year:		
None	76,9	65,9
Some	14,5	20,6
All of them	8,6	13,5

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Photo 29 | Associativism in Custódia-PE

Women's Participation Index (iMu)

To assess whether PDHC was able to promote the empowerment of women among beneficiary families, a Women's Participation Index (iMu), explained in **ANNEX II**, adapted from PROCASE Project (2021), was used.The iMu was obtained through the questions in the FIDA questionnaire **(ANNEX III)** that indicate the level of women's participation in community actions and occupations in various activities, such as farming, trade, and public service, among others.Thus, the higher the value of iMu, the better the indicator of women's empowerment in the agricultural unit.

In relation to iMu, PDHC had a significant impact **(Figure 31)**. While the beneficiaries had an average of 335 points, the control group had an average of 261 points. Therefore, PDHC provided an increase in the empowerment of women in beneficiary families of 28.4% (about 75 points more than the control group).

The impact of PDHC was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 31)**. In this case, while the beneficiaries presented an average number of 353 points, the control group presented an average of 264 points, showing an increase in the empowerment of women of 33.8% (about 89 points more than the control group).

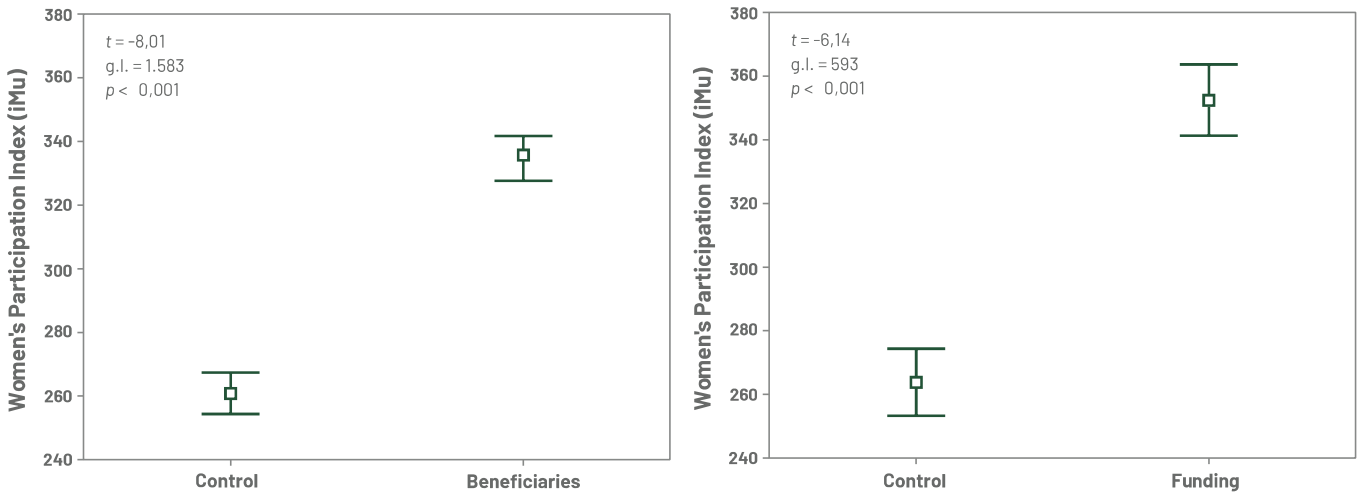


Figure 31 | Mean, standard error and t-test results for samples dependent on the Women's Participation Index (iMu) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' responses to each question that makes up the iMu, by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 8**.

Chart 8 | Summary of the variables that make up the Women's Participation Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Do the women in your family actively participate in community or Association activities?	33,0	46,9
Occupations held by the women in the family in the last 5 years		
Agriculture / Farming	80,0	84,3
Processing / Product Manufacturing	16,5	14,6
Public Services (school, health center, etc.)	4,9	4,5
Provision of services (maid, manicure, nanny, seamstress)	6,5	6,5
Commerce	3,9	4,4
Craftsmanship	3,5	6,3

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Photo 30 | Baru production in Arinos-MG (top) and bean harvest in Cristino Castro-PI (bottom)

Photo 31 | Papaya production in Curimatá-PI (top) and poultry farming in Cristino Castro-PI (bottom)

Youth Participation Index (iJ)

To assess whether PDHC was able to promote youth participation in the activities of the beneficiary families, a Youth Participation Index (iJ) was used, detailed in **ANNEX II**, adapted from the PROCASE Project (2021). The iJ was obtained by using questions from the FIDA questionnaire **(ANNEX III)** that indicate the participation of young people in community actions and occupations in various activities, such as farming, commerce, and public service, among others. Thus, the higher the value of iJ, the better the indicator of youth empowerment in the agricultural unit.

In relation to iJ, PDHC showed a significant impact **(Figure 32)**. While the beneficiaries had an average of 85 points, the control group had an average of 70 points. Therefore, the PDHC provided an increase in youth empowerment in beneficiary families of 22.2% (about 16 points more than the control group).

On the other hand, although the beneficiaries who received funding showed higher iJ values (average of 79 points) when compared to the control group (average of 66 points), this difference cannot be considered significant at a significance level of 5 or 10% (t = -1.31; p = 0.190) **(Figure 32)**.

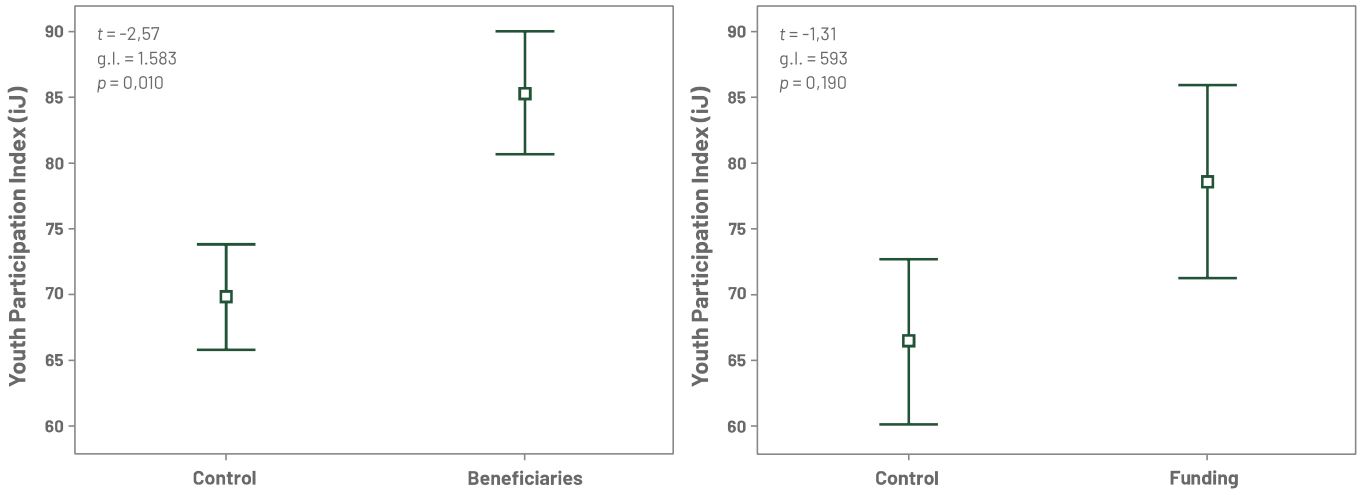


Figure 32 | Mean, standard error and t-test results for samples dependent on the Youth Participation Index (iJ) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' answers to each question that makes up the iJ, by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 9**.

Chart 9 | Summary of the variables that make up the Youth Participation Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Do the youth in your family actively participate in community or Association activities?	7,1	10,2
Occupations held by the youth in the family in the last 5 years		
Agriculture / Farming	28,0	28,7
Processing / Product Manufacturing	5,7	4,5
Public Services (school, health center, etc.)	1,6	1,5
Provision of services (maid, manicure, nanny, seamstress)	3,0	2,5
Commerce	2,2	2,8
Craftsmanship	0,8	1,4

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Photo 32 | Productive backyard in Cristalândia do Piauí-PI

Photo 33 | Corn production in Corrente-PI (top) and pomegranate production in Campinas do Piauí-PI (bottom)

Women and Youth Participation Index (iJM)

An integration between the indices of participation of women and youth (iJM) was also carried out with the same aim of assessing whether PDHC was able to promote the joint empowerment of women and youth in the project beneficiary families. iJM is detailed in ANNEX II, also adapted from the PROCASE Project (2021).This index was also determined by the questions in the FIDA questionnaire **(ANNEX III)** that indicate the participation of women and young people in community activities and their occupations in various activities, such as farming, commerce, and public service, among others. Thus, the higher the value of iJM, the better the indicator of combined empowerment of women and youth in the agricultural unit.

Regarding iJM, PDHC had a significant impact **(Figure 33)**. While beneficiaries had an average of 210 points, the control group had an average of 165 points. Therefore, PDHC provided an increase in the joint empowerment of women and youth in beneficiary families of 27.1 percent (about 45 points more than the control group).

The PDHC impact was even greater when comparing the control and beneficiary groups that received funding from the project **(Figure 33)**. In this case, while the beneficiaries presented an average number of 216 points, the control group presented an average of 165 points, showing an increase in the combined empowerment of women and youth of 30.7% (about 51 points more than the control group).

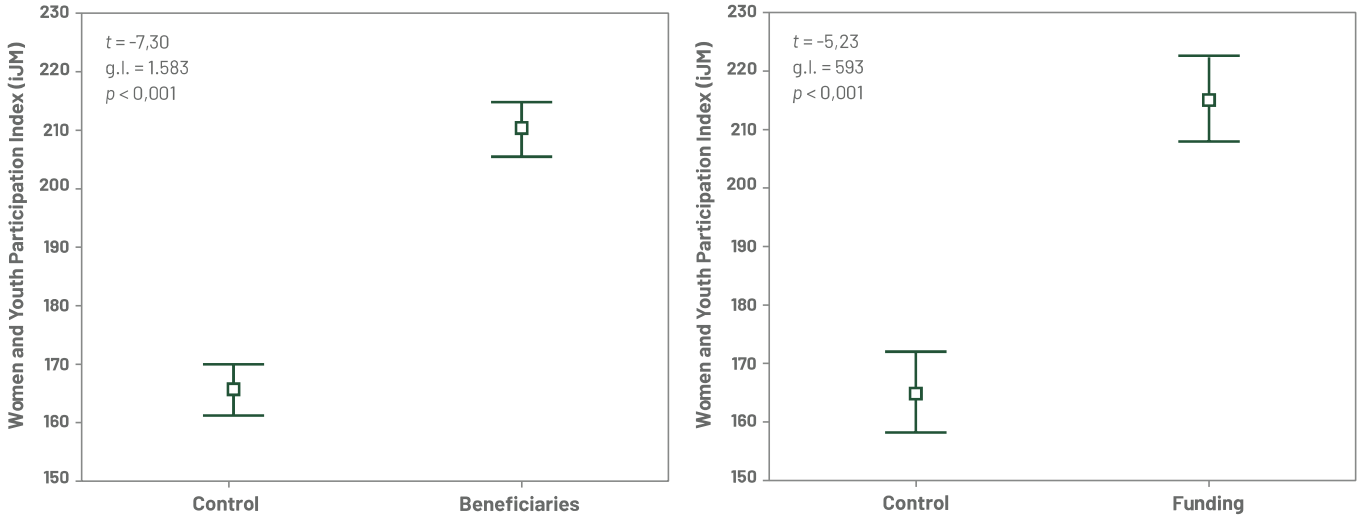


Figure 33 | Mean, standard error and t-test results for samples dependent on the Women and Youth Participation Index (iJM) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Drought Exposure Index (iSeca)

To assess whether PDHC provided less exposure to the harmful effects of drought among project beneficiaries, a Drought Exposure Index (iSeca), detailed in **ANNEX II**, adapted from the PROCASE Project (2021), was used. The iSeca was assessed using the questions in the FIDA questionnaire **(ANNEX III)** that indicate the impact of drought on families' lives, the loss of production, the sale of durable goods to minimize the effect of droughts, among others. Thus, the higher the value of iSeca, the greater the impact of drought on the agricultural unit.

Regarding iSeca, PDHC did not show a significant effect on the group of beneficiaries **(Figure 34)**. Despite the higher values observed in the beneficiaries group (average of 202 points) compared to the control group (average of 198 points), which would indicate a bigger impact of drought among the beneficiaries, this difference cannot be considered significant ($t = -0.89$; $p = 0.372$).

Photo 34 | Drought conditions in Assunção-PB (top) and plantation in Carnaubeira da Penha-PE (bottom)

TESTIMONIALS FROM PDHC BENEFICIARIES (KEYWORD: "MORE LEARNING")

"I found their visits very important. There were things that I didn't have experience with and through them I started to understand like how to treat my vegetables, how to harvest, about fertilizers. They would say 'it's not like this' and tell us how it was, and then it worked out."

"We learned a lot of things. We didn't know how to reuse fertilizer for the plants and fruits. With the cistern we had enough water to maintain our crops."

"Knowledge. More and more learning regarding how to produce, how to live in the semi-arid... And pass on to others how to work without fires, without chemicals, according to agroecology, a work that respects nature and people"

"We learned how to take better care of the pigs. There were things we didn't know and learned to do practically. Many of our questions were answered."

"We participated in the project, and they divided us into several parts at that time: we worked with pigs, chickens, vegetable gardens, we planted a lot of things. We bought things to take care of the animals, we participated in several meetings. They helped us plant tomatoes and prune coffee, because we didn't know how. For us it was a very good thing, great, I hope there will be another opportunity to learn more things"

"We learned how to work with the animals, how to manage them, how to cure foot-and-mouth disease. Everyone here has learned now"

"There was a veterinarian who came to help us treat animals with worms. We raised sheep and learned how to use the correct feed, with mineral salt. Also hygiene. We did not take these precautions, so when the technician came to the farm, he oriented us and told us what could happen if we were not careful."

"It was good, we learned a lot of things we didn't know"

Photo: Silvia Nonata da Silva

Similarly, although the beneficiaries who received funding also showed higher iSeca values (average of 187 points) compared to the control group (average of 179 points), this difference cannot be considered significant (t = -1.03; p = 0.302) **(Figure 34)**.

