

Info Note

Examining gender differences in the access to and implementation of climate-smart agricultural practices in Central America

Findings from monitoring efforts in the climate-smart villages (CSVs) of Olopa (Guatemala) and Santa Rita (Honduras)

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Key messages

- Women are comparatively **more predisposed than men to invest in climate change adaptation solutions, even though they receive less income from agricultural activities** and less investment from their farms.
- Compared to men, women have lower access to credit or loans to help them carry out their agricultural activities, but when they do, they are **more likely to invest them in strategies that address the risks of climate change**
- The fact that women and men receive weather forecast information does not necessarily mean that they will use it. The reason for not using the climate information received has gender connotations. For example, in Olopa, the men tend to not use the information because they don't know what decision to change while women say they don't trust that information.
- In the Climate-Smart Villages of Olopa (Guatemala) and Santa Rita (Honduras), men report participating more in the implementation of the climate-smart agricultural practices (CSA) than women.
- In Olopa, most women report that they decide jointly with their spouses on the implementation of the CSA practices, while in Santa Rita women's participation in joint decision-making processes is lower.
- In general, both men and women perceive that the implementation of CSA practices provides higher agricultural productivity and income

This Info Note summarizes the findings from the monitoring efforts of CSA practices conducted in 2018 in the Climate-Smart Villages of Guatemala and Honduras within the framework of the project "[Generating evidence on gender-sensitive climate-smart agriculture to inform policy in Central America](#)" led by the International Center of Tropical Agriculture (CIAT), with the financial support of the International Development Research Center (IDRC).

Prioritizing gender in the Climate-Smart Villages (CSVs)

Climate change is posing serious threats to the production systems and rural livelihoods of smallholders in Central America and these effects are expected to worsen even more in the coming years (IPCC, 2014). Due to the different roles, responsibilities, social norms and rights of men and women, climate change will affect them differently (Alston and Berry, 2013). To overcome the threats and challenges that climate change poses to agriculture and food security in the region, adaptation and mitigation strategies will be required to make farming systems more resilient to the climate, and to ensure that both men and women can benefit from these strategies.

Among these strategies, climate-smart agriculture (CSA) seeks to promote interventions that reduce the vulnerability of the agriculture sector to climate variability and change through: i) the sustainable and equitable increase of productivity, income and food security; ii) the improvement of the adaptive capacity and resilience of agricultural systems; and iii) the contribution to the reduction of its greenhouse gas emissions (FAO 2010).

Climate-Smart Villages (CSVs) provide a space where the people in the community work together with researchers and local partners, in a participatory manner, to prioritize and evaluate the CSA options (agricultural practices and technologies, as well as climate information services) that are most appropriate for each context. To study the gender differences in the access, use and perception of these actions it is essential to adapt them to the differentiated needs of men and women in these areas.

Objective and methodology

Developed by researchers of the CGIAR program on Climate Change, Agriculture and Food Security (CCAFS), the gender-sensitive Smart Household Monitoring system is a tool that allows the compilation of standardized data - with a gender dimension - in almost real time and at multiple scales. Through a series of indicators, it seeks to evaluate and monitor trends (e.g. access, motivations and limitations) in the adoption of CSA practices and technologies by men and women as well as the benefits perceived at the level of farm performance, household livelihoods, workload, degree of participation in decision making and access to generated resources (Bonilla-Findji et al., 2018).

The objective of this Info Note is to present some of the most significant gender differences in the adoption of CSA options, as well as in the processes of adaptation to climate change in the CSVs of Olopa (Guatemala) and Santa Rita (Honduras). The study is based on the implementation of the CSA monitoring system carried out in April 2018 that covered a total of 279 farmers in Olopa (152 women and 122 men, belonging to 158 households), and 256 farmers in Santa Rita (127 women and 129 men, belonging to 149 households). The CSA practices that were monitored in the CSV of Olopa were: vegetable gardens with and without water harvesting, irrigation, and improved black bean varieties; while in the CSV of Santa Rita the practices were: vegetable gardens with and without water harvesting, solar grain dryers, and improved varieties of red beans.

Agricultural Income and Climate Investment

Both the CSV of Olopa and the CSV of Santa Rita are predominantly agricultural: 97% of men and 93% of women in Olopa, and 89% of men and 86% of women in Santa Rita declared agriculture as the main source of household income in the previous year. However, when asked who received the income from agricultural activities, important gender gaps were found (Figure 1). Compared with men, women of both CSVs reported having less frequency received income for their agricultural work. These differences were more pronounced in the CSV of Santa Rita.

