WOMEN IN AGRICULTURAL SCIENCES

MULHERES NAS CIÊNCIAS AGRÁRIAS

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Abstract: *This study aimed at assessing women's role in the Center for Applied Agricultural Sciences (CCAA) at the Federal University of Sergipe (UFS). Four databases were analyzed and indicated that CCAA is a predominately male-oriented center, as men professors outnumber women in five out of its six departments. Currently, there are 85 professors, all of them with doctorate degrees (67.1% men and 32.9% women) and 26 professors with postdoctoral experience, 30.8% women and 69.2% men. Only eight professors received research fellowships: two women and six men. There are 215 leadership positions registered, 29.3% being occupied by women and 70.7% by men. Similarly, women represented 42.6% and men 57.4% of the incoming undergraduate students and 53.1% and 46.9% amongst graduate students, respectively. Many gender barriers have been surpassed, but others remain, mainly in the highest hierarchical levels, and need to be further addressed.*

Keywords: *Female Representation. Equity. Gender.*

Resumo: *O objetivo desse estudo foi avaliar o papel feminino no Centro de Ciências Agrárias Aplicadas (CCAA) da Universidade Federal de Sergipe (UFS). Foram analisados quatro bancos de dados e concluiu-se que o CCAA é um centro predominantemente masculino, pois o número de professores suplanta o de professoras em cinco dos seis departamentos. Hoje são 85 professores, todos com doutorado (67,1% homens e 32,9% mulheres) e 26 professores com pós-doutorado, sendo 30,8% mulheres e 69,2% homens. Apenas oito professores são bolsistas produtividade: duas mulheres e seis homens. Há 215 cargos de chefia cadastrados, com 29,3% ocupados por mulheres e 70,7% por homens. Dos ingressantes nos cursos de graduação, 42,6% são mulheres e 57,4% são homens; e na pós-graduação associada ao CCAA, 53,1% são mulheres e 46,9% são homens. Muitas barreiras de gênero já foram suplantadas, mas outras permanecem, sobretudo nos altos níveis hierárquicos e necessitam ser discutidas.*

Palavras-chave: *Representação Feminina. Equidade. Gênero.*

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Introduction

The participation of women in the history of civilizations is not well-known due to the absence or low number of records of their actions and deeds. For Melo and Thomé (2018), records of women participation have been excluded, there being little information on unique actions having wider visibility. The first archeological findings on ancient civilizations showed the primordial place occupied by women. Their fecundity was compared to field fecundity in nature and, thus, there was a worship to Goddesses, as they were considered the source of life in all ancient historical societies. During that period, the societal structure was mostly egalitarian and remained as such for tens of thousands of years until a male God started to determine women as inferior to men (Lins, 2017).

From the IX century onwards, in the West, after the restructuring of the Catholic Church, the role of women was established as submissive to men. This vision has been responsible for reinforcing the structure of the patriarchal society that has been in place up to the present day. Various monotheistic religions through the centuries strengthened the inequality between men and women, and this has spilled over into social life (Melo; Thomé, 2018).

Unfortunately, the injustice affecting reaching the female population still prevails, embedded in an aristocratic, male-oriented society – although there have been some important improvements. The history of feminism acquires its initial shape with the French Revolution and the independence of the United States of America (USA), when women started to stand up for their rights. In Brazil, the movement of women for gender equality started in the XIX century. However, little is known about this period, as there are few historical archives on this matter. Moreover, the documented historical facts are fragmented, precluding a comprehensive understanding of the feminist movement (Melo; Thomé, 2018).

In science, the first detailed publication on the participation of women was *Women in Science*, written by Mozans in 1913, according to Leta (2003). Rossi (1965) was the author of another important publication, which highlighted the start of a movement in the USA stimulating the formal education of women in the 1960s. In that decade, an increasing participation of women in certain areas of science was observed, particularly in the biological sciences. Nevertheless, their number was still low and differences in wages were clear. Women were trained to be teachers instead of being scientists, and generally with no graduate titles.

The situation was similar in Brazil. One of the main steps towards understanding the relation between science and gender was the establishment of the Center of Women Studies (Núcleo de Estudos sobre a Mulher) by Fanny Tabak in the late 1980s, at the Pontifícia Universidade Católica do Rio de Janeiro (Leta, 2003). Grossi et al. (2016) analyzed the position of women in Brazilian science after conducting an historical analysis on the gender issue in education based on the work by Fulvia Rosemberg and Nina Madse.

Even though many achievements have been made in the last years, there is still large inequality in gender roles (and salaries) in the sciences, with women occupying mostly positions related to the educational process rather than research. The number of scientific projects conducted by women in the Agricultural Sciences in Brazil ranked 4th in 2013-2014, among a number of different field studies, being surpassed by the Biological Sciences, Health, and Human Sciences, in this order (Grossi et al., 2016). Many governmental policies have been created in the last ten years aiming at increasing women participation in the areas of Science and Technology (UNESCO, 2020). Considering the current information gaps and *status quo*, there are still big challenges before we reach an equalitarian participation of women and men in the areas of science, technology, engineering, and mathematics (STEM).

The objective of this study was to analyze the role of women at the Center for the Applied Agricultural Sciences (CCAA) of the Federal University of Sergipe (UFS). The specific proportion of women among professors of each area within the CCAA was calculated: Agronomic Engineering, Agricultural Engineering, Fishery Engineering, Forestry Engineering, Veterinary Medicine, and Zootechnics. Moreover, the number of women receiving fellowships granted by the National Council for Scientific and Technological Development (*Bolsista Produtividade* of the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* – CNPq) was analyzed, as well as those occupying leadership positions. Finally, the proportion of women among students of undergraduate and

graduate programs related to the Agricultural Sciences at UFS, was analyzed in terms of incoming and drop-out students.

Materials and methods

This research study is descriptive and was based on four data sources related to professors and students, associated to the departments and undergraduate and graduate programs associated to the Center of Applied Agricultural Sciences (CCAA) of the Federal University of Sergipe (UFS). Furthermore, it used the database of the Brazilian population provided by the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística – IBGE):

Data on professors of each department associated to the undergraduate programs were available in the sites of the six departments that are part of CCAA/UFS, as per July 2022. The gender and the graduate degree of each professor was obtained from these sites.

Data on leadership positions of professors associated to the Agricultural Sciences were provided by the secretariat of CCAA, referring to the period 1983-2022. The database contained the gender of the professor, department, position, and starting and ending year of the positions occupied. The name of the professor was removed before the secretariat shared the database.