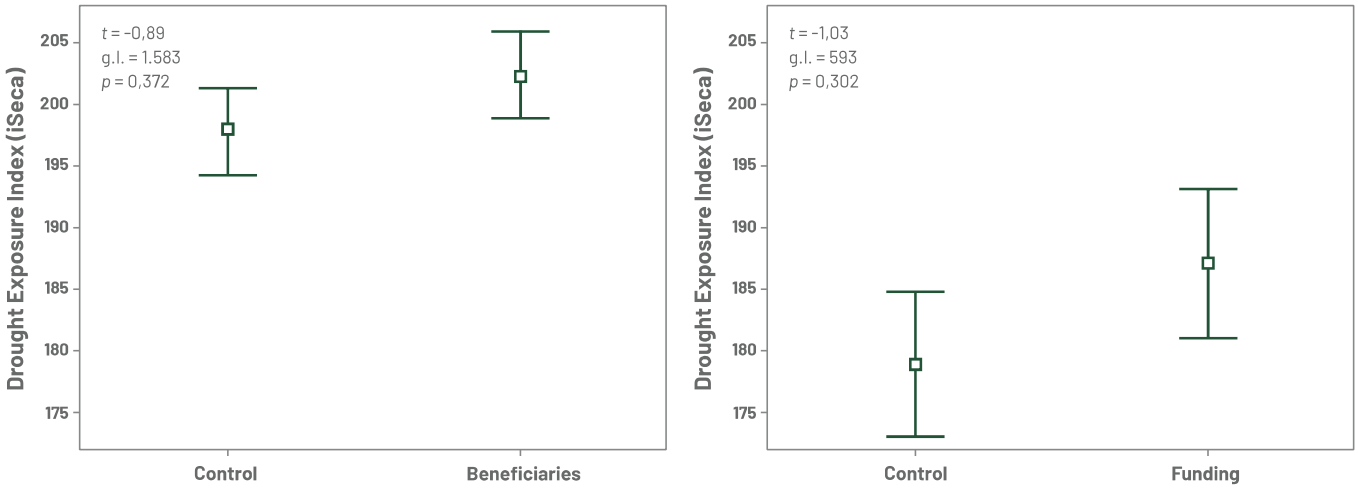


Figure 34 | Mean, standard error and t-test results for samples dependent on the Drought Exposure Index (iSeca) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

Photo 35 | Drought conditions in São João do Campestre-RN (top) and in Monte das Gameleiras-RN (bottom)

A summary of families' responses to each question that makes up the iSeca (whether they were affected by the drought, how the drought affected the family's life, and whether they sold consumer goods or assets to cope with the drought), by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 10**.

Chart 10 | Summary of the variables that make up the Drought Exposure Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Was affected by drought in the last 5 years	72,9	73,3
How the drought affected the family's life		
Work reduction	63,0	62,4
Difficulties in domestic life due to lack of water for drinking and cooking	48,6	48,8
Loss of agricultural production	67,6	68,2
Loss of animals	25,3	29,9
Consumer goods or assets sold to cope with the drought		
Animals	12,4	13,8
Motorcycle and other durable transport or work goods	1,2	1,1
Household Appliances	0,1	0,2
Land or house	26,9	30,0

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Housing Index (iMor)

To assess whether PDHC provided a better living condition among project beneficiaries, a Housing Index (iMor) was used, explained in **ANNEX II**, adapted from the PROCASE Project (2021).The iMor was determined through the questions in the FIDA questionnaire **(ANNEX III)** that indicate the characteristics of the households, such as type of construction, roofing material, sewage disposal, whether it has piped water and electricity, among others.Thus, the higher the value of iMor, the better the housing condition of the agricultural unit.

Regarding iMor, PDHC did not show a significant effect in the beneficiary group **(Figure 35)**, and the values observed in the beneficiary group (average of 878 points) were slightly lower than in the control group (average of 881 points). Similarly, although the beneficiaries who received funding showed slightly higher iMor values (average of 888 points) than the control group (average of 878 points), this difference cannot be considered significant **(Figure 35)**.

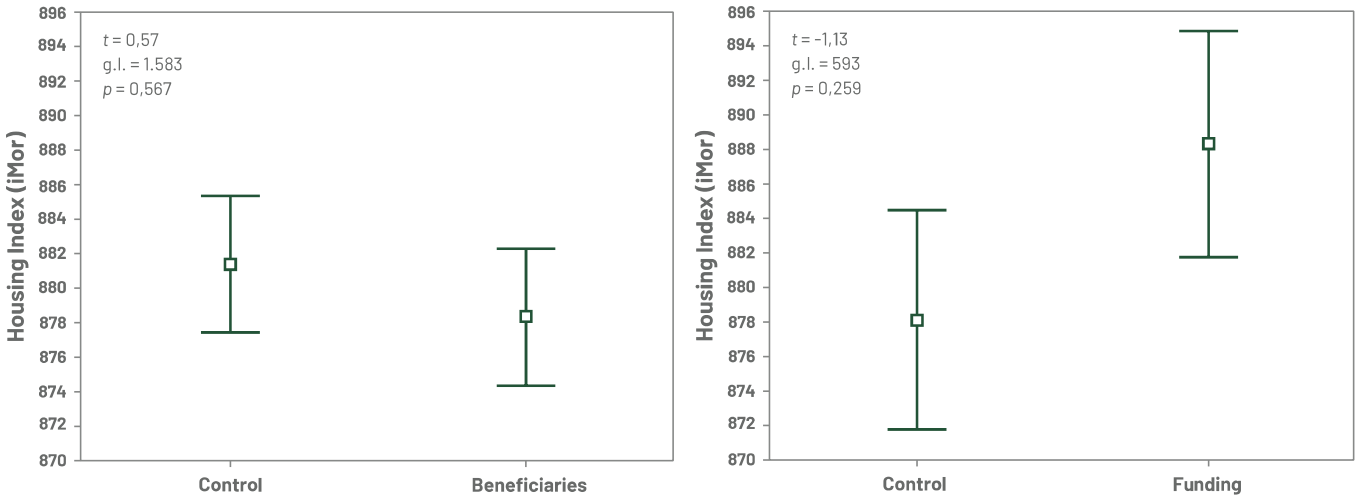


Figure 35 | Mean, standard error and t-test results for samples dependent on the Housing Index (iMor) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

A summary of the families' responses to each question that makes up iMor, by control group and beneficiary group (including both those who received and those who did not receive funding), is presented in **Chart 11**.

Chart 11 | Summary of the variables that make up the Housing Index by number of families (in percentage) of the control group and of the total group of beneficiaries that did or did not receive funding

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
Type of residence		
Shack	2,7	3,4
House	97,3	96,5
Other	0,1	0,1
Main material used for external walls		
Adobe	7,9	5,9
Masonry (brick, block)	86,7	88,6
Wood	1,6	1,3
Others	0,2	0,6
Mud	3,5	3,5
Main roofing material		
Concrete slab	2,7	2,6
Other material (wood, straw, canvas, tile)	0,6	1,2
Ceramic roof tile	93,8	93,3
Zinc, Asbestos, Ethernit	3,0	2,9
Main material used for flooring		
Masonry (cement, brick, block, tile, etc.)	75,4	77,0
Ceramics	22,4	20,1
Compacted soil	2,0	2,5
Wood	0,1	0,4
If there is a bathroom/sanitary in the house		
Yes	89,6	88,8
No	10,4	11,2
Main destination of household sewage		
Open air, ditch, river, lake or sea	18,6	17,9
Masonry-lined cesspit	61,9	62,6
Unlined cesspit	11,4	11,7
Another way	0,4	0,6
Sewage or rainwater collection system	7,6	7,2

QUESTIONS/VARIABLES	NUMBER OF FAMILIES (%)	
	CONTROL	BENEFICIARIES
If there is electricity in the house		
Yes	98,5	97,8
No	1,5	2,2
If piped water is available in at least one room in the house		
Yes	70,1	68,8
No	29,9	31,2

Note: Cells filled in green indicate larger absolute values for the control group or beneficiary group, but without comprising a hypothesis test.

Photo 36 | Homes of families interviewed in Juazeiro do Norte-CE (left) and Formoso-MG (right)

Foto 37 | Homes of families interviewed in Irauçuba-CE (left) and Graccho Cardoso-SE (right)

Multidimensional Poverty Index (IPM)

To evaluate if PDHC was able to impact the poverty level of the project beneficiaries in different levels of deprivation, through a multidimensional analysis, the multidimensional poverty index (MPI) was used, which is described in **ANNEX II**. The IPM is determined through a synthesis of several dimensions, such as income, social capital, human capital, food security, housing conditions, and the sustainability dimension. Thus, the higher the IPM value, the higher the multidimensional poverty of the agricultural unit.

Regarding the IPM, the PDHC did not show a significant effect in the beneficiary group **(Figure 36)**, although the values observed in the beneficiary group (average of 357 points) were slightly lower than in the control group (average of 361 points).

On the other hand, the results show a negative effect of PDHC when comparing the control groups with the beneficiaries who received funding from the project **(Figure 36)**. In this case, while the beneficiaries presented an average number of 353 points, the control group presented an average value of 339 points, showing an increase in multidimensional poverty of 4.2% (about 14 points more than the control group).

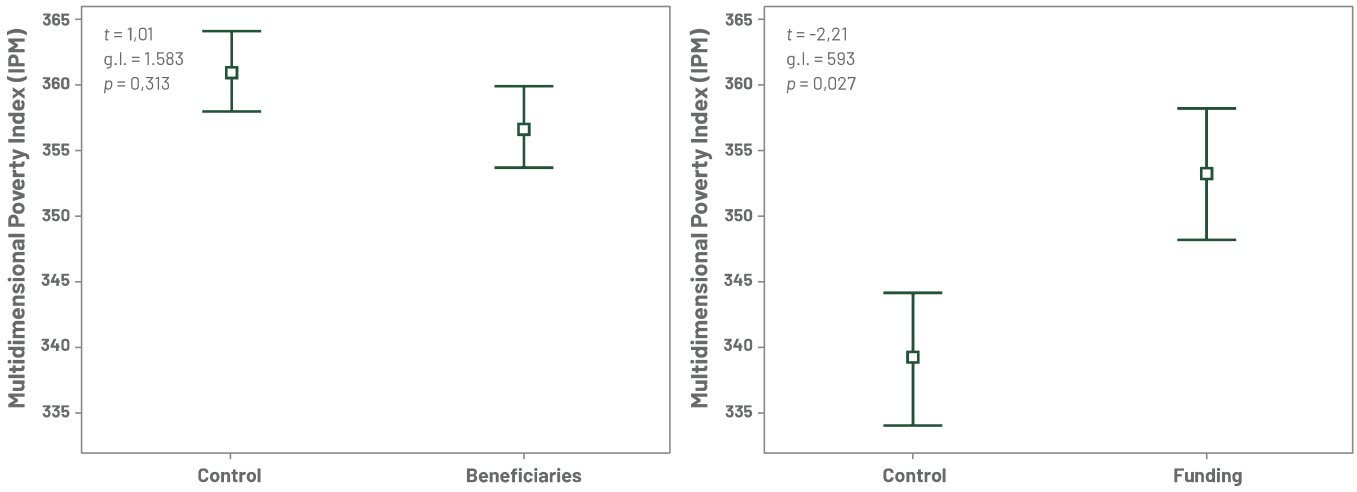


Figure 36 | Mean, standard error and t-test results for samples dependent on the Multidimensional Poverty Index (IPM) between the control and beneficiary groups (left chart) and control and beneficiary groups who received funding (right chart) after matching between pairs of farmers using Propensity Score Matching. g.l. = degrees of freedom

TESTIMONIALS FROM PDHC BENEFICIARIES (PALAVRA-CHAVE: "SATISFACTION")

"The benefit for our house has been blessed, because it has increased our consumption and improved our income. I don't know for others, but for me it has improved 100%, and I am very satisfied. I hope to see more of the project"

"I am satisfied with the project because it helped my family's income, and after the project, my production increased"

"We participated in the Dom Helder project and it helped a lot here. We are very satisfied. This project has helped a lot in our agriculture and animal farming. We are very satisfied."

Phoyo 38 | Homes of families interviewed in Almenara-MG (top) and Caraí-MG (bottom)

Photo 39 | Homes of families interviewed in Porto da Folha-SE (top left), Itainópolis-PI (top right) and Curimatá-PI (bottom)

Logical Framework

Regarding the logical framework indicators **(Chart 12)**, it is observed that PDHC obtained results much higher than the expected in some of the goals, such as the diversity of productive systems, the implementation of new technologies and innovative practices, and the adoption of a new income-generating activity. Some targets were a little lower than expected, such as the adoption of new/improved inputs, technologies, or practices, and access to credit for at least 13,500 families. On the other hand, some goals were partially achieved, such as a minimum of 10,800 families accessing public procurement programs (PAA, PNAE).