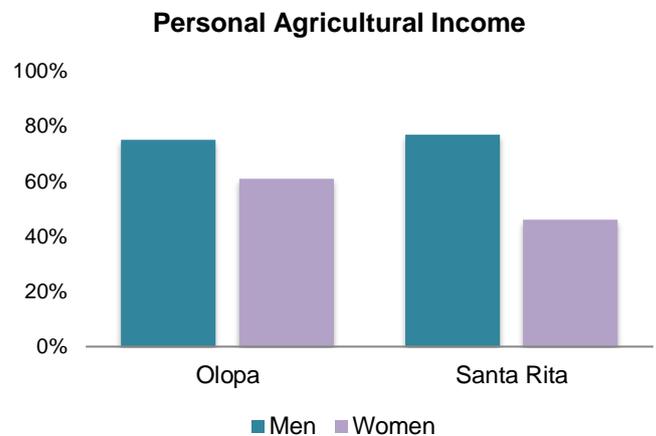


Figure 1. Percentage of women and men who answered "Yes" to the question: Last year, did you personally earn income from activities related to agriculture? Men (n = 120 Olopa, n = 128 Santa Rita), Women (n = 152 Olopa, n = 127 Santa Rita)

In terms of investment capacity, men of both CSV reported more frequently that they had invested the money in the farm (90% in Olopa and 80% in Santa Rita), compared to women (78% in Olopa and 28% in Santa Rita). However, **the women who reported having invested in the farm declared more frequently that the investment was directed at recovering from or preventing the negative effects of climatic events** (Figure 2). These results may indicate a greater tendency for women to invest in adapting their production systems to climate change and/or climate variability.

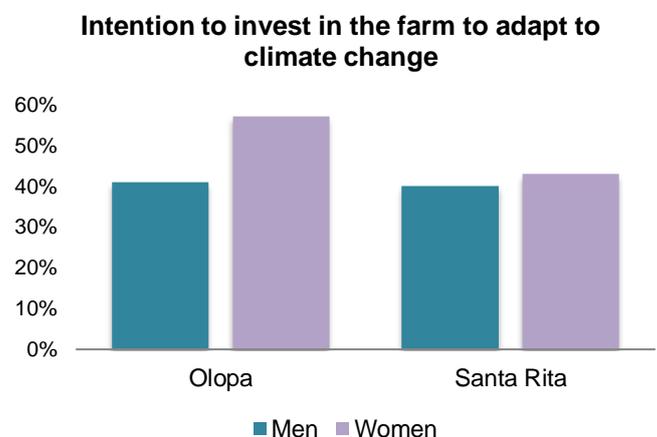


Figure 2. Percentage of men or women who answered "Yes" to the question: "Did that investment intend to help you recover or prevent the negative effects of climatic events?" Men (n = 108 Olopa, n = 103 Santa Rita), Women (n = 118 Olopa, n = 35 Santa Rita)

Risk mitigation actions in agricultural activities following climatic events

The main climatic events that affected the agricultural activity of the farms of the CSV of Olopa were excess rainfall (64%), droughts (59%), hailstorms (35%) and storms (34%). In the case of Santa Rita, the main climatic

events reported were excessive rainfall (74%), followed by storms (33%), strong winds (14%) and droughts (12%). These climatic events affected the production of the farms. For example, in the CSV of Olopa, 67% of households reported that the production or income generated on the farm had been affected by some climatic event, while in the CSV of Santa Rita this percentage was somewhat lower (56%).

In general, the majority of households in Santa Rita (88%) and Olopa (76%) reported not having made any changes in the infrastructure of the farm, in the types of crops grown or in the agricultural management practices in response to these climatic events, while 16% and 6%, respectively, declared they had made changes in response to climatic events. In both CSVs, men reported more frequently than women having made changes in crop management practices due to climate impacts. In the CSV of Olopa, 10% of men and 15% of women also declared having made crop changes as a climate risk mitigation action, while in Santa Rita it was only an action followed by 17% of the men.