Data on fellowships granted by the National Council for Scientific and Technological Development (CNPq), to professors associated to the departments within CCAA as per August 2022 were obtained from the CNPq site (lattes.cnpq.br) and complemented with information available at the secretariat of the Coordination of the UFS Graduate Programs.

Database from the Superintendence for Indicators of Institutional Performance (*Superintendência de Indicadores de Desempenho Institucional* - SIDI), which contained information on CCAA, or CCAA-related undergraduate and graduate students (among others). Here, we only analyzed students of the São Cristóvão Campus for the period 2010-2022, even though UFS has other *campi*. The following variables were available in this database and were included in this analysis: registration number, gender, incoming year, name of the undergraduate program, department offering the undergraduate program, entering mode for the undergraduate program (broad competition or through quota for low income and minority groups), name of the graduate program, campus, entering year, birthdate, race, cancellation mode and term. The name of all students was removed by SIDI before sharing this database.

Data on the population of the states of Sergipe, as per September 2022, as well as Alagoas and Bahia, two neighbouring states providing the largest number of students to UFS (IBGE, 2022). The population of these three states was combined to show the proportion of women and men.

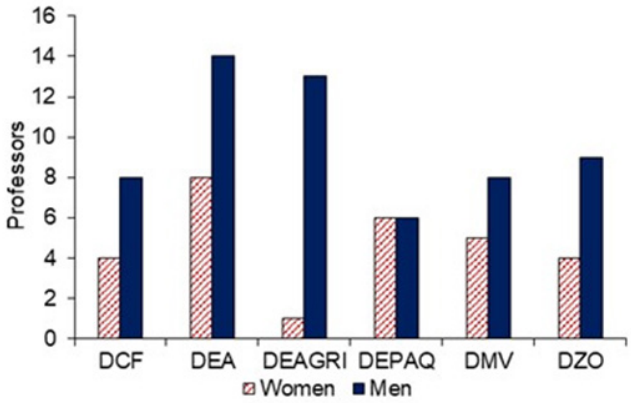
All analyses were performed using Microsoft Excel Version 18.2306.1061.0 and R software Version 4.2.1 (R Core Team, 2022).

Results and discussion

Gender distribution among professors in each department associated to the Center of Applied Agricultural Sciences (CCAA)

The CCAA is a predominantly male center as only one out of its six departments presents gender equality, the Department of Fishery and Aquaculture Engineering, with six women out of its twelve professors. In all other departments female representation is lower than 40%, with the Department of Agricultural Engineering presenting the lowest proportion, with only one woman in the faculty, who was hired while this study was being conducted (Figure 1). In 2022, the Federal University of Sergipe (DIAVI/CEMDI/SIDI, 2022) published its academic indices corresponding to three terms (2020/1, 2020/2, and 2021/1). The majority of its 1580 professors were men (53%), versus 47% of women.

Figure 1. Number of professors (women and men) in the departments of the Center for Applied Agricultural Sciences (CCAA): Forest Sciences (DCF), Agronomic Engineering (DEA), Agricultural Engineering (DEAGRI), Fishery and Aquaculture Engineering (DEPAQ), Veterinary Medicine (DMV), and Zootechnics (DZO)



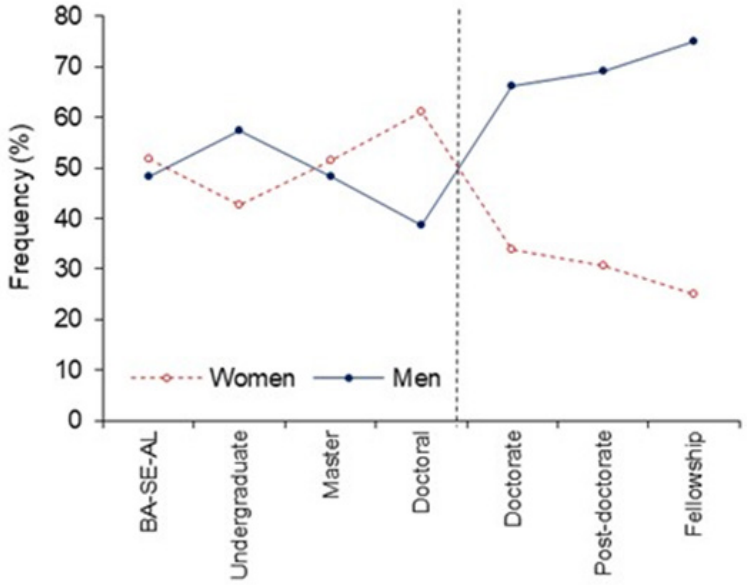
Source: Based on the website of each department associated to the undergraduate programs available in the sites of each of the six departments of CCAA/UFS, e.g. https://www.sigaa.ufs.br/sigaa/public/departamento/professores.jsf?id=211 (available in July/2022).

According to Lino and Mayorga (2016), a Scholar Census of the Brazilian Basic Education record, conducted in 2007, indicated that women teachers were much more abundant in programs of the first years of basic education (daycares, pre-schools, and grades 1 to 4), being above 90% in all courses. When moving up to grades 5-9 and grades 10-12, this participation rate fell to 74.4% and 64.4%, respectively. At the undergraduate level, the percentage of men among the faculty members surpasses the percentage of women. The participation of women in science is particularly complex, as it demands the deconstruction of an imaginary of fragility, one of the possible reasons for the current male-dominance in science, particularly in higher positions.

Graduate degree, postdoctoral experience, and CNPQ fellowship of CCAA professors

There are 59 professors associated to the CCAA, all of them with doctorates: 39 men (66.1%) and 20 women (33.9%). Less than 50% of these professors have postdoctoral experience (26). Eighteen of them are men (69.2%) and eight are women (30.8%) (Right side of Figure 2). The National Council for Scientific and Technological Development has a fellowship program that provides grants to professors in Brazil with doctoral degrees and outstanding publishing records as a stimulus and appreciation for their work. Only eight professors at CCAA receive CNPq fellowships, two of them being women (25%) (Right side of Figure 2). Here, again, we document the predominant male presence at the top of the academic career.