Chart 12 | Logical Framework (LFA) Indicators as measured by direct interviews with beneficiaries[1]

INDICATOR	TARGET	SCOPE	SCOPE (%)
35% (or more) increase in the assets of families benefiting from technical assistance and productive investments[2]	35%	12.466	23%
70% reduction in extreme poverty among beneficiaries of productive investments[3]	70%	90%	129%
30% reduction in extreme poverty of PDHC beneficiaries[4]	30%	87%	290%
45,000 will have access to public policies and programs[5]	45.000	53.847	120%
27,000 families benefited from technical assistance increase their agricultural production by 25% (or more) at the end of the project[6]	27.000	9.947	37%
30% of the beneficiary families report an increase in production[7]	16.154	16.790	104%
30% of families report the adoption of new/improved inputs, technologies or practices[8]	16.154	53.483	331%
13,500 have access to credit[9]	13.500	10.899	81%
At least 80% increase their production[10]		4.741	44%
At least 20,000 families diversified their productive systems[11]	20.000	46.154	231%
At least 16,200 families adopt new technological practices[12]	16.200	43.920	271%

INDICATOR	TARGET	SCOPE	SCOPE (%)
At least 20,000 families introduce at least one new product[13]	20.000	25.155	126%
6,140 families adopt a new income-generating activity[14], being:	6.140	12.549	204%
4,500 families with women in charge of the household;[15]	4.500	3.776	84%
1,100 families with youth in charge of the household;[16]	1.100	968	88%
260 families from indigenous communities;[17]	260	199	77%
280 families from quilombola communities.[18]	280	160	57%
10,900 families benefit from actions that involve the implementation of new technologies and innovative practices[19]	10.900	53.506	491%
At least 10,800 families access public procurement programs (PAA, PNAE)[20]	10.800	1.709	16%
At least 2,700 families have access to differentiated markets (organic, fair trade)[21]	2.700	3.352	124%

Notes (Q = question, see ANNEX III):
1 - to estimate the number of families from the sample, the expansion factors of 43.180 and 23.818 were used for the samples of Lot 1 and Lot 2, respectively. It should be noted that no hypothesis testing and also no impact assessment was applied for any of the values presented in this table;
2 - families who answered 'yes' to Q176 and '35% or more' to Q177;
3 - families that received benefits under the Rural Development Program and had monetary income of up to R$105.00 per month, in accordance with Law 14.284 of 2021;
4 - PDHC beneficiaries with monetary income of up to R$105.00 per month, according to Law 14.284;
5 - number of PDHC beneficiaries registered in ANATER's Technical Assistance Management System (SGA) on 12/30/2021;
6 - families filled in options 2 (more than 25%) to 4 (more than half) of Q172;
7 - families filled in options 1 (increased a little) to 4 (increased more than half) of Q172;
8 - families who answered positively to one of the options A through X of Q175;
9 - families who answered positively to Q174;
10 - families who accessed credit (Q174) and reported some increase in production (Q172);
11 - families that have started a new product (options A through J of Q163) or new activities (options A through L of Q164);
12 - Families who answered one of the options: A, B, E, F, L, O, and Q from question Q175;
13 - families who answered one of the options: A through J from Q163;
14 - families who answered one of the options: A through L from Q164;
15 - families who answered one of the options: A through L of Q164, headed by women;
16 - families who answered one of the options: A through L of Q164, headed by youth;
17 - families who answered one of the options: A through L of Q164, self-declared as being from indigenous communities;
18 - families who answered one of the options: A through L of Q164, self-declared as being from quilombola communities;
19 - families who filled in one of the options A through X of Q175;
20 - families who declared to access PAA and/or PNAE in options A and/or B of Q161;
21 - families that declared one of the options D through H of Q161.

Phoyo: Silvia Norlata da Silva

5. CONCLUSION

This impact evaluation document demonstrates that the PDHC reached its intended objectives, generating in the group of beneficiaries greater income, agricultural production and food diversity; access to public and agrarian policies; greater inclusion in associations; besides also having managed to insert women and youth in the family's productive, commercial and community activities.Furthermore, this document also shows that the impact of PDHC was even more promising within the group of beneficiaries that received funding.

It must be emphasized that PDHC managed to reach the most vulnerable population, with characteristics such as: their productive units present an average area of about 4.6 ha; the median area is 2 ha; about 40% don't have the land title/ownership; and

about 75% of the heads of household have no basic education or even no education at all. In summary, the families assisted by PDHC can be characterized as follows: they have between two and four members (average of 3.4 members per family), are between 30 and 59 years old (heads and spouses with an average age of 46 and 44 years, respectively) and most families have two members active in agriculture and cattle raising, and such activities are developed by the couple (about 65% of the cases).

Technical Assistance activities can change for the better the lives of family farmers in the Brazilian semiarid region, as demonstrated here. However, when there is an association of productive development and technical assistance activities, the improvement is maximized. For example, in almost all the comparative dimensions that considered income gains (Total Farm Income, Agricultural Monetary Income, Agricultural Income from Self-Consumption, Animal Production, Derivatives of Animal Production, Vegetable Production, Total Annual Income, and Per Capita Annual Income), the beneficiaries that received funding showed greater differences relative to the control group than when comparing all beneficiaries relative to the control. The same result can also be observed for the number of pig and poultry heads, the food diversity, and the access to public and agrarian policies. Therefore, the importance of associating technical assistance and productive development in future actions should be emphasized.

Finally, two uncertainties that do not fit in this impact assessment should be highlighted, presented here in the form of questions. Was the time between the technical assistance actions (including or not the productive development) and the impact evaluation sufficient to generate all the benefits intended by PDHC? That is, if this response period was short, even for a small part of the beneficiaries, the impact generated by PDHC was probably even bigger than what is presented in this document. Second, for how long should the positive impacts generated by PDHC last? It is important to re-evaluate the families assisted in the near future and, if necessary, to elaborate a continued policy to offer technical assistance and productive development to family farmers in the Brazilian semiarid region.

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ANNEX I
Municipalities with interviewed farmers

Chart 13 | Distribution of the 4,895 interviews conducted in the 413 municipalities in the sample journey between the months of January, February and March 2022

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
AL	Arapiraca	2700300	21
AL	Belo Monte	2700904	2
AL	Canapi	2701605	15
AL	Carneiros	2701803	7
AL	Craíbas	2702355	20
AL	Dois Riachos	2702504	1
AL	Girau do Ponciano	2702900	20
AL	Inhapi	2703304	6
AL	Limoeiro de Anadia	2704203	1
AL	Major Isidoro	2704401	25
AL	Maravilha	2704609	3
AL	Mata Grande	2705002	5
AL	Monteirópolis	2705408	3
AL	Olho d'Água das Flores	2705705	3
AL	Palestina	2706208	4
AL	Pão de Açúcar	2706406	5
AL	Poço das Trincheiras	2707206	12
AL	Porto Real do Colégio	2707503	20
AL	Quebrangulo	2707602	20
AL	Santana do Ipanema	2708006	9
AL	São Brás	2708204	20
AL	São José da Tapera	2708402	4
AL	Traipu	2709202	20
BA	Andorinha	2901353	9
BA	Antas	2901601	7
BA	Baixa Grande	2902609	15
BA	Banzaê	2902658	8
BA	Barra	2902708	21

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
BA	Caém	2905107	19
BA	Cícero Dantas	2907806	11
BA	Fátima	2910750	3
BA	Glória	2911402	1
BA	Ichu	2913309	18
BA	Itapicuru	2916500	5
BA	Itiúba	2917003	15
BA	Jacobina	2917508	2
BA	Jaguarari	2917706	16
BA	Jeremoabo	2918100	2
BA	Lamarão	2919108	1
BA	Mirangaba	2921401	3
BA	Monte Santo	2921500	5
BA	Morro do Chapéu	2921708	19
BA	Nordestina	2922656	23
BA	Nova Fátima	2922730	16
BA	Novo Triunfo	2923050	3
BA	Ourolândia	2923357	20
BA	Paulo Afonso	2924009	2
BA	Pilão Arcado	2924405	5
BA	Ponto Novo	2925253	6
BA	Queimadas	2925808	5
BA	Quixabeira	2925931	11
BA	Remanso	2926004	10
BA	Retirolândia	2926103	3
BA	Santa Bárbara	2927507	10
BA	Santa Brígida	2927606	3
BA	Santaluz	2928000	12
BA	Santanópolis	2928307	10
BA	Saúde	2929800	2
BA	Serra Preta	2930402	17
BA	Serrinha	2930501	19
BA	Valente	2933000	4

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
BA	Várzea da Roça	2933059	4
BA	Euclides da Cunha	2910701	2
CE	Abaiara	2300101	5
CE	Aiuaba	2300408	5
CE	Altaneira	2300606	4
CE	Antonina do Norte	2300804	1
CE	Apuiarés	2300903	6
CE	Ararendá	2301257	2
CE	Arneiroz	2301505	6
CE	Assaré	2301604	7
CE	Aurora	2301703	3
CE	Banabuiú	2301851	4
CE	Barbalha	2301901	2
CE	Barro	2302008	9
CE	Caridade	2303006	5
CE	Caririaçu	2303204	7
CE	Cariús	2303303	2
CE	Cedro	2303808	9
CE	Crateús	2304103	18
CE	Crato	2304202	11
CE	Forquilha	2304350	9
CE	General Sampaio	2304608	5
CE	Granjeiro	2304806	6
CE	Groaíras	2304905	7
CE	Ibaretama	2305266	9
CE	Ibicuitinga	2305332	11
CE	Icó	2305407	32
CE	Iguatu	2305506	4
CE	Independência	2305605	74
CE	Ipaporanga	2305654	5
CE	Ipu	2305803	26
CE	Ipueiras	2305902	13
CE	Irauçuba	2306108	22

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
CE	Juazeiro do Norte	2307304	19
CE	Jucás	2307403	14
CE	Limoeiro do Norte	2307601	4
CE	Milagres	2308302	8
CE	Miraíma	2308377	6
CE	Missão Velha	2308401	4
CE	Mombaça	2308500	12
CE	Monsenhor Tabosa	2308609	114
CE	Nova Olinda	2309201	5
CE	Nova Russas	2309300	1
CE	Novo Oriente	2309409	11
CE	Pacoti	2309805	15
CE	Pacujá	2309904	14
CE	Paramoti	2310407	8
CE	Pedra Branca	2310506	13
CE	Piquet Carneiro	2310902	7
CE	Poranga	2311009	37
CE	Quiterianópolis	2311264	7
CE	Quixadá	2311306	11
CE	Quixelô	2311355	20
CE	Quixeramobim	2311405	80
CE	Quixeré	2311504	4
CE	Russas	2311801	16
CE	Santana do Cariri	2312106	6
CE	Sobral	2312908	6
CE	Solonópole	2313005	23
CE	Tabuleiro do Norte	2313104	8
CE	Tamboril	2313203	133
CE	Tarrafas	2313252	3
CE	Tauá	2313302	14
CE	Tejuçuoca	2313351	14
CE	Uruburetama	2313807	7
CE	Varjota	2313955	18

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
CE	Várzea Alegre	2314003	3
CE	Parambu	2310308	15
CE	Canindé	2302800	16
MA	Mombaça	2100303	1
MA	Monsenhor Tabosa	2100436	2
MA	Nova Olinda	2100709	10
MA	Nova Russas	2101004	11
MA	Novo Oriente	2101202	2
MA	Pacoti	2101608	9
MA	Pacujá	2101772	8
MA	Paramoti	2102150	2
MA	Pedra Branca	2102374	3
MA	Piquet Carneiro	2102754	3
MA	Poranga	2104008	6
MA	Quiterianópolis	2105401	6
MA	Quixadá	2105609	2
MA	Quixelô	2105948	7
MA	Quixeramobim	2106003	1
MA	Quixeré	2107209	6
MA	Russas	2108108	5
MA	Santana do Cariri	2108454	9
MA	Sobral	2108702	3
MA	Solonópole	2109205	1
MA	Tabuleiro do Norte	2109908	3
MA	Tamboril	2110005	1
MA	Tarrafas	2110401	8
MA	Tauá	2111078	12
MA	Tejuçuoca	2111250	10
MA	Uruburetama	2111722	8
MA	Varjota	2112233	9
MA	Varjota	2112704	5
MG	Águas Formosas	3100906	4
MG	Almenara	3101706	63

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
MG	Arinos	3104502	2
MG	Campo Azul	3111150	1
MG	Capitão Enéas	3112703	12
MG	Caraí	3113008	6
MG	Carbonita	3113503	1
MG	Chapada Gaúcha	3116159	17
MG	Comercinho	3117009	10
MG	Coração de Jesus	3118809	7
MG	Coronel Murta	3119500	2
MG	Felício dos Santos	3125408	2
MG	Formoso	3126208	28
MG	Grão Mogol	3127800	4
MG	Indaiabira	3130655	23
MG	Itaipé	3132305	2
MG	Itamarandiba	3132503	30
MG	Jacinto	3134707	3
MG	José Gonçalves de Minas	3136520	10
MG	Lagoa dos Patos	3137304	9
MG	Lontra	3138658	5
MG	Luislândia	3138682	1
MG	Machacalis	3138906	13
MG	Mata Verde	3140555	11
MG	Matias Cardoso	3140852	19
MG	Medina	3141405	3
MG	Minas Novas	3141801	28
MG	Mirabela	3142007	10
MG	Monte Azul	3142908	9
MG	Montezuma	3143450	4
MG	Ninheira	3144656	7
MG	Padre Paraíso	3146305	34
MG	Pai Pedro	3146552	4
MG	Pedra Azul	3148707	3
MG	Ponto Chique	3152131	3

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
MG	Ponto dos Volantes	3152170	1
MG	Rio Pardo de Minas	3155603	24
MG	Rubim	3156601	1
MG	Salinas	3157005	3
MG	Santa Helena de Minas	3157658	1
MG	Santa Maria do Salto	3158102	1
MG	Santo Antônio do Jacinto	3160306	2
MG	São João do Paraíso	3162708	3
MG	São Romão	3164209	5
MG	Senador Modestino Gonçalves	3165909	2
MG	Urucuia	3170529	2
MG	Vargem Grande do Rio Pardo	3170651	2
PB	Aguiar	2500205	4
PB	Arara	2500908	2
PB	Araruna	2501005	5
PB	Aroeiras	2501302	11
PB	Assunção	2501351	27
PB	Borborema	2502706	3
PB	Cabaceiras	2503100	48
PB	Camalaú	2503902	4
PB	Catingueira	2504207	3
PB	Congo	2504702	33
PB	Coxixola	2504850	36
PB	Cubati	2505006	61
PB	Damião	2505352	1
PB	Frei Martinho	2506202	1
PB	Gado Bravo	2506251	10
PB	Livramento	2508505	1
PB	Monteiro	2509701	13
PB	Natuba	2509909	2
PB	Nazarezinho	2510006	7
PB	Nova Olinda	2510204	5
PB	Nova Palmeira	2510303	1

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
PB	Olho D'Água	2510402	5
PB	Olivedos	2510501	103
PB	Pedra Lavrada	2511103	1
PB	Piancó	2511301	5
PB	Picuí	2511400	9
PB	Pilões	2511608	4
PB	Prata	2512200	37
PB	Santa Cecília	2513703	5
PB	Santa Terezinha	2513802	2
PB	São João do Tigre	2514107	38
PB	São José dos Cordeiros	2514800	14
PB	São Sebastião do Umbuzeiro	2515203	43
PB	Serra Branca	2515500	43
PB	Serraria	2515906	8
PB	Solânea	2516003	10
PB	Soledade	2516102	3
PB	Sumé	2516300	3
PB	Taperoá	2516508	4
PB	Umbuzeiro	2517001	3
PB	Vieirópolis	2517209	12
PE	Jatobá	2105450	7
PE	Alagoinha	2500502	28
PE	Afogados da Ingazeira	2600104	5
PE	Afrânio	2600203	5
PE	Agrestina	2600302	1
PE	Altinho	2600807	1
PE	Angelim	2601003	5
PE	Belém do São Francisco	2601607	1
PE	Betânia	2601805	4
PE	Bezerros	2601904	20
PE	Bodocó	2602001	18
PE	Bom Jardim	2602209	4
PE	Cabrobó	2603009	12