Risk mitigation actions in agricultural activities following climatic events

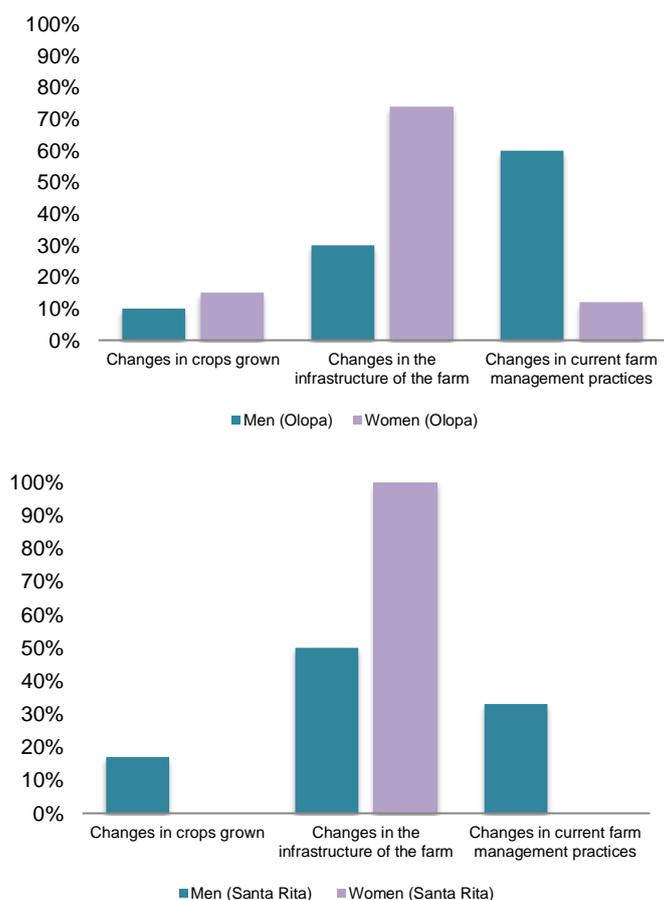


Figure 3. Percentage of men and women that reported having implemented different changes in their agricultural activities due to climate impacts. Men (n = 10 Olopa, n = 6 Santa Rita), Women (n = 34 Olopa, n = 5 Santa Rita)

Financial Services

The use of credit or loans for the development of agricultural activity revealed important gender differences. In the CSV of Olopa and Santa Rita, 32% and 38% of men respectively reported having used loans, in contrast to only 19% and 13% of women (Figure 4). Of the women who reported having obtained credit, only between 18% (Olopa) and 6% (Santa Rita) obtained it from a formal banking institution, compared to 33% and 16% of the men in Olopa and Santa Rita, respectively. The majority of women in Santa Rita obtained the loan from cooperatives and microcredits (59%) and from private lenders (24%), while the majority of women in Olopa obtained credit from family and friends (50%), cooperatives and microcredits (32%).

Gender differences in the access to loans from banking institutions can limit women's ability to cope with climate change risks, or to make significant investments in their farms. This is important, especially considering that women have a greater preference (or need) to use the credit to help them cope with the impacts of climate change: **61% (Olopa) and 59% (Santa Rita) of women who resorted to credit did so to help them cope with the negative effects of climatic events** (compared to only 28% and 44% of men in Olopa and Santa Rita).

Access to agricultural credit

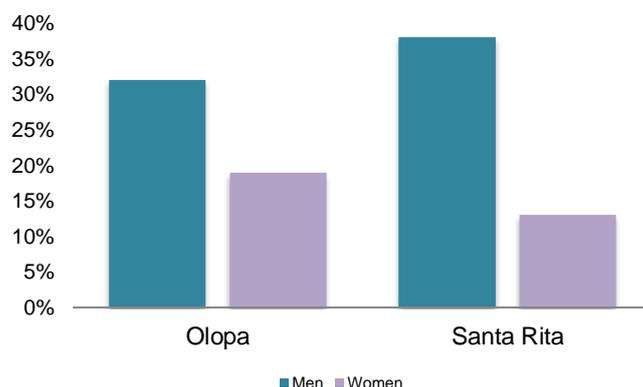


Figure 4. Percentage of women and men who declared having resorted to loans or credit to develop agricultural activity. Men (n = 108 Olopa, n = 128 Santa Rita), Women (n = 118 Olopa, n = 127 Santa Rita)

Climate Information Services

Regarding access to climate information, the majority of the farmers surveyed at the CSV of Olopa reported having received climate information services i.e. early warnings, rain forecasts for the next days and forecasts for the next months (70% of women and 64% of men).