Figure 2. Population of Bahia, Sergipe and Alagoas (BA-SE-AL), and educational levels of CCAA/UFS students by gender. To the right of the dotted line are items considered in the UNESCO assessment (2020) for comparison, i.e., CCAA professors with doctorate, post-doctorate, and CNPq fellowship by gender



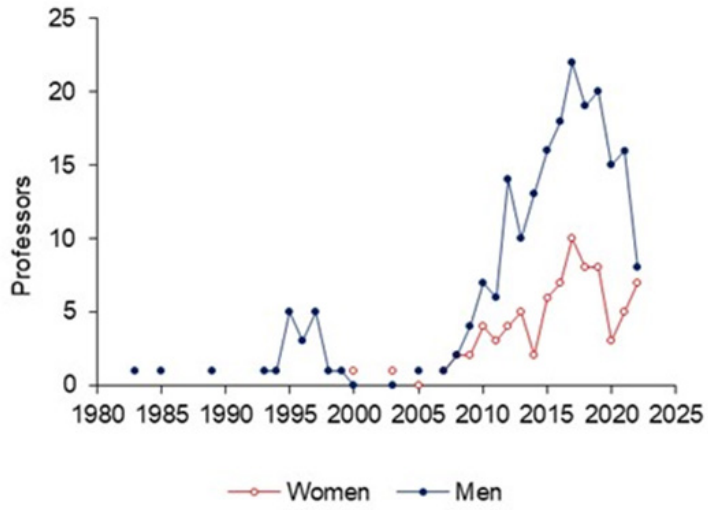
Source: Based on data of IBGE, database from the Superintendence for Indicators of Institutional Performance (SIDI), and data on fellowships granted by the National Council for Scientific and Technological Development (CNPq) (provided in July/2022).

According to Tavares and Parente (2015), the number of women scientists generally decreases along the scientific trajectory, mainly in the field of Engineering. This in turn is one of the reasons for finding a low participation rate of women among CNPq fellowship recipients, e.g., in the fields of Mathematics and Technology. According to Lino and Mayorga (2016), the participation of women in science has gradually increased in recent years, considering that the percentage of women scientists in Latin America and the Caribbean in the last twenty years was around 20%. More current data by the United Nations Education, Scientific, and Cultural Organization (UNESCO, 2020) have indicated only a minor improvement, with a global women participation of 29.3% in 2019. In this study, we found a larger number of men at the top of the academic career at UFS. Cunha et al. (2020) also found larger participation of men at the top of the academic career at the Federal University of Tocantins (UFT), with the number of men being three times higher than the number of women in the Agricultural Sciences. Thus, again there is lesser female representation in this field.

Leadership positions of faculty members and gender

Data on leadership positions of CCAA faculty members go back to the 1980s. However, all professors were originally associated to the Center of Biological Sciences and Health up to 2013, when the Center of Applied Agricultural Sciences was established, even though the Department of Agronomic Engineering had already been created in 1992. The CCAA database presented a list of 215 leadership positions occupied by CCAA faculty members, including advisor, assistant, director of department, coordinator of undergraduate and graduate programs, and dean. Only 63 of these positions (29.3%) were occupied by women and 152 by men (70.7%). Women from CCAA started to occupy leadership positions only after 2000. Their number has been increasing in recent years, but it has always been below the number of men, except in 2021 (Figure 3). An increasing trend in the total number of leadership positions of women and men from 2008 onwards, most likely reflects the increasing administrative complexity of UFS, with new positions being opened.

Figure 3. Number of professors (women and men) at the Center of Applied Agricultural Sciences (CCAA) occupying leadership positions at the Federal University of Sergipe



Source: Based on data of leadership positions of professors associated to the Agricultural Sciences provided by the secretariat of the Center of Applied Agricultural Sciences (CCAA) (provided in July/2022).

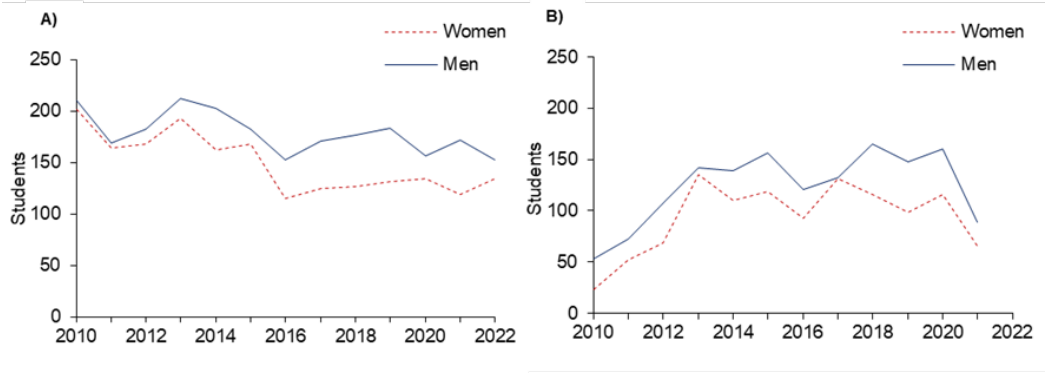
This comparison of men and women occupying leadership positions is very important to understand the gaps in some fields, as well as the dynamics of professional ascendance. According to Lino and Mayorga (2016), the higher the reputation and the attributes of the academic position at the university, the lower the female participation, with women being more absent from positions involving more power and responsibility in the sciences. Olinto (2011) pointed out that existing barriers can be identified and described by two mechanisms: horizontal segregation, where women are convinced to follow paths different from men, mainly by family members and/or school, establishing life and professional strategies that are 'more adequate' to their gender (such a career paths in basic education and nursing); and vertical segregation, where women mainly occupy subordinate positions with no possibility of professional and wage ascension. The results presented by the author are also similar at the international level, as presented by UNESCO (2020): the higher we go up in the power hierarchy, the lesser the participation of women, which suggests the existence of mechanisms that lead to the vertical segregation of gender in academic careers.

Incoming undergraduate students, cancellations, gender, and age

A total of 4,305 incoming students enrolled in six undergraduate courses associated to the Center of Applied Agricultural Sciences (CCAA) between 2010 and 2022. A proportion of 42.6% were women and 57.4% were men (Left side of Figure 2; Figure 4A). During the same period, 2,618 students requested cancellation of their courses: 43.2% were women and 56.8% were men (Figure 4B). In Radar UFS (2022), which dealt with the profile of all incoming students at the Federal University of Sergipe in 2021, the percentage of women was slightly higher (51%) than that of men (49%).

The proportion of women among the general population of the state of Sergipe was also analyzed, together with the neighbouring states of Alagoas and Bahia (IBGE, 2022), as they represent most of the expected public attending the Federal University of Sergipe, due to its proximity. A parity in gender was observed for the population of these three states together (Left side of Figure 2). At UFS, in all six undergraduate programs of the Agricultural Sciences, the percentage of men surpassed that of women by 14.8%, which indicates a more male environment among students in this field, not reflecting the gender distribution of the regional population.