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
PE	Cachoeirinha	2603108	10
PE	Calumbi	2603405	46
PE	Camocim de São Félix	2603504	1
PE	Capoeiras	2603801	11
PE	Carnaíba	2603900	52
PE	Carnaubeira da Penha	2603926	14
PE	Casinhas	2604155	1
PE	Cedro	2604304	19
PE	Chã Grande	2604502	1
PE	Correntes	2604700	6
PE	Cupira	2605004	13
PE	Custódia	2605103	15
PE	Dormentes	2605152	16
PE	Flores	2605608	39
PE	Floresta	2605707	3
PE	Garanhuns	2606002	13
PE	Granito	2606309	35
PE	Gravatá	2606408	1
PE	Ibimirim	2606606	15
PE	Iguaracy	2606903	11
PE	Ingazeira	2607109	5
PE	Ipubi	2607307	82
PE	Itaíba	2607505	9
PE	Lagoa do Ouro	2608602	5
PE	Manari	2609154	3
PE	Mirandiba	2609303	13
PE	Orobó	2609709	16
PE	Orocó	2609808	5
PE	Petrolândia	2611002	1
PE	Quixaba	2611533	5
PE	Sairé	2612000	6
PE	Salgueiro	2612208	5
PE	Santa Maria da Boa Vista	2612604	6

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
PE	Santa Maria do Cambucá	2612703	23
PE	Santa Terezinha	2612802	2
PE	São João	2613206	14
PE	São Joaquim do Monte	2613305	4
PE	São José do Belmonte	2613503	9
PE	Serrita	2614006	1
PE	Moreilândia	2614303	72
PE	Tabira	2614600	2
PE	Tacaratu	2614808	17
PE	Terezinha	2615102	7
PE	Terra Nova	2615201	1
PE	Trindade	2615607	3
PE	Tupanatinga	2615805	6
PE	Tuparetama	2615904	13
PE	Verdejante	2616100	14
PE	São José do Egito	2613602	21
PI	Alvorada do Gurguéia	2200459	1
PI	Aroeiras do Itaim	2200954	4
PI	Assunção do Piauí	2201051	16
PI	Avelino Lopes	2201101	4
PI	Bela Vista do Piauí	2201556	5
PI	Betânia do Piauí	2201739	16
PI	Bocaina	2201804	2
PI	Bom Jesus	2201903	2
PI	Campinas do Piauí	2202109	1
PI	Corrente	2202901	3
PI	Cristalândia do Piauí	2203008	3
PI	Cristino Castro	2203107	2
PI	Curimatá	2203206	2
PI	Currais	2203230	3
PI	Curral Novo do Piauí	2203271	17
PI	Dirceu Arcoverde	2203354	14
PI	Floresta do Piauí	2203859	1

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
PI	Geminiano	2204352	1
PI	Inhuma	2204709	18
PI	Ipiranga do Piauí	2204808	1
PI	Itainópolis	2205003	5
PI	Jacobina do Piauí	2205151	4
PI	Jaicós	2205201	10
PI	Júlio Borges	2205524	2
PI	Lagoa do Sítio	2205599	1
PI	Massapê do Piauí	2206050	6
PI	Monte Alegre do Piauí	2206605	2
PI	Morro Cabeça no Tempo	2206654	2
PI	Parnaguá	2207603	2
PI	Patos do Piauí	2207777	1
PI	Paulistana	2207801	5
PI	Pedro Laurentino	2207934	5
PI	Pimenteiras	2208106	16
PI	Pio IX	2208205	4
PI	Redenção do Gurguéia	2208700	1
PI	Riacho Frio	2208858	3
PI	Santa Luz	2209302	4
PI	São José do Piauí	2210201	3
PI	São Julião	2210300	16
PI	São Raimundo Nonato	2210607	223
PI	Sebastião Leal	2210631	1
PI	Simplício Mendes	2210805	2
PI	Tamboril do Piauí	2210953	3
PI	Vera Mendes	2211506	1
RN	Água Nova	2400406	1
RN	Almino Afonso	2400604	19
RN	Antônio Martins	2400901	26
RN	Apodi	2401008	79
RN	Campo Grande	2401305	23
RN	Barcelona	2401503	3

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
RN	Caraúbas	2402303	111
RN	Cerro Corá	2402709	3
RN	Doutor Severiano	2403202	4
RN	Encanto	2403301	3
RN	Fernando Pedroza	2403756	2
RN	Francisco Dantas	2403905	3
RN	Frutuoso Gomes	2404002	2
RN	Janduís	2405207	6
RN	Japi	2405405	6
RN	João Dias	2405900	40
RN	Lagoa de Pedras	2406304	1
RN	Lagoa Salgada	2406601	3
RN	Lucrécia	2406908	4
RN	Marcelino Vieira	2407302	7
RN	Monte Alegre	2407807	3
RN	Monte das Gameleiras	2407906	2
RN	Olho d'Água do Borges	2408409	2
RN	Pedra Preta	2409605	3
RN	Serra Caiada	2410306	4
RN	Rafael Fernandes	2410504	2
RN	Rafael Godeiro	2410603	1
RN	Riacho de Santana	2410801	2
RN	São João do Campestre	2412302	9
RN	São Paulo do Potengi	2412609	3
RN	São Pedro	2412708	3
RN	São Tomé	2412906	7
RN	Senador Elói de Souza	2413102	6
RN	Serra de São Bento	2413300	2
RN	Serrinha dos Pintos	2413557	20
RN	Severiano Melo	2413607	1
RN	Sítio Novo	2413706	3
RN	Tangará	2414001	3
RN	Tenente Ananias	2414100	7

STATE	MUNICIPALITY	IBGE CODE	NUMBER OF INTERVIEWS
RN	Upanema	2414605	50
RN	Venha Ver	2414753	7
SE	Brejo Grande	2800704	33
SE	Gararu	2802403	4
SE	Graccho Cardoso	2802601	27
SE	Japoatã	2803401	28
SE	Lagarto	2803500	5
SE	Macambira	2803708	1
SE	Monte Alegre de Sergipe	2804201	6
SE	Nossa Senhora Aparecida	2804458	1
SE	Nossa Senhora da Glória	2804508	12
SE	Nossa Senhora das Dores	2804607	6
SE	Pacatuba	2804904	6
SE	Pinhão	2805208	1
SE	Poço Redondo	2805406	17
SE	Poço Verde	2805505	47
SE	Porto da Folha	2805604	20
SE	Propriá	2805703	37
SE	Ribeirópolis	2806008	33
SE	Santana do São Francisco	2806404	22
SE	São Miguel do Aleixo	2807006	2
SE	Simão Dias	2807105	2

ANNEX II
Composition of Development Indices

1. Brazilian Food Insecurity Scale (EBIA)

The Brazilian Food Insecurity Scale (EBIA) was calculated by adding the scores obtained in questions K1, K2, K3, K4, K5, K6, K7 and K8 (ANNEX III), whose values vary between zero and eight, as presented below. The higher the EBIA value, the greater the food insecurity of the agricultural unit.

K1. In the past three months, did the residents of this household worry that they would run out of food before they could buy or receive more food? (Yes - 1, No or DK/DA - 0)

K2. In the last three months, did the food run out before the residents of this household had money to buy more food? (Yes - 1, No ou DK/DA - 0)

K3. In the last three months, did the residents of this household run out of money to have a healthy and varied diet? (Yes - 1, No ou DK/DA - 0)

K4. In the last three months, did the residents of this household eat only a few types of food that they still had because they ran out of money? (Yes - 1, No ou DK/DA - 0)

K5. In the past three months, has any resident aged 18 or older missed a meal because there was no money to buy food? (Yes - 1, No ou DK/DA - 0)

K6. In the past three months, has any resident aged 18 or older ever eaten less than they thought they should because there was no money to buy food? (Yes - 1, No ou DK/DA - 0)

K7. In the past three months, has any resident aged 18 or older ever felt hungry but didn't eat because there was no money to buy food? (Yes - 1, No ou DK/DA - 0)

K8. In the past three months, has any resident aged 18 or older ever had only one meal a day or gone a whole day without eating because there was no money to buy food? (Yes - 1, No ou DK/DA - 0)

Finally, the EBIA values in the classes below indicate:

- EBIA equals 0 = indicates Food Security
- EBIA between 1 and 3 = indicates Mild Food Insecurity

- EBIA between 4 and 5 = indicates Moderate Food Insecurity
- EBIA between 6 and 8 = indicates Severe Food Insecurity
-

2. Food Diversity

Food Diversity indicates both the variety of food items consumed by the families and, indirectly, the nutritional adequacy of the diet. It was calculated using question K9 **(ANNEX III)**, whose values vary between zero and ten, as shown below. The higher the value of this index, the greater the food diversity of the farm.

K9. Think about the last 24 hours: which food groups did the family consume?

A) Grains, roots and tubers (rice, corn, cassava, potato, yam) (Yes - 1, No - 0)
B) Legumes (beans, fava beans, peas, lentils, peanuts) (Yes - 1, No - 0)
C) Seeds and oilseeds (sesame, cashew, licuri, walnuts, almonds) (Yes - 1, No - 0)
D) Milk and dairy products (Yes - 1, No - 0)
E) Meat, poultry and fish (Yes - 1, No - 0)
F) Eggs (Yes - 1, No - 0)
G) Dark green leafy vegetables (cabbage, spinach, watercress, chicory, arugula) (Yes - 1, No - 0)
H) Fruits and vegetables rich in vitamin C (orange, acerola, lemon, mango, cashew, seriguela, taioba) (Yes - 1, No - 0)
I) Other vegetables (maxixe, jerimum, okra) (Yes - 1, No - 0)
J) Other fruits (banana, cashew apple, passion fruit, tomato) (Yes - 1, No - 0)

Finally, the Food Diversity values in the classes below indicate:

- Food Diversity between 1 to 4 = indicates Low Diversity
- Food Diversity between 5 and 10 = indicates High Diversity

3. Ecological Index - iEco

The ecological index, which was adapted from the PROCASE Project (2021), represents the adoption of good practices that benefit the environmental conservation in agricultural units. Thus, the higher the iECO value, the better the indication of use of good ecological practices at the farm. The following questions from the questionnaire **(ANNEX III)** were used for its construction:

111. Between January and December of the previous year, did you adopt the following practices?

A) Use of fire (Yes - 0, No - 1)
B) Use of pesticides or chemical poison (Yes - 0, No - 4)
C) Use of chemical fertilizer (Yes - 0, No - 1)
D) Use of organic compost (Yes - 1, No - 0)
E) Use of manure (Yes - 1, No - 0)
F) Use of residual crops (Yes - 1, No - 0)

120. What is the destination of the empty agrochemical containers?

A) Empty agrochemical packages returned at collection points (Yes - 1, No - 0)
B) Empty agrochemical packages buried/burned/tossed into the environment (Yes - 0, No - 1)
C) Do you reuse empty packaging (Yes - 0, No - 1)

121. What is the destination of the household waste?

A) Recycled domestic waste (Yes - 1, No - 0)
B) Buried/burned domestic waste (Yes - 0, No - 1)
B) Buried/burned domestic waste (Yes - 0, No - 1)
D) Separation of organic waste for composting in the domestic waste (Yes - 1, No - 0)

The sum of the above descriptors forms the Ip component of iEco. It should be noted that three modifications were adopted in the ecological index as proposed by PROCASE: (i) a higher weight was given to the non-use of agrochemicals, (ii) a score of 0 was given to reuse of empty agrochemical containers (they should not be reused) and (iii) collection of domestic waste by the municipal service was also removed, since this activity is independent of the will of the beneficiary or the project.

- In addition to *Ip*, iEco is composed of three other components: *Iespelho*, *Iriacho* and *Inascente*. where *Iespelho* = conservation level of the water mirror on the property (with riparian forest present amounts to 1, other answers, 0). If there is no water feature on the property, a value of 0 has been assigned.
- *Iriacho* = conservation level of the creek that passes through the property (if a

riparian forest is present, 1, otherwise 0). If there is no creek on the property, a value of 0 was assigned.

- *Inascente* = conservation level of the spring that passes through the property (if preserved, 1, otherwise 0). If there is no spring on the property, a value of 0 was assigned.

Finally, *n* is the number of water source types recorded on the property, among water mirrors, creeks, and springs (ranging from 0 to 3).

$$iEco = 1000 \times \left(\frac{Ip + Iespelho + Iriacho + Inascente}{16 + n}\right)$$

4. Access to Public Policies Index - iAPP

The Access to Public Policies Index (iAPP), adapted from the PROCASE Project (2021), indicates the access of farming families to public policies. Thus, the higher the iAPP value, the better the indication of access to public policies in the agricultural unit. The following questions from the questionnaire **(ANNEX III)** were used for its construction:

22. Have you or a member of your family ever accessed the following benefits?
A) Retirement, Social Security (Yes - 1, No - 0)
B) Unemployment insurance (Yes - 1, No - 0)
C) Bolsa Família (Family allowance), Bolsa Escola (School Allowance), cartão alimentação (food card), auxílio gás (gas allowance), food basket (Yes - 1, No - 0)
D) Scholarship, Educa mais Brasil, Inglês sem fronteiras, Jovem aprendiz, Pronatec, Sisutec, Sisu, Prouni, FIES Pós-graduação (labor and student programs) (Yes - 1, No - 0)
E) Free pass, senior card, Driver's license with economical value (Yes - 1, No - 0)
F) "Living without limits", "Health is priceless", "Stork Network" Programs (Yes - 1, No - 0)
G) Electricity with economical value (Yes - 1, No - 0)
H) "My house, my life" "My better house" Programs (Yes - 1, No - 0)
I) "Light for rural areas" Program (Yes - 1, No - 0)
J) "Light for All" Program (Yes - 1, No - 0)
K) Water Cistern for human consumption - 1° water (Yes - 1, No - 0)
L) Water Cistern for production - 2nd water (Yes - 1, No - 0)
M) Technical assistance and rural extension (ATER) (Yes - 1, No - 0)

N) Rural Credit (Yes - 1, No - 0)
O) National Program for the Strengthening of Family Farming (PRONAF) (Yes - 1, No - 0)
P) Food Acquisition Program (PAA) (Yes - 1, No - 0)
Q) National School Meals Program (PNAE) (Yes - 1, No - 0)
R) Garantia Safra (Crop Warranty) (Yes - 1, No - 0)
S) Brazil without Poverty Program (PBSM) (Yes - 1, No - 0)
T) Rural Insurance (Yes - 1, No - 0)
U) Family farming Insurance – SEAF (Yes - 1, No - 0)
V) Land reform, Land credit (Yes - 1, No - 0)
W) Rural poverty Reduction program (Yes - 1, No - 0)
X) Individual Micro Entrepreneur (MEI) (Yes - 1, No - 0)
Y) Emergency aid in calamities, Drought Allowance (Yes - 1, No - 0)
Z) Family Health Program (PSF) (Yes - 1, No - 0)
AA) Defense Insurance (Yes - 1, No - 0)
AB) State Water Supply System (Yes - 1, No - 0)
AC) Water for Human Consumption in Water Tank Trucks (Yes - 1, No - 0)
AD) Programa Fomento Rural (Rural incentives program) (Yes - 1, No - 0)
AE) Emergency Aid due to covid (Yes - 1, No - 0)
AF) Other program/benefit (Yes - 1, No - 0)

23. Access to Public Services. Does your household benefit from the following public services?
A) Health agent (Yes - 1, No - 0)
B) PSF/presence of a doctor in the community/district (Yes - 1, No - 0)
C) School transportation (Yes - 1, No - 0)
D) Public transportation (Yes - 1, No - 0)
E) Public Security (Yes - 1, No - 0)

Thus, iAPP is composed of four components: *Ib*, *Ia*, *Idap* and *Is* as below:
1. *Ib* = (number of benefits received/32), where 32 is the total benefits from question 22.
2. *Ia* = 1 (if someone in the household participates in an association) or 0 (otherwise).
3. *Idap* = 1 (if someone in the household has DAP) or 0 (otherwise).
4. *Is* = (number of public services to which the household has access/5), where 5 is the total number of public services from question 23.