In contrast, in the CSV of Santa Rita, only one third of the population reported access and use of climate services (31% of women and 35% of men). In both CSVs, and for both men and women, the most common communication

channel for accessing climate information was the radio, television or community speaker (94% and 92% of women and 84% and 88% of men in Olopa and Santa Rita respectively).

Even though women received climate information as much or more frequently than men, the use of that climate information did not follow the same trend. For example, 54% and 20% of women in Olopa and Santa Rita respectively reported having received weather forecast information, but not being able to personally use it (in contrast to 42% and 11% of men in Olopa and Santa Rita respectively).

In general, there is a lower use of climate information by women. When examining the reported reasons for the non-use of the daily forecasts (Table 1), it was found that 70% of the women of Olopa did not trust the information they received or felt it was not accurate enough to be able to take any decisions based on it. In Santa Rita, the two fundamental reasons for the non-use of climate information on rainfall forecasts by women were the lack of understanding of the information and the lack of knowledge about what decisions to make. In the case of men, the fundamental reason for not using the information in Santa Rita was the lack of understanding of the climate information received, while in Olopa the lack of knowledge about what decision to make. These results exemplify the importance of considering the specific needs of men and women, for each location and context, when designing climate information delivery services.

Table 1. Percentage of women and men who reported specific reasons for not using the information from daily rainfall forecasts

		N	I did not trust the information or it was not precise enough	I did not understand the information	I did not know what decision to make	I did not have the resources or means to make other farm management decisions
Olopa	Men	33	12%	12%	55%	21%
	Women	43	70%	12%	19%	0%
Santa Rita	Men	17	35%	53%	0%	12%
	Women	8	12%	38%	38%	12%

Climate-Smart Agricultural Practices and Technologies (CSA)

In general, the level of implementation of CSA practices in the households is higher in the CSV of Olopa than in the CSV of Santa Rita. In both CSVs, the CSA practice with the highest level of implementation was vegetable gardens without water harvesting.

Table 2. Percentage of households that adopted climate-smart practices (CSA) in the CSVs of Santa Rita (Honduras) and Olopa (Guatemala)

CSA Practices (Santa Rita)	Improved red bean varieties	Vegetable garden with water harvesting	Vegetable garden without water harvesting	Solar grain dryers
Households (n=145)	3%	2%	16%	6%
CSA Practices (Olopa)	Improved black bean varieties	Vegetable garden with water harvesting	Vegetable garden without water harvesting	Irrigation
Households (n=149)	17%	11%	65%	18%

The perceived level of participation in the implementation of CSA practices was much higher in men than in women in both CSVs. A higher percentage of men than women answered 'Yes' to the question: 'Were you the person in charge of doing most of the work related to the practice?'. This occurred for all CSA practices examined, except for the implementation of vegetable gardens without water harvesting (33% of men, 55% of women) and with water harvesting (58% of men, 59% of women) in Olopa (Guatemala).

Analyzing the decision-making dynamics involved in the implementation of CSA practices, in Olopa both men and women largely reported having made the decision jointly with their partners (Table 3). In the case of irrigation, compared to other practices, relatively more women reported not having participated in the implementation decision.

In the CSV of **Santa Rita, there was a lower prevalence of joint decision-making processes, compared to Olopa. In addition, in Santa Rita there were also larger discrepancies between men and women with regard to their perceptions of decision-making processes.** For all practices, the majority of men reported having made the decision to implement the practice individually, with the implementation of improved varieties of red beans and vegetable gardens with water harvesting being especially relevant, where all male respondents reported having made the decision without consulting his spouse. The majority of women reported not having participated in the decision to implement solar grain dryers and improved red bean varieties (71 and 67% respectively), while 17% of women individually decided to implement vegetable gardens without water harvesting.

These differences in decision-making processes may be due, at least in part, to differences in roles between men and women. For example, the cultivation of improved red bean varieties might be a practice developed mostly by

men in Santa Rita, and hence the lower involvement of women in decision-making processes.

In general, there is a lower contribution of women in decision-making processes related to the implementation of CSA practices in the CSV of Santa Rita, compared to Olopa. Socio-cultural aspects may influence these differences between the two CSVs. For example, about 65% of the population of the CSV of Olopa is of the Ch'orti 'ethnic group, while the population in Santa Rita is predominantly not indigenous, which could influence gender dynamics and decision-making processes in these territories.