Figure 4. Number of incoming students (A) and cancellations (B) by gender (women and men) at the Center for Applied Agricultural Sciences (CCAA) from 2010 to 2022.



Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) related to CCAA-related undergraduate students (provided in July/2022).

Thus, most of the incoming undergraduate students of CCAA are men, also representing most of the cancellations. However, a more detailed analysis of the CCAA data indicates that the number of men was higher among incoming students in 2010-2022 for the undergraduate programs of Fishery Engineering, Forest Engineering, Agronomic Engineering, and Agricultural Engineering - as well as their cancellations (Figure 5); but that, conversely, for Veterinary Medicine and Zootechnics, the number of enrollments of women were higher than men – cancellations being similar (Figure 5).

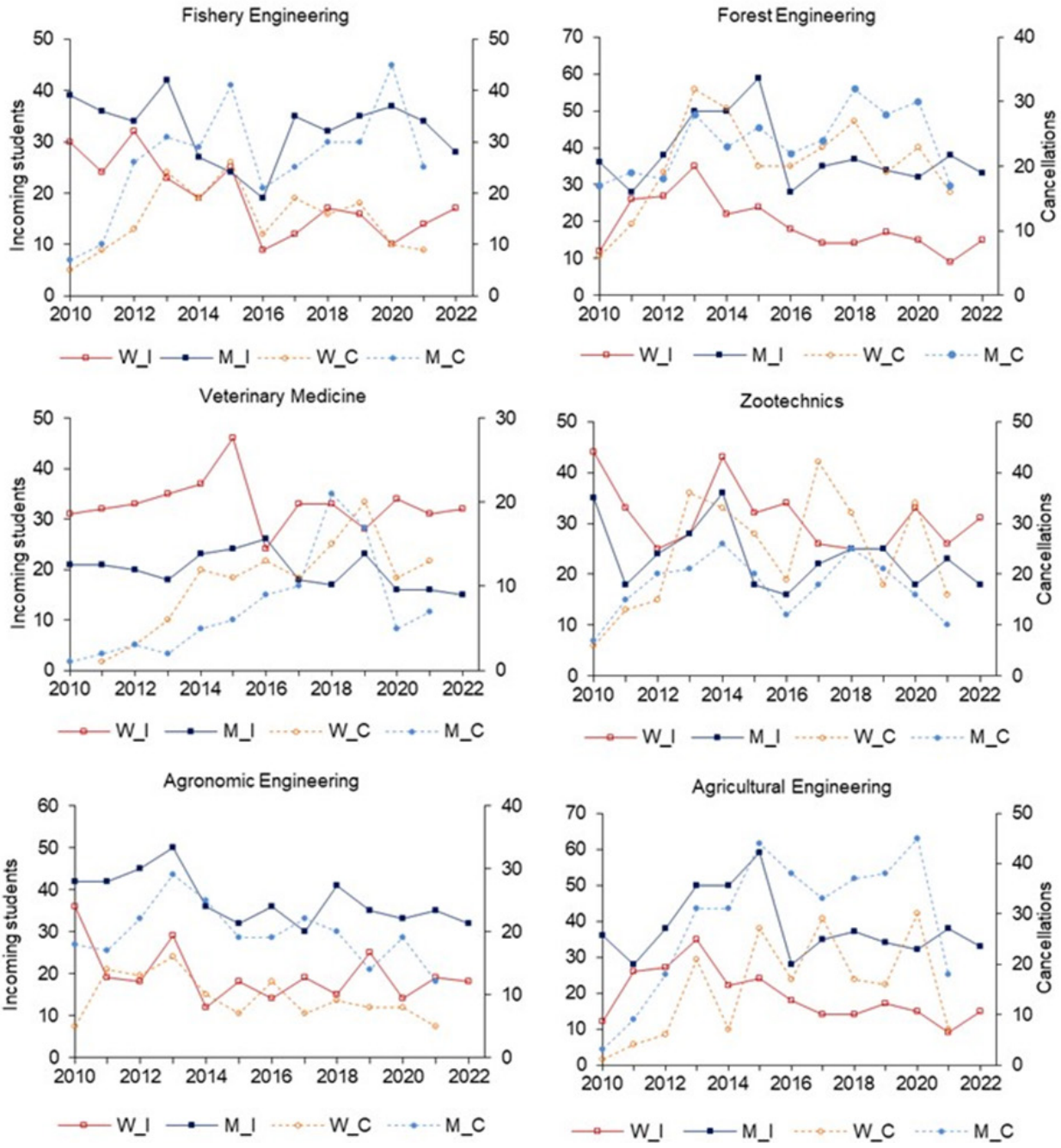
Incoming Veterinary Medicine students have a mean age of 21 years, Agronomic Engineering, Forest Engineering and Zootechnics students, 22 years, Agricultural Engineering, 23 years, and Fishery Engineering, 25 years. Thus, Fishery Engineering students are four years older than Veterinary Medicine students at the time of enrollment. This course (Veterinary Medicine) included the oldest student at CCAA, a 74-year-old man. The oldest woman at the CCAA, was 61 years old when she enrolled in Zootechnics. We raise the hypothesis that the success rate in these courses is associated with age, the younger students have more success than older students, because many many older students must work to support their households. However, this hypothesis cannot be properly tested, as information on job and number of children are not currently collected by UFS (Figure 6).

Cancelations of student enrollment may be due to one of the following reasons: abandonment, cancellation of special enrollment, re-option, new selection process (*Vestibular* or ENEM), spontaneous cancellation, judicial cancellation, death, maximum time period to conclude the program reached (*jubilamento*), student did not show up after being summoned according to a special notice, such as Edital 21/2017/PROGRAD (related to *jubilamento*), exchange, cancelled undergraduate program, transference to another university or internal transference. The main cause of cancellation at CCAA was abandonment, with 70.6% of the total number of cancellations (42.4% of women and 57.6% of men). The program with the highest abandonment in the Agricultural Sciences was Forest Engineering, with a proportion of 21.2%, followed by Fishery Engineering (19.7%), Zootechnics (19.2%), Agricultural Engineering (18.7%), Agronomic Engineering (13.0%), and Veterinary Medicine (8.2%). The only programs with an abandonment proportion of women being higher than men are Veterinary Medicine and Zootechnics (Figure 7).