Finally, iAPP was calculated as follows:

$$iAPP = 1000 \times \left(\frac{Ib + Ia + Idap + Is}{4}\right)$$

5. Access to Agrarian Policies Index - iAPA

The Access to Public Policies Index (iAPA) was calculated according to the PROCASE Project (2021) and indicates the access of farming families to policies that specifically target agriculture, livestock, and farm production. The higher the iAPA value, the better the indication of access to agrarian policies. Only some items from question 22 were considered **(ANNEX III)** for the construction of iAPA:

22. Have you or a member of your family ever accessed the following benefits?

L) Water cistern for production - 2nd water (Yes - 1, No - 0)
M) Technical assistance and rural extension (ATER) (Yes - 1, No - 0)
N) Rural credit (Yes - 1, No - 0)
O) National Program for the Strengthening of Family Farming (PRONAF) (Yes - 1, No - 0)
P) Food Acquisition Program (PAA) (Yes - 1, No - 0)
Q) National School Meals Program (PNAE) (Yes - 1, No - 0)
R) Garantia Safra (Crop Warranty) (Yes - 1, No - 0)
T) Rural insurance (Yes - 1, No - 0)
U) Family Farming Insurance - SEAF (Yes - 1, No - 0)
V) Land reform, Land credit (Yes - 1, No - 0)
X) Individual Micro-Entrepreneur (MEI) (Yes - 1, No - 0)

Thus, iAPA is composed of three components: *Ib*, *Ia* e *Idap* as below:
1. *Ib* = (number of benefits received/11), where 11 is the total benefits chosen from question 22.
2. *Ia* = 1 (if someone in the household participates in an association) or 0 (otherwise).
3. *Idap* = 1 (if someone in the household has DAP) or 0 (otherwise).

Finally, iAPA was calculated as follows:

$$iAPA = 1000 \times \left(\frac{Ib + Ia + Idap}{3}\right)$$

6. Associativity Index - iAssoc

The Associativity Index (iAssoc) was calculated according to the PROCASE Project (2021), and indicates the level of association of the families through participation in community activities. The higher the value of iAssoc, the better the indication of participation in community activities on the agricultural unit. The index was calculated as follows **(ANNEX III)**:

141. What type of community associative activity/social organization have you participated in?

A) Community, neighborhood, producer associations, cooperatives (Yes - 1, No - 0)
B) Collective, communal, mutual work (Yes - 1, No - 0)
C) Organized social movement (NGO, MST, MLT, FETAG, CONTAG, etc.) (Yes - 1, No - 0)
D) Church-related movements (Yes - 1, No - 0)
E) Unions (Yes - 1, No - 0)
F) Other (club, social and sports associations, etc.) (Yes - 1, No - 0)

1. *Qassoc* = number of different types of associations the family participates in (question 141).
2. *F1* = Factor that indicates whether the respondent is aware of meetings held in the last year: Doesn't know = 0; Didn't have meetings = 1; Had meetings = 2
3. *F2* = Factor indicating the frequency of meeting attendance in the last year: None = 0; Some = 1; All = 2
4. *C1* = 1 if there is processing of the production through the association and 0 if not
5. *C2* = 1 if the production is commercialized through the association and 0 if not

Thus, iAssoc is composed of the five components mentioned above as shown in the equation:

$$iAssoc = 1000 \times \left(\frac{Qassoc + F1 + F2 + C1 + C2}{12}\right)$$

7. Women's Participation Index - iMu

The Women's Participation Index (iMu), adapted from the PROCASE Project (2021), indicates the empowerment of women in households through their participation in community actions and occupations in various activities. The higher the value of iMu, the better the indication of women's empowerment in the agricultural unit. The index was calculated as follows **(ANNEX III)**:

125. In your family, do women actively participate in community or Association actions? (Yes - 1, No - 0)

126. What occupations have the women in your family already held in the last five years?

A) Agriculture/farming (Yes - 1, No - 0)
B) Processing/manufacturing of products (Yes - 1, No - 0)
C) Public service (school, health center, etc.) (Yes - 1, No - 0)
D) Provision of services (maid, manicure, nanny, seamstress) (Yes - 1, No - 0)
E) In commerce (Yes - 1, No - 0)
F) In craftsmanship (Yes - 1, No - 0)

Based on the answers to questions 125 and 126, the index was constructed with the following components:

1. *Mulherp* = participation in community activities and/or associations (question 125)
2. *Agropec* = participation in agriculture and farming activities (question 126)
3. *Benef.* = participation in production processing (question 126)
4. *SP* = participation in public services (question 126)
5. *Serv* = participation in the provision of services (question 126)
6. *Com* = participation in commerce (question 126)
7. *Artes* = participation in craftsmanship (question 126)

$$iMu = 1000 \times \left(\frac{Mulherp + \frac{Agropec + Benef + SP + Ser + Com + Artes}{6}}{2} \right)$$

8. Youth Participation Index - iJ

The Youth Participation Index (iJ), adapted from the PROCASE Project (2021), indicates the empowerment of young people in families through their participation in community actions and occupations in various activities.The higher the value of iJ, the better the indication of youth empowerment in the agricultural unit. The index was calculated as follows **(ANNEX III)**:

127. Do the young people in your family actively participate in community or Association actions? (Yes - 1, No - 0)

128. What occupations have the young people in your family already held in the last five years?

A) Agriculture/farming (Yes - 1, No - 0)
B) Processing/manufacturing of products (Yes - 1, No - 0)
C) Public service (school, health center, etc.) (Yes - 1, No - 0)
D) Provision of services (maid, manicure, nanny, seamstress) (Yes - 1, No - 0)
E) In commerce (Yes - 1, No - 0)
F) In craftsmanship (Yes - 1, No - 0)

Based on the answers to questions 127 and 128, the index was constructed with the following components:

1. *Jovemp* = participation in community activities and/or association (question 127)
2. *Agropec* = participation in agriculture and farming activities (question 128)
3. *Benef.* = participation in production processing (question 128)
4. *SP* = participation in public services (question 128)
5. *Serv* = participation in the provision of services (question 128)
6. *Com* = participation in commerce (question 128)
7. *Artes* = participation in craftsmanship (question 128)

$$iJ = 1000 \times \left(\frac{Jovemp + \frac{Agropec + Benef + SP + Ser + Com + Artes}{6}}{2} \right)$$

9. Women and Youth Participation Index - iJM

An integration between the indices of participation of women and youth (iJM) was also conducted, adapted from the PROCASE Project (2021), with the same intent to evaluate the joint empowerment of women and youth in families through their participation in community actions and occupations exercised in various activities. The higher the value of iJM, the better the indication of joint empowerment of women and youth in the agricultural unit. The index was calculated as follows **(ANNEX III)**:

$$iJM = \frac{iJ + iMu}{2}$$

10. Drought Exposure Index - iSeca

The Drought Exposure Index (iSeca), adapted from the PROCASE Project (2021), indicates the impact of the level of exposure to the harmful effects of drought on the lives of farming households. The higher the value of iSeca, the greater the impact of drought will have been on the farm unit. The index was calculated as follows **(ANNEX III)**:

106. Have you been affected by drought in the last five years? (Yes - 1, No - 0)

107. How did the drought affect the family's life? Indicate the effects of the drought
A) Work reduction (Yes - 1, No - 0)
B) Difficulties in domestic life due to lack of water for drinking and cooking (Yes - 1, No - 0)
C) Agricultural production loss (Yes - 1, No - 0)
D) Animal Loss (Yes - 1, No - 0)

109. Consumption goods or assets sold to cope with drought:
A) Animals (Yes - 1, No - 0)
B) Motorcycle and other durable transport or work goods (Yes - 3, No - 0)
C) Household appliances (Yes - 1, No - 0)
D) Land or house (Yes - 5, No - 0)

Based on the answers to questions 106, 107 and 109, the index was constructed using the following equation:

$$iSeca = 1000 \times \left(\frac{Somatório\ das\ questões\ 106, 107\ e\ 109}{15}\right)$$

11. Housing Index – iMor

The Housing Index (iMor), adapted from PROCASE Project (2021), indicates the housing condition of farming families. The higher the value of iMor, the better the housing condition of the farm unit. The index was calculated as follows **(ANNEX III)**:

Im = average of the indicators below (questions 129, 130, 131, 132, and 134):

129. Type of residence: (1 if home, 0 otherwise)
A) House
B) Shack
C) Others

130. Main material used in external walls: (1 if masonry, 0 otherwise)
A) Masonry (brick, block)
B) Adobe
C) Wood
D) Mud
E) Other temporary material (straw, canvas, plastic)

131. Main roof material: (1 if tile, 0 otherwise)
A) Ceramic tile
B) Concrete slab
C) Zinc, asbestos, ethernit
D) Other material (wood, straw, canvas, plastic)

132. Main material used on floor: (0 if soil, 1 otherwise)
A) Masonry (cement, brick, block, tile, etc.)
B) Wood
C) Compacted soil

134. Did you have a bathroom/sanitary in your house? (1 if Yes, 0 if No)

Is = average of the indicators below (questions 135, 136 and 138):

135. What was the main destination of the household's sewage? (1 if collection system or cesspool, 0 otherwise)
A) Sewage or rainwater collection system
B) Masonry-lined cesspool
C) Unlined Cesspool
D) Open air, ditch, river, lake or sea
E) Another way

136. Do you have electricity in your house? (1 if yes, 0 if no)

138. Does the household have piped water available in at least one room? (1 if yes, 0 if no)

Based on the Im and *Is* components above, *iMor* was constructed using the following equation:

$$iMor = 1000 \times \left(\frac{Im + Is}{2}\right)$$

12. Multidimensional Poverty Index – MPI

The Multidimensional Poverty Index considers poverty as a phenomenon of multidimensional (or multivariate) origin, therefore incorporating several types of deprivations (ALKIRE; FOSTER, 2011). The index is composed of six types of dimensions: (i) Income Dimension, (ii) Social Capital Dimension, (iii) Human Capital Dimension, (iv) Food Security Dimension, (v) Housing and Housing Conditions Dimension, and (vi) Sustainability Dimension. The indicator ranges from 0 to 1,000: the higher it is, the worse are the living conditions of the population. The reference for being considered poor or extremely poor is when this index exceeds 333 points or 500 points, respectively.

Monitora has two types of PDHC databases to evaluate this index. The first, with information from 2021, covers beneficiaries served by public and private technical assistance companies, and the second covers only those served by public technical assistance companies with findings referring to 2017 and 2021.

Each dimension presents a set of indicators, which are:

(i) Income Dimension
- Revenue Indicator

(ii) Social Capital Dimension
- Access to Agricultural Policies Indicator
- Participation of Women and Youth in Community Actions Indicator
- Associativity Indicator
- Access to Public Policies and Public Services Indicator
- Access to Credit Indicator

(iii) Human Capital Dimension
- Schooling Indicator
- Access to Training Programs Indicator
- Access to Technical Assistance Indicator

(iv) Food Security Dimensio
- Dietary Difficulty Indicator
- Varied Diet Indicator
- Food Origin Indicator

(v) Housing and Housing Conditions Dimension
- Housing Conditions Indicator
- Durable Goods Indicator

(vi) Sustainability Dimension
- Farming Practices Indicator
- Disposal of Agrochemical Packaging Indicator
- Waste Disposal Indicator
- State of Conservation of Springs, Water Bodies and Riparian Woods

The higher the IPM value, the greater the multidimensional poverty of the agricultural unit. For a further description of the components and calculations of the IPM, see FAO and OPHI (2022).

