

PARTICIPATION OF FEMALE AGRICULTURAL SCIENTISTS IN DEVELOPING COUNTRIES

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Despite the significant increase in the number of female scientists in agricultural research in industrialized and developing countries in recent decades, the participation of women in science and technology (S&T) remains low. The attrition rate for women enrolled in S&T-related subjects at higher-education agencies or employed as scientists and engineers is much higher than it is for men. Further, significant disparity remains in the number of women holding senior scientific or management positions (Sheridan 1998; IAC 2006).

Disaggregated data on the number and share of women in S&T positions are scarce, and they predominantly focus on developed countries or some of the larger, often more-advanced, developing countries (IAC 2006). The Agricultural Science and Technology Indicators (ASTI) initiative, as part of its overall data collection activities on agricultural R&D investments and capacity, has collected data to fill this gap; at least for the agricultural sector. This brief provides an initial overview of the results, based on a dataset comprising 67 countries. Currently, only one in five agricultural researchers in the developing world are female. Across regions, average shares of female scientists range from 17 percent for the Middle East and North Africa as of 2001/03, to 20 percent for the Asia-Pacific, as of 2002-/03, and Latin America and the Caribbean, as of 1996—the latest year relevant data are available for this region.

Table 1—Share of women in total research staff by degree and region of the developing world, 1996–2003

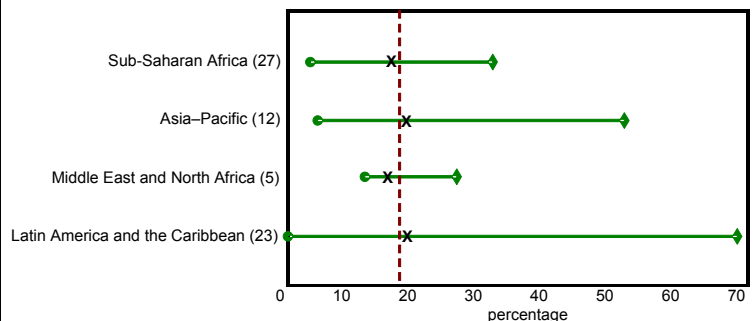
Region	BSc	MSc	PhD	Total
	(percentage)			
Sub-Saharan Africa (27)	23.1	18.8	13.5	18.4
Asia-Pacific (12)	31.1	19.3	14.7	20.3
Middle East and North Africa (5)	24.7	14.2	8.5	16.9
Subtotal (44)	28.2	18.4	13.8	19.4
Latin America and the Caribbean (23)	na	na	na	20.1
Total (67)	na	na	na	19.5

Source: Compiled by author from ASTI database.

Notes: Figures in parentheses indicate the number of countries in each category. For sample sizes, see specific country briefs. Data for Sub-Saharan Africa are for 2000/01; data Asia-Pacific (excluding China) are for 2002/03; data for the Middle East and North Africa are for 2001/03; and data for Latin America and the Caribbean are for 1996; na indicates that data are not available.

Unsurprisingly, large variations exist across countries within regions. In Sub-Saharan Africa, female researchers represented more than 30 percent of all agricultural research staff in Botswana, Mauritius, and South Africa in 2000. In contrast, of the agricultural researchers employed in Eritrea and Ethiopia that year, only 4 and 7 percent, respectively, were female. The spread was even broader in Latin America and the Caribbean and in the Asia-Pacific region. In 2002/3, female scientists in Pakistan and Nepal constituted only 6 and 9 percent of total research staff, respectively, while in Myanmar over half of the agricultural researchers employed in 2003 were women. The range in Latin America and the Caribbean was 0 percent in St. Kitts-Nevis to 69 percent in St. Lucia. On average, shares of female agricultural R&D staff were higher in the Caribbean than in most Latin American countries; Uruguay is the exception, with a 44 percent share of female researchers as of 1996. In contrast, differences across countries in the Middle East and North Africa are less pronounced—from 13 percent in Jordan to 28 percent in Tunisia—though this is partly due to the low sample size of only five countries.

Figure 1—Comparison of shares of female agricultural scientist, by region of the developing world, 1996–2003



Source: See Table 1.

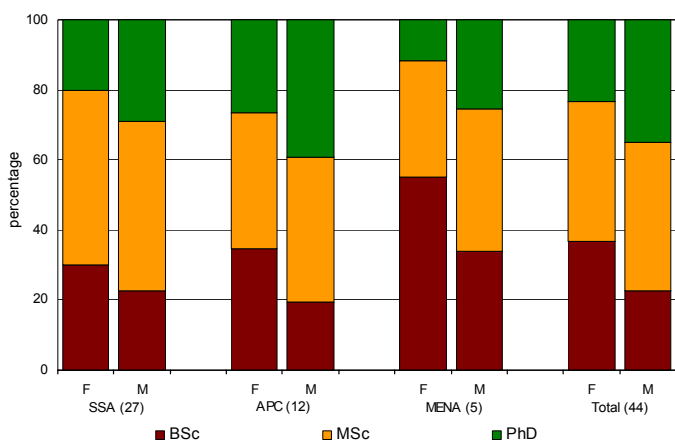
Notes: See Table 1. X denotes the regional average.