Students of Agricultural Sciences usually spend an average of 2.7 years in their original undergraduate program before having it cancelled. For Veterinary Medicine and Agronomical Engineering, this period is about 3.1 years, for Forest Engineering and Zootechnics, 2.8 years, for Fishery Engineering, 2.4 years, and for Agricultural Engineering, 2.1 years. Veterinary Medicine students are usually loyal to their first choice of undergraduate program, but those enrolled in Fishery Engineering and Agricultural Engineering may be using these courses as a bridge to other programs of interest, since 75% of them cancel the program after 2.5 years (Figure 8). A highlight case is a student of Agronomical Engineering who spent 18 years in this course before having his enrollment cancelled in 2013. Students of Fishery Engineering and Veterinary Medicine cancel their enrollment when they are 27 years old in average, those of Zootechnics, Agronomical Engineering, and Agricultural Engineering when they are 26 years old, and students of Forest Engineering when

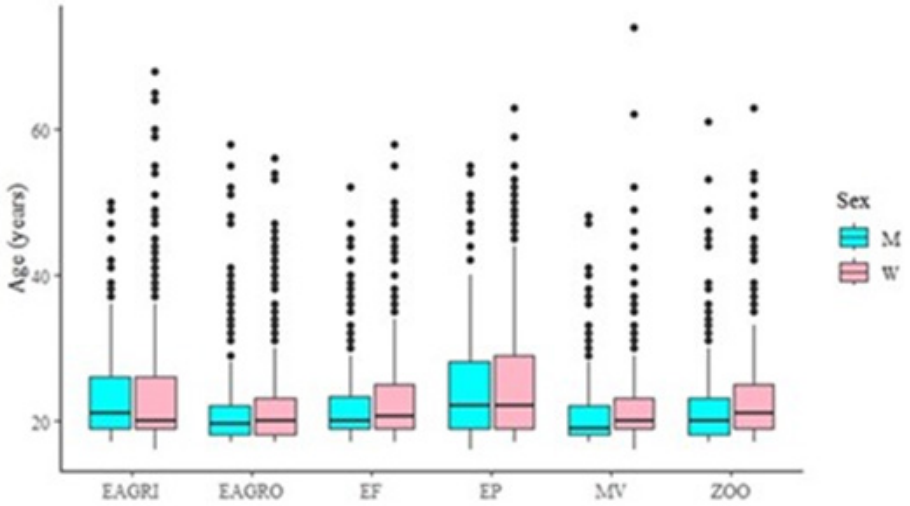
they are 25 years old. For students older than 40 years, the evasion is high for all programs (Figure 9).

Figure 5. Number of incoming students (I) and cancellations (C) per gender (W = women; M = men) for each undergraduate program associated to the Center for Applied Agricultural Sciences (CCAA) in 2010-2022



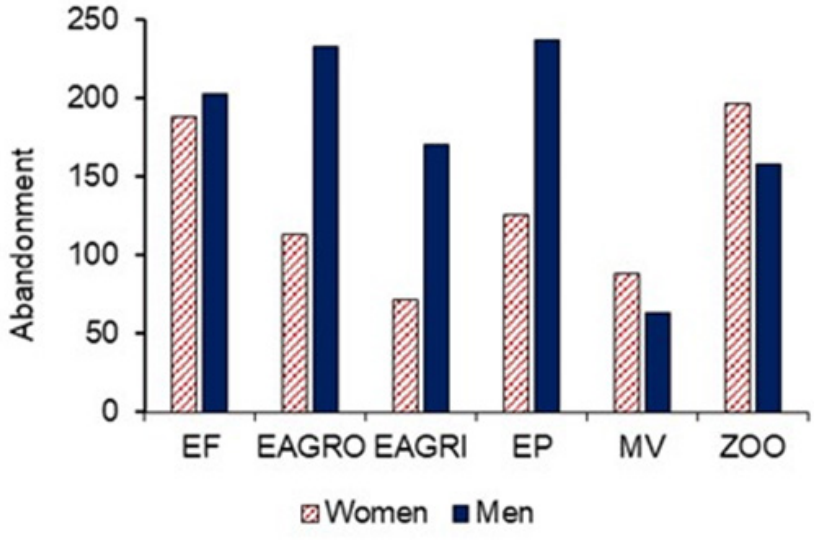
Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related undergraduate students (provided in July/2022).

Figure 6. Age of incoming students by gender (M = men; W = women) for each undergraduate program of the Center for Applied Agricultural Sciences (CCAA) in 2010-2022: Agricultural Engineering (EAGRI), Agronomic Engineering (EAGRO), Forest Engineering (EF), Fishery Engineering (EP), Veterinary Medicine (MV), and Zootechnics (ZOO). Black circles correspond to outliers



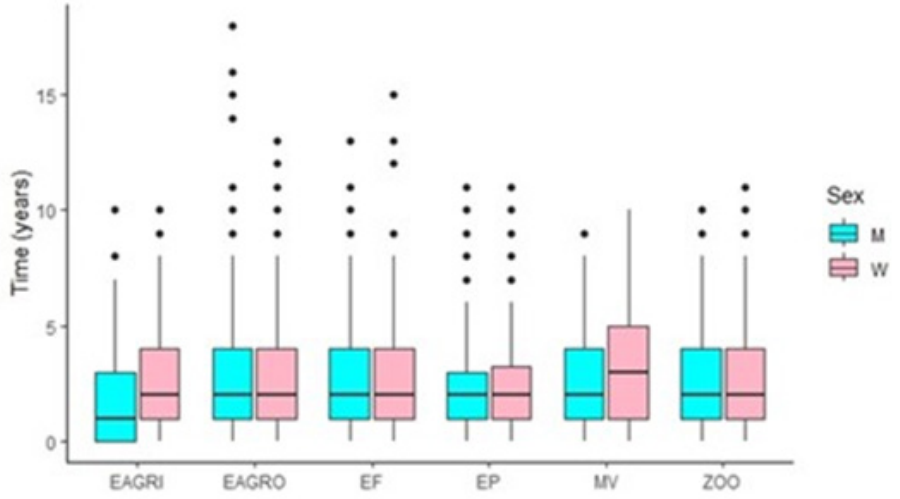
Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related undergraduate students (provided in July/2022).