ANNEX III
Impact Survey Questionnaire

FIDA QUESTIONNAIRE - DOM HELDER C MARA PROJECT

Note: Answers marked with a circle indicate only 1 option; those marked with a square indicate the possibility of multiple answers;

PRELIMINARY ASSESSMENT (for the group interviewed in 2018 only)

Respondent
Name of respondent:
Is the respondent the same? 1 - Yes 2 - No
If not, describe the reason for the change:

Head of the family
Name of head of household:
Is the head of the family the same? 1 - Yes 2 - No
If not, describe the reason for the change:

Cônjuge
Name of spouse:
Is the spouse the same? 1 - Yes 2 - No
If not, describe the reason for the change:

Acquaintance or reference person
Full name of acquaintance or reference person:
Is the acquaintance or reference the same? 1 - Yes 2 - No
If not, describe the reason for the change:

QUESTIONNAIRE IDENTIFICATION (from here on fill in for all respondents)

1. Beneficiary code:

2. Sample group as stated in the registration: 1 - Beneficiary 2 - Control

5. UF:
1. Alagoas
2. Bahia

3. Ceará
4. Maranhão
5. Paraíba
6. Pernambuco
7. Piauí
8. Rio Grande do Norte
9. Sergipe
10. Minas Gerais

5.1 Municipality:

6. Community:

7. ZIP code:

7.1 Full home address:

8. What is the socio-cultural identification of the community?
1 – Quilombola
2 – Indigenous
3 – Fisherman
4 – Family Farmer
5 – Fundo de Pasto
6 - Agrarian Reform Settlement Project
7 – Other
99 – Doesn't know/Didn't answer

9. Community Housing Characterization
1 - Clustered Buildings
2 - Diffuse buildings

10. Main productive activities:
1 - Beekeeping (extraction of honey, propolis, pollen, wax, etc.)
2 - Goat, sheep, poultry
3 - Aquaculture (fish, oyster, shrimp, etc.)
4 - Agricultural production, irrigated horticulture, irrigation
5 - Extractivism
6 - Processing of beekeeping products
7 - Processing of goat, sheep and poultry products
8 - Processing of aquaculture products
9 - Processing of fruits, such as licuri, umbu, passion fruit, guava, mangaba and others

10 - Processing of manioc and production of by-products
11 - Crafts and other non-agricultural activities (sewing, embroidery, wood, clay, leather, straw, etc.)
12 - Artisanal Fishing
13 - Cattle farming
14 - Pig Farming
15 - Other activities (agricultural and non-agricultural)

11. Name of respondent

11.1 Nickname of respondent:

12. Head of household's CPF number:

12.1 Nickname of head of the household:

13. CPF do(a) chefe:

14. Head of household's NIS/CadÚnico number:

15. Head of household's cell phone number for contact:

16. Spouse's name:

16.1 Spouse's nickname:

17. Spouse's CPF number:

18. Spouse's NIS/CadÚnico number:

19. Spouse's phone number for contact:

19.1 Full name of acquaintance or reference person:

19.2 Nickname of the reference person:

19.3 Reference person's phone number for contact:

19.4 In your opinion, do you/your family consider yourselves family farmers?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

19.5 What is the main purpose of your agricultural production?
1 - Consumption by family members
2 - Commercialization
99 - I have no agricultural production

19.6 Did you or a member of your family receive technical assistance and rural extension between the years 2018 and 2021 from Projeto Dom Helder Câmara (PDHC)?
1 - Yes
2 - No
3 - No, but we received technical assistance and rural extension from another entity

19.7 Have you or a member of your family received resources from the Rural Productive Development? 1 - Yes 2 - No

20. Has DAP: 1 - Yes 2 - No

21. What type of DAP do you have (multiple answer)
1 - Principal
2 - Women
3 - Youth
4 – Special

22. Did you or a member of your family have access to the following benefits in the last four years (2018, 2019, 2020 and 2021)?

A - Retirement, Social Security
1 - Yes 2 - No

B - Unemployment insurance
1 - Yes 2 - No

C - Bolsa Família (Family allowance), Bolsa Escola (School Allowance), cartão alimentação (food card), auxílio gás (gas allowance), food basket
1 - Yes 2 - No

D - Scholarship, Educa mais Brasil, Inglês sem fronteiras (educational programs)
1 - Yes 2 - No

D – Jovem aprendiz, Pronatec, Sisutec, Sisu, Prouni, FIES, Pós-graduação (labor and student programs)
1 - Yes 2 - No

E - Free pass, senior card, Driver's license with economical value
1 - Yes 2 - No

F - "Living without limits", "Health is priceless", "Stork Network" Programs
1 - Yes 2 - No

G - Electricity with economical value
1 - Yes 2 - No

H - "My house, my life" "My better house" Programs
1 - Yes 2 - No

I - "Light for rural areas" Program
1 - Yes 2 - No

J - "Light for All" Program
1 - Yes 2 – No

K - Water Cistern for human consumption - 1st water
1 - Yes 2 – No

L - Water Cistern for production - 2nd water
1 - Yes 2 - No

M - Technical assistance and rural extension (ATER)
1 - Yes 2 - No

N - Rural Credit
1 - Yes 2 – No

O – National Program for the Strengthening of Family Farming (PRONAF)
1 - Yes 2 - No

P – Food Acquisition Program (PAA)
1 - Yes 2 - No

Q – National School Meals Program (PNAE)
1 - Yes 2 - No

R - – Garantia Safra (Crop Warranty)
1 - Yes 2 - No

S - Brazil without Poverty Program (PBSM)
1 - Yes 2 - No

T - Rural Insurance
1 - Yes 2 - No

U -Family farming Insurance – SEAF
1 - Yes 2 – No

V - Land reform and land credit
1 - Yes 2 - No

W - Rural Poverty Reduction Program
1 - Yes 2 - No

X - Individual Micro-Entrepreneur (MEI)
1 - Yes 2 – No

Y - Emergency aid in calamities - Drought Allowance
1 - Yes 2 - No

Z - Family Health Program (PSF)
1 - Yes 2 - No

AA - Defense Insurance
1 - Yes 2 - No

AB - State Water Supply System
1 - Yes 2 - No

AC - Water for Human Consumption in Water Tank Trucks
1 - Yes 2 - No

AD - Programa Fomento Rural (Rural incentives program)
1 - Yes 2 - No

AE - Emergency Aid due to covid
1 - Yes 2 - No

AF - Another program/benefit
1 - Yes 2 - No

*Which one?

23. Does your family benefit from the following public services? (multiple answers)
A - Health Care Agent: 1 - Yes 2 - No
B - PSF/presence of a physician in the community/district: 1 - Yes 2 - No
C - School bus: 1 - Yes 2 - No
D - Public Transportation: 1 - Yes 2 - No
E - Public Security: 1 - Yes 2 - N

A - CHARACTERIZATION OF FAMILY MEMBERS AND OTHER RESIDENTS

24.

25. Full name:

26. NIS/CadÚnico number:

27. Nature of relationship with head of the household
1 - Boss;
2 - Spouse;
3 - Son/stepson
4 - Father/Mother/Mother in law/Father in law;
5 - Siblings;
6 - Other relative;
7 - Household member;
8 - Pensioner;
9 - Employee

28. Age (years):

29. Gender: 1 - Male 2 - Female

30. Can read/write: 1 - Yes 2 - No 3 - Can only sign name

31. Education:
Uneducated;
Kindergarten;
Preschool;
Literacy;
1st elementary grade;
2nd elementary grade;

3rd elementary grade;
4th grade;
5th grade;
6th grade;
7th grade;
8th grade;
1st grade high school;
2nd grade high school;
3rd grade high school;
Higher education incomplete;
Higher education complete;
Does not apply.

32. Main occupation:
1-Agribusiness (agriculture, cattle ranching, extraction, aquaculture)
2-Administration of agricultural activities
3-Extensionists, agricultural technicians
4-Specialized agricultural occupations (tractor driver, vaccinator, etc.)
5-Other agricultural occupations
6-Industry, construction
7-Commerce and auxiliary activities
8-Provision of services
9-Technical, scientific, artistic, education
10-Administrative
11-Social service
12-Transportation
13-Craftsmanship
14-Other
15-Domestic activities
16- Retired with no occupation
17-No occupation due to disability
18-No occupation
19-Does not apply

33. What was your main position at work last year?
1 - Self-employed (odd jobs, self-employed, family producer)
2 - Employee/partner in rural area
3 - Temporary worker in rural area
4 - Employee without employment contract (permanent)
5 - Employee with a formal job contract (permanent)
6 - Unpaid worker, domestic worker

7 - Public servant, military
8 - Employer
9 - Intern/apprentice
10 - Student
11 - Does not apply

34. Location of main occupation:
1 - Rural (including fishing)
2 - Urban
99 - Does not apply / Did not answer

*Is there a second resident? 1 - Yes 2 - No
Remarks:

B - ANIMAL PRODUCTION

*Auxiliary question 1.1. - Did you raise cattle in 2021? 1 - Yes 2 - No

*Auxiliary question 1.2. – Did you raise pigs in 2021? 1 - Yes 2 - No

*Auxiliary question 1.3. – Did you raise goats in 2021? 1 - Yes 2 - No

*Auxiliary question 1.4. – Did you raise sheep in 2021? 1 - Yes 2 - No

*Auxiliary question 1.5. – Did you raise poultry in 2021? 1 - Yes 2 - No

*Auxiliary question 1.6. – Did you raise fish in 2021? 1 - Yes 2 - No

*Auxiliary question 1.7. - Did you raise oysters in 2021? 1 - Yes 2 - No

*Auxiliary question 1.8. - Did you raise farm fish in 2021? 1 - Yes 2 - No

*Auxiliary question 1.9. - Did you raise any other kind of animal in 2021?
1 - Yes 2 - No

*What other animal have you raised?

38.1 [PRODUCTION] Nº of animals in 31/12/2021:

39.1 [PRODUCTION] Total value of animals in 31/12/2021:

39.1.1 [PRODUCTION] Total value of animals in 31/12/2021:
1 – Average animal value 2 – Total animal value

*Auxiliary question 2.1. – [SALES] Did you sell cattle between January 2021 and December 2021? 1 - Yes 2 - No

40.1 [SALES] Production sold (kg):

41.1 [SALES] Portion of production destined for PAA, PNAE (kg):

42.1 [SALES] Portion of production going to local markets in the same state (kg):

43.1 [SALES] Portion of the production destined to other states (kg):

44.1 [SALES] Total sales value (R$):

45.1 [CONSUMPTION] Portion of production destined for family consumption (kg):

46.1 [CONSUMO] Consumption amount expressed in R$:

*Remarks:

C - OTHER ANIMAL PRODUCTION PRODUCTS

*Auxiliary question 1.1. – Did you produce bovine milk in 2021? 1 - Yes 2 - No

*Auxiliary question 1.2. – Did you produce goat milk in 2021? 1 - Yes 2 - No

*Auxiliary question 1.3. - Did you produce cheese or curd in 2021? 1 - Yes 2 - No

*Auxiliary question 1.4. – Did you produce jerked meat or carne de sol in 2021?
1 - Yes 2 - No

*Auxiliary question 1.5. – Did you produce eggs in 2021? 1 - Yes 2 - No

*Auxiliary question 1.6. – Did you produce honey in 2021? 1 - Yes 2 - No

*Auxiliary question 1.7. – Did you produce dairy in 2021? 1 - Yes 2 - No

*Auxiliary question 1.8. – Did you produce fish filets in 2021? 1 - Yes 2 - No

*Auxiliary question 1.9. – Did you produce another animal product in 2021?
1 - Yes 2 - No

*What other animal product?

50.1 [PRODUCTION] Quantity:

51.1 [PRODUCTION] Quantity Unit:
1 - Unit
2 - Head
3 - Dozen
4 - Cluster
5 - Gram (g)
6 - Kilogram (kg)
7 - 40 kg bag
8 - 50Kg bag
9 - 60 kg bag
10 - Milliliter (ml)
11 - Litre (l)
12 - Cubic meter (m^3)
13 - meter (m)
14 - Hectare (ha)
15 - Days - human labor (DH)
16 - Days - animal labor (DA)
17 - Days - mechanical labor (DM)
18 - Bunch
19 - m^3
96 - Other

52.1 [PRICE] Unit Price (R$):

*Auxiliary question 2.1. – [SALES] Did you sell bovine milk between January 2021 and December 2021? 1 - Yes 2 - No

53.1 [SALES] Amount sold:

54.1 [SALES] Portion of production destined for PAA, PNAE:

55.1 [SALES] Portion of production destined for local markets in the same state:

56.1 [SALES] Portion of the production destined to other states:

57.1 [SALES] Total sales value (R$):

58.1 [CONSUMPTION] Portion of production for family consumption:

59.1 [CONSUMPTION] Portion of the bovine milk production used to produce cheese, curd, or other by-product:

*Remarks:

D - VEGETAL PRODUCTION AND EXTRACTIVISM

*Auxiliary question 1.1. - Did you produce backyard vegetables in 2021? 1 - Yes 2 - No

*Auxiliary question 1.2. – Did you produce watermelon in 2021? 1 - Yes 2 - No

*Auxiliary question 1.3. – Did you produce backyard fruit trees in 2021? 1 - Yes 2 - No

*Auxiliary question 1.4. – Did you produce seed cotton in 2021? 1 - Yes 2 - No

*Auxiliary question 1.5. – Did you produce bananas in 2021? 1 - Yes 2 - No

*Auxiliary question 1.6. – Did you produce cashew nuts in 2021? 1 - Yes 2 - No

*Auxiliary question 1.7. – Did you produce passion fruit in 2021? 1 - Yes 2 - No

*Auxiliary question 1.8. – Did you produce paddy rice in 2021? 1 - Yes 2 - No

*Auxiliary question 1.9. – Did you produce broad beans in 2021? 1 - Yes 2 - No

*Auxiliary question 1.10. – Did you produce beans in 2021? 1 - Yes 2 - No

*Auxiliary question 1.11. – Did you produce cassava (aipim) in 2021? 1 - Yes 2 - No

*Auxiliary question 1.12. – Did you produce manioc in 2021? 1 - Yes 2 - No

*Auxiliary question 1.13. – Did you produce maize grain in 2021? 1 - Yes 2 - No

*Auxiliary question 1.14. – Did you produce corn cobs in 2021? 1 - Yes 2 - No

*Auxiliary question 1.15. – Did you produce pumpkins in 2021? 1 - Yes 2 - No

*Auxiliary question 1.16. – Did you produce cashew (stem) in 2021? 1 - Yes 2 - No

*Auxiliary question 1.17. – Did you produce another vegetable product in 2021?
1 - Yes 2 - No

*What other vegetable product?