Table 3. Percentage of levels of participation in decision-making processes for the implementation of CSA practices in Olopa's CSV (Guatemala) and Santa Rita (Honduras)

CSA Practices (Olopa)	N		No, I did not participate	Yes, I decided alone	Yes, it was a joint decision
Vegetable garden with water harvesting	Men	9	11%	22%	67%
	Women	22	5%	23%	73%
Vegetable garden without water harvesting	Men	78	3%	26%	72%
	Women	97	3%	23%	74%
Irrigation	Men	22	5%	27%	68%
	Women	24	12%	12%	75%
Improved black bean varieties	Men	17	12%	29%	59%
	Women	28	7%	29%	64%
CSA Practices (Santa Rita)	N		No, I did not participate	Yes, I decided alone	Yes, it was a joint decision
Vegetable garden with water harvesting	Men	3	0%	100%	0%
	Women	24	38%	17%	46%
Vegetable garden without water harvesting	Men	21	14%	43%	43%
	Women	24	38%	17%	46%
Solar grain dryers	Men	9	11%	67%	22%
	Women	7	71%	0%	29%
Improved red bean varieties	Men	5	0%	100%	0%
	Women	3	67%	0%	33%

In Olopa for each of the CSA practices, the majority of men (92%) and women (88%) perceived an **increase in production derived from their implementation**. In Santa Rita, the same percentage of women (47%) perceived an increase in production as a result of the implementation of vegetable gardens without water harvesting. In the CSV of Santa Rita, the majority of men perceived (52%) an increase in production associated with the implementation of the practices, except in the case of solar grain dryers.

For all CSA practices, the women of Olopa perceived more frequently than men having obtained an additional income for the household derived from the

implementation of the practice. In Santa Rita, this trend was also observed in the practice of vegetable gardens without water harvesting (Table 4). Both men and women from Olopa reported that **the use of additional income derived from the implementation of the practices was mostly used in the purchase of food** (73 and 83% respectively). In Santa Rita, the practice of vegetable gardens without water harvesting also followed the same trend (100% of men and 67% of women reported the use of additional income for the purchase of food). These results highlight the potential of CSA practices in improving the food security of rural households affected by the effects of climate change in Central America.

Table 4. Percentage of men and women on the perceived effect on the generation of additional income derived from the implementation of CSA practices)

CSA Practices (Olopa)	N		Percentage
Improved black bean varieties	Men	16	44%
	Women	24	67%
Vegetable garden with water harvesting	Men	9	44%
	Women	20	90%
Vegetable garden without water harvesting	Men	75	53%
	Women	94	71%
Irrigation	Men	21	57%
	Women	23	65%
CSA Practices (Santa Rita)	N		Percentage
Improved red bean varieties	Men	5	20%
	Women	19	11%
Vegetable garden with water harvesting	Men	3	33%
	Women	17	35%
Vegetable garden without water harvesting	Men	8	12%
	Women	1	0%

Conclusions and policy recommendations

This analysis has shown important gender differences that became visible during the initial implementation of the monitoring system in the CSVs of Honduras and Guatemala. The results show that women receive a lower personal income from agriculture and have less access to agricultural credit compared to men. However, women presented a greater willingness to invest this income, or credit, in solutions to adapt and mitigate the impacts of climate change and climate variability.

- It is essential to improve personal income and women's access to financial services in order to strengthen the climate resilience of agricultural

territories and the livelihoods of rural communities in the region.

- Moreover, the gender differences found in the access to, and use of, climate information demonstrate the need to produce climate information that fits the capacities and needs of men and women in each territory.

Regarding the CSA practices evaluated, the results show that **men generally had a greater perception of participation in the implementation of the practices than women. The participation of women in the decision on the implementation of these CSA practices was greater in Olopa than in Santa Rita.**

- The differences in the dynamics of decision-making processes for the adoption of CSA practices between the two CSVs highlight the importance of having an in-depth knowledge of the local and socio-cultural context of each territory.
- It is important to take into account the gender roles within each territory, in order to know the effects they may have on the decision-making processes between the couples associated with the implementation of specific CSA practices.

In both CSVs, **the majority of men and women, perceived an increase in the production and income** derived from the implementation of CSA practices. The income derived from the implementation was mainly destined to the **purchase of food.**

- This highlights the potential of CSA practices to improve food security in rural households in Honduras and Guatemala is evident.

Finally, it is important to emphasize that these two locations in Guatemala and Honduras may not represent the rest of the country or region, due to the influence of activities and programs associated with the approach to sustainable territories adapted to climate (CSV), and therefore, a greater exposure of men and women to climate information and CSA practices.

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