Figure 7. Number of students (women and men) with registration cancelled by abandonment during 2010-2021 for each undergraduate program associated to the Center for Applied Agricultural Sciences (CCAA): Forest Engineering (EF), Agronomic Engineering (EAGRO), Agricultural Engineering (EAGRI), Fishery Engineering (EP), Veterinary Medicine (MV), and Zootechnics (ZOO)



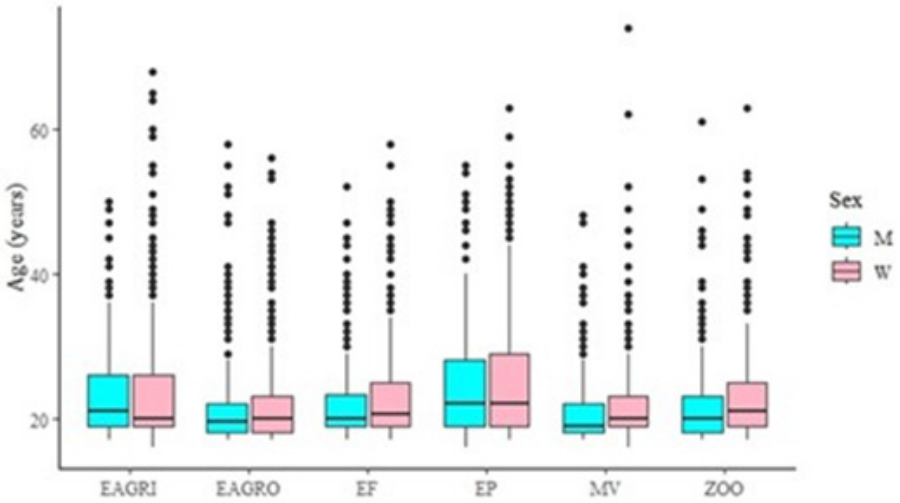
Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related undergraduate students (provided in July/2022).

Figure 8. Time in years before enrollment is cancelled for men (M) and women (W) in all six undergraduate programs associated to the Center for Applied Agricultural Sciences (CCAA) in 2010-2022: Agricultural Engineering (EAGRI), Agronomic Engineering (EAGRO), Forestry Engineering (EF), Fishery Engineering (EP), Veterinary Medicine (MV), and Zootechnics (ZOO). Black circles correspond to outliers



Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related undergraduate students (provided in July/2022).

Figure 9. Student age when cancellation occurred for men (M) and women (W) in all six undergraduate programs associated to the Center for Applied Agricultural Sciences (CCAA) in 2010-2022: Agricultural Engineering (EAGRI), Agronomic Engineering (EAGRO), Forestry Engineering (EF), Fishery Engineering (EP), Veterinary Medicine (MV), and Zootechnics (ZOO). Black circles correspond to outliers



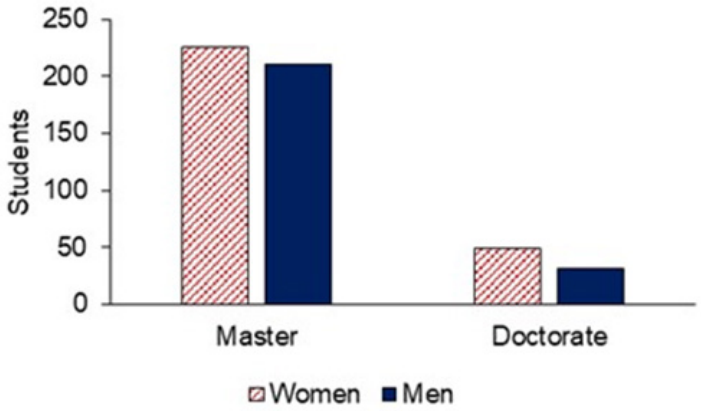
Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related undergraduate students (provided in July/2022).

Students of Graduate Programs associated to the Center for Applied Agricultural Sciences (CCAA)

From 2010 to 2022, 516 students enrolled in three graduate programs associated to the Center for Applied Agricultural Sciences at the Federal University of Sergipe: Agriculture and

Biodiversity, Water Resources, and Zootechnics. A proportion of 53.1% were women and 46.9% were men. In master programs, the proportion of women (51.6%) was higher than men (48.4%) (Left side of Figure 2). In doctorate programs, this difference was even larger (61.3% of women against 38.7% of men) (Left side of Figure 2; Figure 10). This analysis is very important as it differs from the global pattern observed by UNESCO (2020) in the field of Science, Technology, Engineering, and Mathematics (STEM), where female presence decreases at higher graduate levels (doctorate and pos-doctorate).

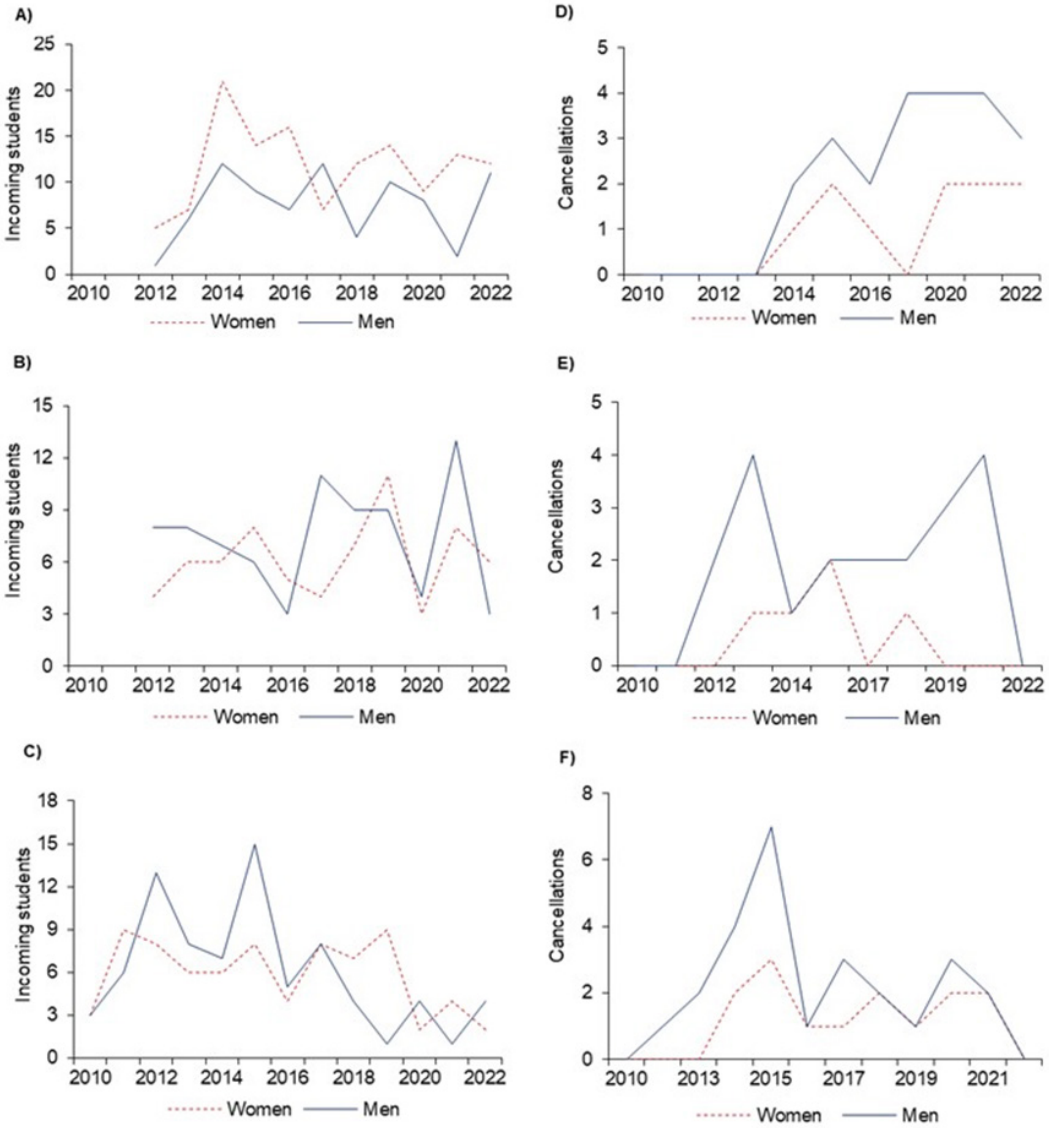
Figure 10. Number of incoming students by gender in all three graduate programs (master and doctorate) associated to the Center for Applied Agricultural Sciences (CCAA) in 2010-2022



Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related graduate students (provided in July/2022).

The graduate program with the highest number of students in 2010-2022, and particularly of women, was the Agriculture and Biodiversity Program (130 women and 82 men) (Figure 11). Thirteen per cent of the incoming students cancelled their enrollment in 2010-2022 (68 in total). A proportion of 42.6% were women and 57.4% were men. The number of cancellations among graduate students for the 2010-2022 period was stable, including in 2020-2021, when more cancellations were expected due to the COVID-19 pandemic.

Figure 11. Number of incoming students (A, B, C) and cancellations (D, E, F) for the Graduate Programs in Agriculture and Biodiversity (A, D), Water Resources (B, E), and Zootechnics (C, F) in 2010-2022



Source: Database from the Superintendence for Indicators of Institutional Performance (SIDI) referring to CCAA-related graduate students (provided in July/2022).

To sum up, the general pattern observed for the Agricultural Sciences at the Federal University of Sergipe indicated a lower number of women enrolled in undergraduate programs, which does not reflect the gender distribution in the regional population. In master programs, the proportion of women becomes slightly higher than men and, in doctorate programs, this proportion is even higher. Conversely, the proportion of women among faculty members in the Agricultural Sciences is much lower than men, and this gap becomes wider when one considers post-doctoral experiences and CNPq fellowhips (*bolsas produtividade*). This pattern was called "scissors graph" by Olinto (2011) and Lino and Mayorga (2016). However, our scissor presents some differences in relation to the one presented by UNESCO (2020): there, the proportion of women in undergraduate courses and master degrees are slightly higher, even though still indicating gender parity; for doctoral degrees an inversion in the pattern occurs, with a slightly higher proportion of men (despite the statistical gender parity). However, at CCAA/UFS, the proportion of women in these graduate courses is much higher than men with no gender parity. Finally, for the scissor's holder, despite our pattern being similar to that of UNESCO, the gap between the low proportion of women faculty members with post-doctoral experiences and with fellowships, and the high

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proportion of men, is much higher (open scissor behavior) (Figure 2). Globally, in STEM (Sciences, Technology, Engineering, and Mathematics), the proportion of women is slightly higher in the lowest academic levels (undergraduate and master programs: 53% and 55%, respectively), than men (UNESCO, 2020). However, at the doctoral level, the proportion of women drops down to less than 45% (no gender parity). This proportion is even lower among STEM researchers (30%). In Latin America and the Caribbean, a gender parity was reached in 2017, when women participation in STEM reached 45.1%.

Even though data from the Agricultural Sciences at UFS do not represent gender equality as defined by UNESCO, the numbers are better than in other Brazilian universities. Fiúza et al. (2016) analyzed the database of the Federal University of Viçosa, more precisely that of the institution's Center for Agricultural Sciences and, between 2010 and 2014, there was an average of 4,613 students enrolled per year in courses belonging to the center. During this period, the percentage of female students was 39% and male students was 61%. Another research study by Gouvêa and Fiúza (2023), analyzed factors that were giving rise to the occurrence of gender asymmetries within the CCA at the same university. To do this, the authors showed the total number of professors from UFV and compared the proportion of men and women in the teaching staff of each center. The CCA had the least female representation – of the 212 teachers, 21.7% were female and 78.3% were male. The lower female representation at UFV may reflect the fact that its Center of Agricultural Sciences is much older than the one at UFS, which has many recently created undergraduate programs and hence new professors. It is possible that gender stereotypes still define the access of women to the Agricultural Sciences. According to Motta (2018) and Gouvêa and Fiúza (2023), the environment in the agricultural fields has a gender asymmetry and this ends up separating people by gender, which contributes to the creation of stereotypes in the professional objectives as well. Indeed, in the Agricultural Sciences, the number of incoming students and the composition of the faculty members, are a result of stereotypes generated from the professionals working in this field, reinforcing the also stereotype idea that male professionals achieve higher performance (or, at least, more visible than that of the female gender).

Conclusions

The Center for the Applied Agricultural Sciences (CCAA/UFS) does not present gender equality, neither among professors nor undergraduate students. The proportion of men among faculty members is higher in five of its six departments. Moreover, the proportion of post-doctorates, fellowships, and/or leadership roles occupied by women is lower than that of men. The incoming undergraduate students of all six courses associated to CCAA are also mostly represented by men. However, in all three graduate programs associated to CCAA, the number of women is higher in the master level and even higher in the doctorate level, the latter differing from the general international pattern. This difference may reflect the need for women to get additional degrees to be accepted in men-dominated fields.