63.1 [PRODUCTION] Pure production harvested area (ha, tarefa, m^2):

63.1.1 [PRODUCTION] Pure production unit of measure:
1 - Hectare
2 - Tarefa
3 - Square meter

64.1 [PRODUCTION] Harvested area of intercropped production (ha, tarefa, m^2):

64.1.1 [PRODUCTION] Pure consortial unit of measure:

*Auxiliary question 2.1. [PRODUCTION] Did you harvest this product between January 2021 and December 2021? 1 - Yes 2 - No

65.1 [PRODUCTION] Amount harvested:

66.1 [PRODUCTION] Unit of quantity (Bracket 2):
1 - Unit
2 - Head
3 - Dozen
4 - Cluster
5 - Gram (g)
6 - Kilogram (kg)
7 - 40 kg bag
8 - 50Kg bag
9 - 60 kg bag
10 - Milliliter (ml)
11 - Litre (l)
12 - Cubic meter (m^3)
13 - meter (m)
14 - Hectare (ha)
15 - Days - human labor (DH)
16 - Days - animal labor (DA)

17 - Days - mechanical labor (DM)
18 - Bunch
19 - m^3
96 - Other

67.1 [PRICE] Unit Price (R$):

*Auxiliary question 3.1: [SALES] Did you sell backyard vegetables between January 2021 and December 2021? 1 - Yes 2 - No

68.1 [SALES] Amount sold:

69.1 [SALES] Portion of production destined for PAA, PNAE:

70.1 [SALES] Portion of production destined for local markets in the same state:

71.1. [SALES] Portion of production destined to other states:

73.1. [CONSUMPTION] Portion of production destined for family consumption:

73.1.1. [CONSUMPTION] Portion of production destined for animal consumption:

*Remarks:

E - DERIVATIVES OF VEGETABLE PRODUCTION

*Auxiliary question 1.1. – Did you produce processed rice in 2021? 1 - Yes 2 - No

*Auxiliary question 1.2. – Did you produce cassava flour in 2021? 1 - Yes 2 - No

*Auxiliary question 1.3. – Did you produce cassava starch in 2021? 1 - Yes 2 - No

*Auxiliary question 1.4. – Did you produce wooden stakes in 2021? 1 - Yes 2 - No

*Auxiliary question 1.5. – Did you produce firewood in 2021? 1 - Yes 2 - No

*Auxiliary question 1.6. – Did you produce charcoal in 2021? 1 - Yes 2 - No

*Auxiliary question 1.7. – Did you produce another vegetable byproduct in 2021? 1 - Yes 2 - No

*What other vegetable by-products?

78.1 [PRODUCTION] Amount:

79.1 [PRODUCTION] Quantity Unit (Bracket 2):
1 - Unit
2 - Head
3 - Dozen
4 - Cluster
5 - Gram (g)
6 - Kilogram (kg)
7 - 40 kg bag
8 - 50Kg bag
9 - 60 kg bag
10 - Milliliter (ml)
11 - Litre (l)
12 - Cubic meter (m^3)
13 - meter (m)
14 - Hectare (ha)
15 - Days - human labor (DH)
16 - Days - animal labor (DA)
17 - Days - mechanical labor (DM)
18 - Bunch
19 - m^3
96 - Other

80.1 [CONSUMPTION] Amount consumed by the family (production unit):

80.1.1 [CONSUMPTION] Amount consumed by animals (production unit):

81.1 [PRICE] UNIT PRICE (R$):

*Auxiliary question 2.1. [SALES] Did you sell between January 2021 and December 2021? 1 - Yes 2 - No

82.1 [SALES] Amount Sold:

83.1 [SALES] Portion of production destined for PAA, PNAE (production unit):

84.1 [SALES] Portion of production destined for local markets in the same state:

85.1 [SALES] Portion of production destined for other states:

*Remarks:

F - NON-AGRICULTURAL PRODUCTION

*Auxiliary question 1.1. – Did you produce crafts in 2021? 1 - Yes 2 - No

*Auxiliary question 1.2. – Did you provide rural tourism services in 2021?
1 - Yes 2 - No

*Auxiliary question 1.3. – Did you perform other non-farm production in 2021?
1 - Yes 2 - No

90.1 [PRODUCTION] Type of product:

91.1 [PRODUCTION] Primary material used:

92.1 [PRODUCTION] Amount produced:

93.1 [PRODUCTION] Quantity unit:
1 - Unit
2 - Head
3 - Dozen
4 - Cluster
5 - Gram (g)
6 - Kilogram (kg)
7 - 40 kg bag
8 - 50Kg bag
9 - 60 kg bag
10 - Milliliter (ml)
11 - Litre (l)
12 - Cubic meter (m^3)
13 - meter (m)
14 - Hectare (ha)
15 - Days - human labor (DH)
16 - Days - animal labor (DA)
17 - Days - mechanical labor (DM)
18 - Bunch
19 - m^3
96 - Other

94.1 [PRICE] Unit price:

94.1.1 [CONSUMPTION] Quantity intended for consumption/storage:

*Auxiliary question 2.1 [SALES] Did you make craft sales between January 2021 and December 2021? 1 - Yes 2 - No

95.1 [SALES] Amount sold:

96.1 [SALES] Portion of production destined to local markets in the same state:

97.1 [SALES] Portion of production destined for other states:

*Remarks:

G - HOUSEHOLD INCOME

*C1. External Temporary Work =
*C2. External permanent work =
*D1. Bolsa família (Family Allowance) =
*D2. Emergency aid in calamities and others (drought, flood, covid) =
*D3. Defense Insurance =
*D4. Maternity pay =
*D5. Others (health, disability, rehabilitation, unemployment insurance, education, BPC, transportation) =
*E1. Retirement=
*E2. Pension, child support =
*E3. Remittances from non-resident relatives and others (donation) =
* E4. Others (rent, leases) =

H - ASSETS AND PATRIMONY

100. Did any household member own or hold land in December last year? 1 - Yes 2 - No

101. How many hectares of land did the household members own, hold, or access for production? (ha) (fills in for all respondents, regardless of the form of access to land) (ha) =

102. Respondent's assets
*House =
* Corral, stable =
* Well, ditch, cistern =
* Plow, mechanical traction harrow =

* Automobile=
* Hydraulic pump =
* Wagon, cart, ox cart =
* Motorcycle =
*Parabolic antenna =
* Sound, radio =
* Bicycle =
* Gas stove (2 burners or more) =
* Freezer =
* Fridge =
* Sewing machine =
* Phone (mobile or landline) =
* Television =
* Water cistern for human consumption =
* Horses, donkeys, mules (heads) =
* Other assets (write the name of the asset and the amount) =

I - EFFECTS OF DROUGHT ON INCOME AND ASSETS

106. Have you been affected by drought in the last five years?
1 - Was not affected (go to question 111) 2 - Was affected

*Remarks:

107. How did the drought affect the family's life? Indicate the effects of the drought (multiple answer)
A - Reduction of workload: 1 - Yes 2 - No

B - Difficulties in domestic life due to lack of water for drinking and cooking
1 - Yes 2 - No

C - Loss of agricultural production: 1 - Yes 2 - No

D - Animal loss: 1 - Yes 2 - No

108. Did you sell assets to face the drought? 1 - Yes 2 - No

109. Consumer goods or assets sold to cope with drought:
A - Animals: 1 - Yes 2 - No
B - Motorcycle and other durable transport or work goods: 1 - Yes 2 - No
C - Household appliances: 1 - Yes 2 - No

D - Land or house: 1 - Yes 2 - No

110. Amount obtained with the sale of assets to face drought (R$) =

*Remarks:

J - AGRICULTURAL AND ENVIRONMENTAL PRACTICES

111. Between January and December of the previous year, did you adopt the following practices?
A - Use of irrigation: 1 - Yes 2 - No
B - Use of watering (irrigation only in beds): 1 - Yes 2 - No
C - Use of fires: 1 - Yes 2 - No
D - Use of agro-toxins or pesticides: 1 - Yes 2 - No
E - Use of chemical fertilizer: 1 - Yes 2 - No
F - Use of organic compost: 1 - Yes 2 - No
G - Use of manure: 1 - Yes 2 - No
H - Use of crop residues (straw stubble): 1 - Yes 2 - No

112. Which crops are irrigated (including with low-cost methods)
A - Fruits: 1 - Yes 2 - No
B - Grass: 1 - Yes 2 - No
C - Cassava: 1 - Yes 2 - No
D - Corn: 1 - Yes 2 - No
E - Beans: 1 - Yes 2 - No
F - Other: 1 - Yes 2 - No
*Which one?

*Auxiliary question 113 – Do you have a weir, pond, dam, reservoir or cistern on your property? 1 - Yes 2 - No

113. What type of water feature (reservoir, if any) is on the property:
A – Weir: 1 - Yes 2 - No
B – Pond: 1 - Yes 2 - No
C – Dam: 1 - Yes 2 - No
D – Water cistern: 1 - Yes 2 - No
E – Other
*Which?

114. What is the conservation status of the water feature (reservoir, if applicable) that exists on the property?

1 - Silted
2 - With riparian forest present
3 - With riparian forest absent
4 - Other
99 - Doesn't know/Didn't answer

*Auxiliary question 115 –Do you have creeks that run through your property?
1 - Yes 2 - No

115. How many creeks pass through the property?

116. What is the state of the riparian forest?
1 - Absent
2 - Barely present
3 - Present

*Auxiliary question 117 – Do you have headwaters or springs on your property?
1 - Yes 2 - No

117. How many water springs are there on the property?

118. What is the status of the water spring(s)?
1 - Degraded
2 - Little preserved
3 - Preserved

119. What is the usage of the spring water(s)?
A - Piped water for domestic use: 1 - Yes 2 - No
B - Water intended for the community: 1 - Yes 2 - No
C - Water used for animal farming: 1 - Yes 2 - No
D - Water used for irrigation purposes: 1 - Yes 2 - No
E - Water running its natural course: 1 - Yes 2 - No
F - Another use: 1 - Yes 2 - No

*What other use do you make of the spring water?

*Auxiliary question 120 – Have you used any agrochemical in the last 12 months?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

120. What is the destination of the empty agrochemical containers? (multiple answers)
A - Returned at collection points: 1 - Yes 2 - No 99 - Does not use/Not applicable

B -Buried/Burned/Discarded in the environment:
1 - Yes 2 - No 99 - Does not use/Not applicable
C - Reused: 1 - Yes 2 - No 99 - Does not use/Not applicable
D - Another destination: 1 - Yes 2 - No 99 - Does not use/Not applicable

*What is the other destination of the empty packages?

121. What is the destination of the domestic waste? (multiple answer)
A - Collected by the municipal system: 1 - Yes 2 - No
B – Recycled: 1 - Yes 2 - No
C - Buried/burned: 1 - Yes 2 - No
D - Discarded in the environment: 1 - Yes 2 - No
E - Separation of organic waste for composting: 1 - Yes 2 - No
F - Another Destination: 1 - Yes 2 - No

*What is the other destination of the domestic waste?

K - FOOD SECURITY

122. What was the origin of the food consumed by the family in the last 12 months?
A - Donations from neighbors and relatives: 1 - Yes 2 - No
B - From your own land/farm: 1 - Yes 2 - No
C - Exchanged between neighbors and relatives: 1 - Yes 2 - No
D - Donation from the government or other institutions: 1 - Yes 2 - No
E - Bought from neighbors or at fairs, warehouses, markets: 1 - Yes 2 - No

123. During the past 12 months, was there a time when the family struggled to get food or even experienced the situation of not having anything to eat? 1 - Yes 2 - No

124. How often does your family eat a varied/diverse diet (vegetables, leaves, fruits, meat, beans, rice, juice)?
1 - Always
2 - Sometimes
3 - Never happened
4 - Doesn't know, didn't answer

Interviewer: "Now I'm going to ask you some questions about the diet, in the last three months, of your family or the people living in the same household as you. For these questions, consider everyone in your household."
ATTENTION INTERVIEWER: DO NOT READ OPTION DK/DA (DOESN'T KNOW/DIDN'T ANSWER). ONLY MARK THIS OPTION FOR THOSE RESPONDENTS WHO CANNOT ANSWER QUESTIONS K1 TO K8.

K1. In the past three months, have the residents of this household been concerned that food would run out before they could buy or receive more food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K2. In the last three months, did the food run out before the residents of this household had money to buy more food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K3. In the last three months, have the residents of this household run out of money to have a healthy and diverse diet?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K4. In the last three months, did the residents of this household eat only certain types of food that they still had because they ran out of money?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K5. In the last three months, has any resident aged 18 or older missed a meal because there was no money to buy food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K6. In the last three months, has any resident aged 18 or older ever eaten less than they thought they should because there was no money to buy food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K7. In the last three months, has any resident aged 18 or older ever felt hungry but didn't eat because there was no money to buy food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K8. In the last three months, has any resident aged 18 or older ever had only one meal a day or gone a whole day without eating because there was no money to buy food?
1 - Yes 2 - No 99 - Doesn't know/Didn't answer

K9. Think back to the last 24 hours: which food groups did the family consume? (read all options and mark those with positive answers):

A - Grains, roots and tubers (rice, corn, cassava, potato, yam): 1 - Yes 2 - No
B - Legumes (beans, fava beans, peas, lentils, peanuts): 1 - Yes 2 - No
C - Seeds and oilseeds (sesame, cashew nuts, licuri, walnuts, almonds): 1 - Yes 2 - No
D - Milk and dairy: 1 - Yes 2 - No
E - Meat, poultry, fish: 1 - Yes 2 - No
F – Eggs: 1 - Yes 2 - No

G - Dark green leafy vegetables (kale, spinach, spinach, watercress, chicory, arugula): 1 - Yes 2 - No
H - Fruits and vegetables rich in vitamin C (orange, acerola, lemon, mango, cashew, seriguela, taioba): 1 - Yes 2 - No
I - Other vegetables (maxixe, jerimum, okra): 1 - Yes 2 - No
J - Other fruits (banana, cajá, passion fruit, tomato): 1 - Yes 2 - No

L - GENDER AND YOUTH

125. In your family, do the women actively participate in community or Association activities? 1 - Yes 2 - No

126. What occupations have the women in your family had in the last five years? (multiple answer)
A - agriculture/farming: 1 - Yes 2 - No
B - In the processing/manufacturing of products: 1 - Yes 2 - No
C - In public service (school, health center, etc.): 1 - Yes 2 - No
D - Provision of services (maid, manicure, nanny, seamstress, etc.): 1 - Yes 2 - No
E - In commerce: 1 - Yes 2 - No
F - In craftsmanship: 1 - Yes 2 - No

127. Do the youth in your family actively participate in community or Association activities? 1 - Yes 2 - No

128. What occupations have the youth in your family had in the last five years?
A - agriculture/farming: 1 - Yes 2 - No
B - In the processing/manufacturing of products: 1 - Yes 2 - No
C - In public service (school, health center, etc.): 1 - Yes 2 - No
D - Provision of services (maid, manicure, nanny, seamstress, etc.): 1 - Yes 2 - No
E - In commerce: 1 - Yes 2 - No
F - In craftsmanship: 1 - Yes 2 - No
G -Only studies: 1 - Yes 2 - No

M - HOUSING AND LIVING CONDITIONS

129. Type of residence: 1 - House 2 - Shack 3 - Others

130. Main material used in external walls
1 - Masonry (brick, block)
2 - Adobe
3 - Wood

4 - Mud
5 - Other temporary material (straw, canvas, plastic)

131. Main roof material
1 - Ceramic tile
2 - Concrete slab
3 - Zinc, asbestos, ethernit
4 - Other material (wood, straw, canvas, plastic)

132. Main flooring material
1 - Masonry (cement, brick, block, tile, etc.)
2 - Wood
3 -Compacted soil
4 - Ceramics

133. Number of bedrooms

134. Did you have a bathroom/sanitary in the residence?? 1 - Yes 2 - No

135. What was the main destination of the household's sewage?
1 - Sewage or rainwater collecting system
2 - Masonry lined septic tank
3 - Unlined septic tank
4 - Open air, ditch, river, lake or sea
5 - Other

136. Do you have electricity in your house? 1 - Yes 2 - No

137. Type of electric power
1 - Single Phase
2 - Two-phase
3 - Three-phase
4 - Other

138. Does the household have piped water available in at least one room?
1 - Yes 2 - No

139. What are the main sources of water used in the household?
A - General distribution network (public network): 1 - Yes 2 - No
B - Well or spring water: 1 - Yes 2 - No
C – Cistern: 1 - Yes 2 - No

D - Creek, Pond, Dam, Reservoir, Waterhole: 1 - Yes 2 - No
E - Water truck: 1 - Yes 2 - No
F - Other sources: 1 - Yes 2 - No

*What other sources of water?