Time-series data were only available for 14 Sub-Saharan African countries in our sample. The share of female agricultural research staff increased for the sample as a whole, from 17 percent in 1991 to 21 percent in 2000, but this increase was not indicative of a trend across countries. Shares increased

by 8 percentage points or more in Malawi, Nigeria, South Africa, and Sudan, but in Burkina Faso, Madagascar, and Tanzania, shares fell from 4 to 8 percentage points. In the remaining countries, the share of female agricultural researchers remained relatively stable (Stads and Beintema 2006).

Researchers (male and female) employed in higher education agencies are traditionally more highly qualified than their counterparts at government and nonprofit agencies, and this trend holds for women. Of the female agricultural researchers employed in higher education agencies in the developing world, 39 percent held PhD degrees—far higher than the corresponding shares of 17 percent at the government agencies and 15 percent at the nonprofit agencies. Nevertheless, female researchers are consistently less well qualified than their male counterparts (Figure 2). Far higher shares of women hold only BSc degrees. The developing world average, based on our sample, is 37 percent of female scientists, compared with only 22 percent of male scientists. Notably, in the Middle East and North Africa, this share rises to over half of all female scientists, compared with only 34 percent of male scientists. At the MSc level, the shares are much closer—40 percent of female scientists held MSc degrees compared with 43 percent of the male scientists. And at the PhD level, the disparity can once again be seen: 23 percent of female researchers in Africa, Asia, and the Middle East held PhD degrees compared with 35 percent of male researchers. A slightly higher share of female researchers held PhD degrees in Asia, at 27 percent, while the comparative shares were only 20 percent in Sub-Saharan African and 12 percent in the Middle Eastern and North Africa.

Figure 2—Gender comparison of degree levels of research staff by developing world region, 2000-03

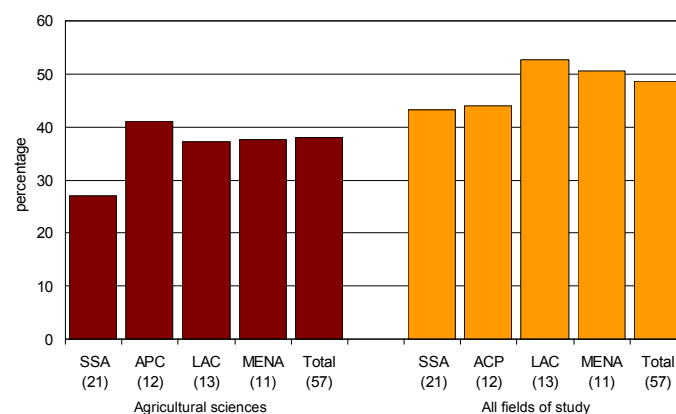


Sources and notes: See Table 1.

Although UNESCO reports an increase in the number of women enrolled in agricultural sciences in developing countries (UNESCO 2004), the share of female students was still very low

when compared across all fields of study. As of 2000/04, about half of the more than 22 million tertiary students enrolled in all fields of study in 57 developing countries were female (Figure 3). Only 3 percent of these 22 million students were enrolled in agricultural sciences (605,000 students), and of these, 38 percent were female (230,000). The shares of tertiary female students in agricultural sciences range from 27 percent in Sub-Saharan Africa to 41 percent in the Asia-Pacific region.

Figure 3—Shares of female students in higher education by developing world region, 2000-04



Source: UNESCO (2006).

Based on the data, it would appear that gender barriers still exist in the agricultural sciences. This is clear from the disparity in the high shares of women qualified only to the BSc level and low shares of women qualified to the PhD level, posing ongoing challenges both for women with aspirations of a scientific career and organizations seeking to redress gender imbalances. Concluding on a positive note, increasing shares of students in agricultural sciences in the past decade or so, as reported by UNESCO, offer cause to anticipate rising numbers of women employed in agricultural research agencies in the years to come.

References

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ABOUT ASTI

The Agricultural Science and Technology Indicators (ASTI) initiative comprises a network of national, regional, and international agricultural R&D agencies and is managed by the International Food Policy Research Institute (IFPRI). The ASTI initiative compiles, processes, and makes available internationally comparable data on institutional developments and investments in public and private agricultural R&D worldwide, and analyses and reports on these trends in the form of occasional policy digests for research policy formulation and priority-setting purposes. For more information, see www.asti.cgiar.org or contact Nienke Beintema, program head (n.beintema@cgiar.org).