Changes have been seen in the field of the Agricultural Sciences at the Federal University of Sergipe, but still not at a desired pace. Moreover, scissor behavior in academia is stronger here than in the international patterns observed by UNESCO, which show a much lower proportion of women with post-doctorate, fellowships, and leadership positions. Thus, these issues should be constantly discussed at the universities, and the scholarships implemented by COPES/POSGRAP/UFS should be considered a very important initiative, together with the organization of specific symposiums, which should be attended by both genders to be more effective. Most importantly, future initiatives must compile information on wages of professionals, who graduated from the six courses analyzed here, to test for salary differences. Only then, will we be moving forward gender equality.

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Literature cited

CUNHA, Ulisses Franklin Carvalho da; MIRANDA, Cynthia Mara; RAMBO, Magale Karine Diel. Mulheres nas ciências exatas e tecnologias: um olhar para a Universidade Federal do Tocatins – UFT na perspectiva de gênero. **Revista Humanidades e Inovação**, v.7, n.2, p.276-289, 2020. Disponível em: https://revista.unitins.br/index.php/humanidadeseinovacao/article/view/1754. Acesso em: 05 set. 2022.

DIAVI/CEMDI/SIDI - Divisão de Avaliação e Monitoramento Institucional, Coordenação de Estudos e Monitoramento de Dados Institucionais**,** Superintendência de Indicadores de Desempenho Institucional. **Perfil do docente da Universidade Federal de Sergipe. Radar UFS Nº 1.** São Cristóvão: UFS, 2022. Disponível em: https://sidi.ufs.br/uploads/page_attach/path/16551/S_ntese_UFS_2022.pdf. Acesso em: 27 out. 2022.

DIAVI/CEMDI/SIDI - Divisão de Avaliação e Monitoramento Institucional, Coordenação de Estudos e Monitoramento de Dados Institucionais**,** Superintendência de Indicadores de Desempenho Institucional. **Perfil do ingressante da Universidade Federal de Sergipe. Radar UFS Nº 5**. São Cristóvão/SE: UFS, 2022. Disponível em: https://sidi.ufs.br/uploads/page_attach/path/16551/S_ntese_UFS_2022.pdf. Acesso em: 27 out. 2022.

FIÚZA, Ana Louise de Carvalho; PINTO, Neide Maria de Almeida; COSTA, Elenice Rosa. Desigualdades de gênero na universidade pública: a prática dos docentes das ciências agrárias em estudo. **Educação e Pesquisa**, São Paulo, v.42, n.3, jul. – set. 2016, p.803-818. Disponível em: https://www.redalyc.org/journal/298/29847323015/html/. Acesso em: 01 out. 2023.

GOUVÊA, Tatiana Gomes; FIÚZA, Ana Louise de Carvalho. Desigualdades de gênero na carreira docente: fatores intervenientes. **Revista Brasileira de Pós-Graduação**, *[S.l.]*, v.18, n. especial, 2023, p.1-27. Disponível em: https://rbpg.capes.gov.br/rbpg/article/view/1887. Acesso em: 01 out. 2023.

GROSSI, Maria Gorett Ribeiro; BORJA, Shirley Doweslei Bernandes; LOPES, Aline Moraes; ANDALÉCIO, Aleixina Maria Lopes. As mulheres praticando ciência no Brasil. **Revista Estudos Feministas**, v. 24, n. 1, p. 11-30, 2016. Disponível em: https://doi.org/10.1590/1805-9584-2016v24n1p11. Acesso em: 15 jul. 2022.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA. **Projeção da População do Brasil – Distribuição Percentual de Homens e Mulheres 2010–2060**. 2022. Brasília: IBGE, 2022. Disponível em: https://www.ibge.gov.br/apps/populacao/projecao/box_generos.html?ag=28. Acesso em: 15 set. 2022.

LETA, Jacqueline. As mulheres na ciência brasileira: crescimento, contrastes e um perfil de sucesso. **Estudos Avançados**, v. 17, n. 49, p. 271-284, 2003. Disponível em: https://doi.org/10.1590/S0103-40142003000300016. Acesso em: 15 jul. 2022.

LINO, Tayane Rogeria e MAYORGA, Cláudia. As mulheres como sujeitos da Ciência: uma análise da participação das mulheres na Ciência Moderna. **Saúde e Transformação Social**, Florianópolis, v.7, n.3, p.96-107, 2016. Disponível em: https://incubadora.periodicos.ufsc.br/index.php/saudeetransformacao/article/view/4239. Acesso em: 05 set. 2022.

LINS, Regina Navarro. **A cama na varanda**: arejando nossas ideias a respeito de amor e sexo. 10ª edição, Rio de Janeiro: Editora BestSeller, 2017. 476p.

MELO, Hildete Pereira de; e THOMÉ, Débora. **Mulheres e Poder – Histórias, Ideias e Indicadores**. Rio de Janeiro: FGV Editora, 2018. 192p.

MOTTA, Janayna Avelar. **Mecanismos de Reprodução das Assimetrias de Gênero no Campo Acadêmico:** A Formação Universitária e a Atuação Profissional no Centro de Ciências Agrárias da Universidade Federal de Viçosa – MG**.** 2018. Dissertação de Mestrado – Universidade Federal de Viçosa, Viçosa, Minas Gerais, 2018. Disponível em: https://www.locus.ufv.br/handle/123456789/22337. Acesso em: 09 dez. 2022.

OLINTO, Gilda. A inclusão das mulheres nas carreiras de ciência e tecnologia no Brasil. **Revista Inclusão Social**, v. 5 n. 1, p. 68-77, 2011. Disponível em: https://revista.ibict.br/inclusao/article/view/1667. Acesso em: 12 set. 2022.

R Core Team. **R: A language and environment for statistical computing**. Version 4.2.1 2022-06-23, Vienna, Austria: R Foundation for Statistical Computing, 2022.

ROSSI, Alice S. Women in science: why so few? **Science**, New Series, v. 148, n. 3674, p. 1196-1202, 1965. Disponível em: https://www.jstor.org/stable/1716182. Acesso em: 02 set. 2022.

UNESCO, United Nations Entity for Gender Equality and the Empowerment of Women – UN Women**. Women in science, technology, engineering and mathematics (stem) in the Latin America and the Caribbean Region**. Montevideo, 2020. Disponível em: https://lac.unwomen.org/en/digiteca/publicaciones/2020/09/mujeres-en-ciencia-tecnologia-ingenieria-y-matematicas-en-america-latina-y-el-caribe. Acesso em: 29 set. 2022.

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