N - CAPITAL SHARES

140. Have you ever participated in an association, union, community work, social movement, NGO, political party or community organization work?
1 - Yes 2 - No
If the answer is "Yes", continue with the interview;
If the answer is "No" and the respondent is a Dom Helder beneficiary, proceed to Q.157;
If the answer is "No" and they are not a Dom Helder beneficiary (control group), proceed to Q.183.

141. What type of associative community activity/social organization have you already participated in?
A - Community, neighborhood, producer associations, cooperative: 1 - Yes 2 - No
B - Collective work, community, mutual work: 1 - Yes 2 - No
C - Organized social movement (NGO, MST, MLT, FETAG, CONTAG, etc.): 1 - Yes 2 - No
D - Movements linked to churches: 1 - Yes 2 - No
E - Labor unions: 1 - Yes 2 - No
F - Others (clubs, social and sports associations, etc.): 1 - Yes 2 - No

*Which?

142. Do you know in what year the association was established?? 1 - Yes 2 - No

143. What was the year of establishment of the association? (aaaa)

144. Did the association hold meetings in the previous year?
1 - Yes 2 - No (proceed to 146) 99 - Doesn't know/Didn't answer

145. How many association meetings did you attend in the past year?
1 - None
2 - Some
3 - All

146. Do you (or a member of your family) process your production through the association? 1 - Yes 2 - No

147. Is the commercialization of your production or part of your production done through the association?
1 - Yes 2 - No

148. What benefits did the association bring to the members?
A - Promotion of products: 1 - Yes 2 - No
B - Help with purchase of inputs, machinery, and equipment: 1 - Yes 2 - No
C - Access to equipment of collective use: 1 - Yes 2 - No
D - Promotion of courses and events: 1 - Yes 2 - No
E - Holding courses, exchanges, training and meetings: 1 - Yes 2 - No
F - Help in carrying out collective work: 1 - Yes 2 - No
G - Dissemination of public policies: 1 - Yes 2 - No
H - Hiring technical assistance to elaborate projects for credit access: 1 - Yes 2 - No
I - Access to new projects and programs: 1 - Yes 2 - No
J - Other services: 1 - Yes 2 - No

*Which ones?

Experience with the FIDA project

If the respondent is a beneficiary of Dom Helder, proceed to the interview.
If they are not a Dom Helder beneficiary (control group), go to Q.183

*Auxiliary question 149 – Respondent profile:
ATTENTION INTERVIEWER: Fill out the option below according to the respondent profile:
Control/Control
Control/Beneficiary+Yes P140
Control/Beneficiary+No P140
Beneficiary/Control
Beneficiary/Beneficiary+Yes P140
Beneficiary/Beneficiary+No P140

149. When did you join the Dom Helder association?
Before the project's implementation
During the project's implementation
After the project's implementation

150. Did you participate in a meeting to choose the Association's project?
1 - Yes 2 - No

151. In what year was the project implemented/started operating? (aaaa)

152. Main Productive Activities of the Association Project (multiple answer):
1 - Beekeeping (extraction of honey, propolis, pollen, wax, etc.)
2 - Goat, sheep, poultry
3 - Aquaculture (fish, oyster, shrimp, etc.)
4 - Agricultural production, irrigated horticulture, irrigation
5 - Extractivism
6 - Processing of beekeeping products
7 - Processing goat, sheep, and poultry products
8 - Processing of aquaculture products
9 - Processing of fruits, such as licuri, umbu, passion fruit, guava, mangaba, and others
10 - Manioc processing and production of derivatives
11 - Handicraft and other non-agricultural activities, sewing, embroidery, wood, clay
12 - Artisanal fishing
13 - Cattle farming
14 - Swine farming
15 - Other activities (agricultural and non-agricultural)

153. Do you consider yourself well-informed about what the association does in the execution of the project (decisions about the project, accountability, project execution, other initiatives)? 1 - Yes 2 - No

154. Have you (or a member of your family) ever been involved in any community business plan? 1 - Yes 2 - No

155. Have you (or a member of your family) ever taken part in
A - Productive investments: 1 - Yes 2 - No 99 - Doesn't know/Didn't answer
B - Technical assistance and advice: 1 - Yes 2 - No 99 - Doesn't know/Didn't answer
C – Training: 1 - Yes 2 - No 99 - Doesn't know/Didn't answer

O - DOM HELDER BENEFICIARIES

157. Which activities, from the Dom Helder Câmara Project (PDHC), have you participated so far (you can mark more than one option):
1 - Initial mobilization meeting
2 - Community diagnosis and productive project
3 - Collective activities like meetings, visits, courses, etc.
4 - Visits in your establishment and individual reports
96 - Other activities
99 - Doesn't know/Didn't answer

158. Were improvements suggested, such as new practices, activities, or the management of your establishment? 1 - Yes 2 - No

159. Did you like these suggestions/recommendations?
1 - I didn't like them
2 - I liked them a little
3 - I liked them, but they could be better
4 - I liked them a lot
99 - Doesn't know/Didn't answer

160. Did you implement at least 1 (one) of the proposals that were suggested to you?
1 - Yes 2 - No

161. To answer this question, think about the period before and after the coronavirus pandemic. Did the rural technical assistance service received by your family from 2018 to 2021 assist in selling products to new markets? (you can mark more than one option)
1 - Yes, it helped selling to the School Feeding Program (PNAE)
2 - Yes, it helped selling at the Food Acquisition Program (PAA)
3 - Yes, it helped selling at Fairs
4 - Yes, it helped selling at the Solidarity Economy Network
5 - Yes, it helped selling at rural tourism
6 - Yes, it helped selling as organic products
7 - Yes, it helped selling at other markets
8 - Yes, it helped selling through the Internet (WhatsApp, Instagram, Facebook or others)
9 - I don't know
10 - No, it did not help

162. How do you identify your community? (check one only)
1 - Quilombola
2 - Indigenous
3 - Fisherman
4 - Family farmer
5 - Fundo de pasto
6 - Agrarian Reform Settlement Project
7 - Other

163. Did the rural technical assistance service guide your family into producing a new product that was not produced before? For example: (you can mark more than one option)
1 - Sheep
2 - Goats

3 - Poultry
4 - Pigs
5 - Fish
6 - Roots, like manioc
7 - Forage production for animals
8 - Fruit
9 - Honey
10 - Productive backyard
11 - I do not produce anything new
12 - I received no guidance

164. With the guidance of the rural technical assistance service, did your family start to perform new activities that generated financial income? For example: (you can mark more than one option)
1 - Production and commercialization of handicrafts
2 - Provision of services (sewing, esthetic services, etc.)
3 - Production and commercialization of bread
4 - Production and commercialization of sweets and jams
5 - Commercialization of milk
6 - Production and commercialization of cheese
7 - Commercialization of eggs and poultry
8 - Production and commercialization of pulps and/or juices
9 - Production and commercialization of honey
10 - Provision of services to neighbors and/or others (mechanical and/or manual)
11 - Tourism services
12 - Other activities
13 - We do not perform any new activity

165. After the beginning of the Dom Helder Câmara Project, how many women in your household started to perform a new income generating activity? Remember: only the number of women!
1 - None
2 - One
3 - Two
4 - Three
5 - Four
6 - Five
7 - Six
8 - Seven
9 - Over eight

166. Since Dom Helder, have women gained more autonomy or empowerment in decision-making? (you can mark more than one option))
1 - Yes, in the family
2 - Yes, in the community
3 - Yes, in the association
4 - Yes, in the union
5 - Yes, in the women's group
6 - No
99 - Doesn't know/Didn't answer

167. Since Dom Helder, have women had more power in the decisions about production? (you can mark more than one option)
1 - Yes, in the productive activity
2 - Yes, in commercialization
3 - Yes, in the administration of the productive activity resources
4 - Yes, in the administration of family resources
5 - No
99 - Doesn't know/Didn't answer

168. With Dom Helder's actions, women's time dedicated to productive work (animal farming, processing, handicraft, agriculture, among other activities:
1 - Increased
2 - Decreased
3 - Hasn't changed
99 - Doesn't know/Didn't answer

169. With Dom Helder's actions, women's time dedicated to domestic work and care (cooking, washing clothes, sewing, caring for children and the elderly), among other activities:
1 - Increased
2 - Decreased
3 - Hasn't changed
99 - Doesn't know/Didn't answer

170. Did Dom Helder's individual activities have adequate and flexible schedules that ensured women's participation? 1 - Yes 2 - No

171. After the beginning of the Dom Helder Câmara Project, how many young people, who are between 15 and 29 years old, in your household began to perform a new income-generating activity? Remember: only those between 15 and 29 years old!
1 - None

2 - One
3 - Two
4 - Three
5 - Four
6 - Five
7 - Six
8 - Seven
9 - Eight
10 - Nine
11 - Over ten

172. Considering the years from 2018 to 2021, your agricultural production:
1 - Increased
2 - Decreased
3 - It remained stable
99 - I don't know the answer

173. Was the agricultural production affected by the coronavirus pandemic?
1 - No, production remained the same
2 - Yes, production decreased but is back to normal
3 - Yes, production decreased and is not back to normal yet
99 - I don't know the answer

174. After the beginning of the activities of the Dom Helder Câmara Project, did you or any member of your family access any rural credit (for example: Pronaf, Agroamigo, Microcredit, Pronamp or other programs)?
1 - Yes 2 - No 99 - Doesn't know/Did not answer

175. With the support of the Dom Helder Câmara Project, have you started to practice any of the following items? (you can mark more than one option)
1 - Balanced feed for the animals
2 - Quality seeds and seedlings
3 - Seedling production techniques
4 - I started to store the fish in freezers
5 - I started using good quality breeding stock
6 - I started using 1-day-old chicks of good origin and vaccinated
7 - Cultivation of leguminous plants and protein bank to improve the nutrition of my animals and thus improve the pasture areas
8 - Intercropping (example: intercropping corn and beans)
9- Preserve and/or recover the native forest, which can serve as pasture for the animals, including bees

10 - I started to use manure or bio-fertilizers
11 - I adopted composting techniques
12 - I started to use natural defensive agents to fight plagues and diseases
13 - Localized irrigation techniques
14 - Techniques for soil and water conservation
15 - Techniques for living with the semi-arid climate
16 - Livestock management techniques, such as vaccination, feeding, separation by category, etc.
17 - Adoption of social technology (example: cistern, biodigester, ecological stove, water reuse, and others)
18 - Increased care and production in productive backyards
19 - Improved craft techniques
20 - Cutting and sewing services techniques
21 - Stopped using/buying transgenic animal feed
22 - Stopped using agrochemicals
96 - Other
99 - I did not practice anything new

176. Did the production infrastructure (for example: facilities such as henhouses, sheds, pigsties, sties, machinery, equipment, and others) improve after receiving the rural technical assistance? 1 - Yes 2 - No 99 - Do not know

177. If improved, by how much:
1 - 10%
2 - 20%
3 - 35% (a little more than 1/3)
4 - 50% (half)
5 - 100% (doubled)
6 - More than doubled

178. Did your livestock (for example: cattle, goats, sheep, etc.) increase after receiving the rural technical assistance?
1 - Yes 2 - No 99 - Do not know

179. If it increased, by how much:
1 - 10%
2 - 20%
3 - 35% (a little more than 1/3)
4 - 50% (half)
5 - 100% (it doubled)
6 - More than doubled

180. Did the technical assistance service inform you about federal government programs or other programs? (you can mark more than one option)
1 - Yes, about Fomento Produtivo
2 - Yes, about the federal government's emergency aid
3 - Yes, about Bolsa Família
4 - Yes, about the Continuous Cash Benefit (BPC)
5 - Yes, about Retirement or Pension
6 - Yes, about the Garantia Safra (crop guarantee)
7 - Yes, about the Light for All
8 - Yes, about the Water for All Program (cisterns, 2nd water)
9 - Yes, about the Productive Organization of Rural Women
10 - Yes, on Rural Workers' Documentation
11 - Yes, on Bolsa Verde
12 - Yes, about other programs
99 - I do not know the answer

181. Between the years of 2018 and 2021, after your family received the rural technical assistance, do you think the family's income improved?
1 - My income improved
2 - My income remained the same
3 - My income got worse
99 - I do not know the answer

182. After receiving technical assistance from Dom Helder, which food groups did the family consume more: (read all the options and mark those with positive answers)
1 - Grains, roots and tubers (rice, corn, cassava, potato, yam)
2 - Legumes (beans, fava beans, peas, lentils, peanuts)
3 - Seeds and oilseeds (sesame, cashew nuts, licuri, walnuts, almonds)
4 - Milk and dairy products
5 - Meat, poultry, and fish
6 - Eggs
7 - Dark green leafy vegetables (kale, spinach, watercress, chicory, arugula)
8 - Fruits and vegetables rich in vitamin C (orange, acerola, lemon, mango, cashew, seriguela, taioba)
9 - Other vegetables (maxixe, jerimum, okra)
10 - Other fruits (banana, cajá, passion fruit, tomato)
99 - Doesn't know/Didn't answer
99 - Não sabe/Não respondeu

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