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Introduction

Climate change affects differently men and women around the world. Due to women's limited access to, and control over key assets, information and inputs for instance, they tend to be disadvantaged in terms of ability, flexibility and means to change their agricultural practices to adapt to a changing climate (Bryan et al. 2012). In sub-Saharan Africa in particular, where women are mostly engaged in rain-fed agriculture under precarious conditions, the effects of land degradation linked to climate change are increasingly affecting their production system. This is why the gender roles in climate-related practices and policies is more and more desired. In order to improve farmers' capacity to cope with recurrent climate variability through the use of climate information, a study was conducted in 10 Regions of Senegal. The specific objectives were to: i) understand and identify farming adaptation practices used by men and women, ii) determine the climate information needs from women, and iii) identify the factors that can influence women's access to climate information.

Study area

The study was conducted in Senegal, a West African country with an area of 196,712 km² (Fig. 1) The country's population is estimated at 14,356,575 inhabitants with a female population of 49.83% (ANSD 2018). The agricultural system is dominated by rainfed agriculture and is therefore very vulnerable to climate change (Lo and Dieng 2015). Agriculture represents about 7.1% of GDP and employs more than 70% of the population (USDA 2007). The climate is marked by two seasons: a dry season and a wet season. Average annual rainfall is relatively low over most of the country; it varies between 300 mm in the North and 1200 mm in the South (Gaye et al. 2015). To face the harmful effects of the climate change, the country has started since 2011, to promote the access to and use of climate information services (CIS) but many efforts still need to be made to strengthen resilience (Tall et al. 2014, Dia et al. 2016).

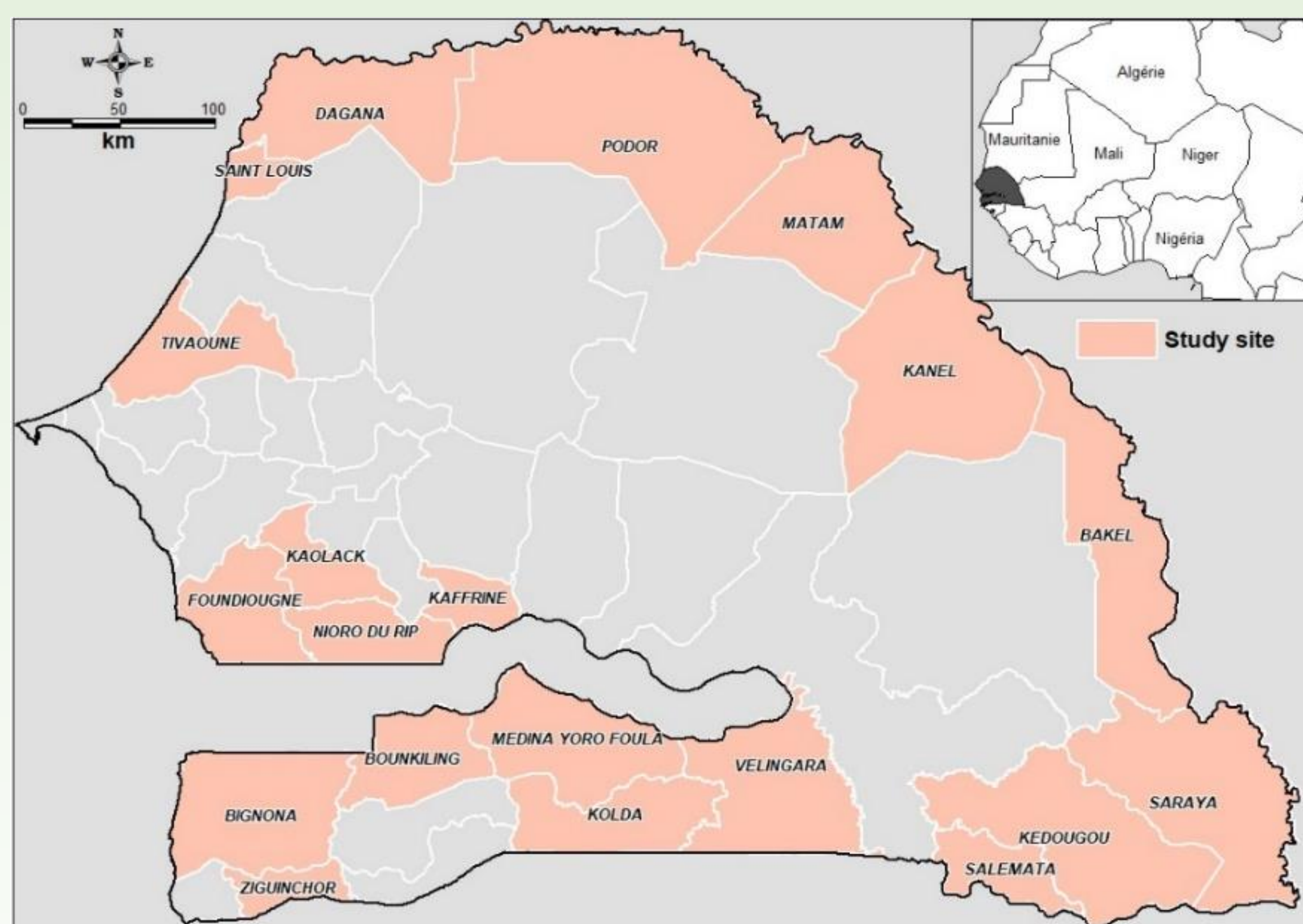


Fig. 1. Study site

Materials & Methods

Quantitative data were collected using a questionnaire. A stratified two-stage random sampling approach was used to select the respondents. The questions were concerned with the socio-economic characteristics of farmers, the agricultural production and the needs and access to CIS. Data were analyzed using the Probit Regression Model to estimate the determinants of access to CIS. The access to CIS was set as a dependent variable for the Probit model. It has been considered that if a farmer receives regularly at least one CIS, he has access to CIS whatever the channel used. The independent variables were: age of the farmer, level of education, head of the family, size of the household, net income of the farmer, adoption of at least one adaptation strategy, farm size, migrant or native status, membership of an organization, marital status, and training on CIS use.

Key results

- Both women and men use adaptive practices to improve resilience. The most important practices are use of improved crop varieties (49% for women and 43% for men), use of new agricultures practices (43% women 32% men), diversification of activities (48% women and 30% men)
- The most important CIS needs from women are: onset and cessation dates of the rainy season, daily rainfall and dry spells forecasts. The radio is the most preferred channel of CIS diffusion by women. This was confirmed by [McOmber, Panikowski et al. \(2013\)](#) and [Tall et al. \(2014\)](#)
- Factors that mostly determine positively the access to CIS are age ($p < 0.05$), membership of an organization ($p < 0.01$), training in climate change domain ($p < 0.01$), the education ($p < 0.1$). The native status affects negatively the access of CIS ($p < 0.05$).

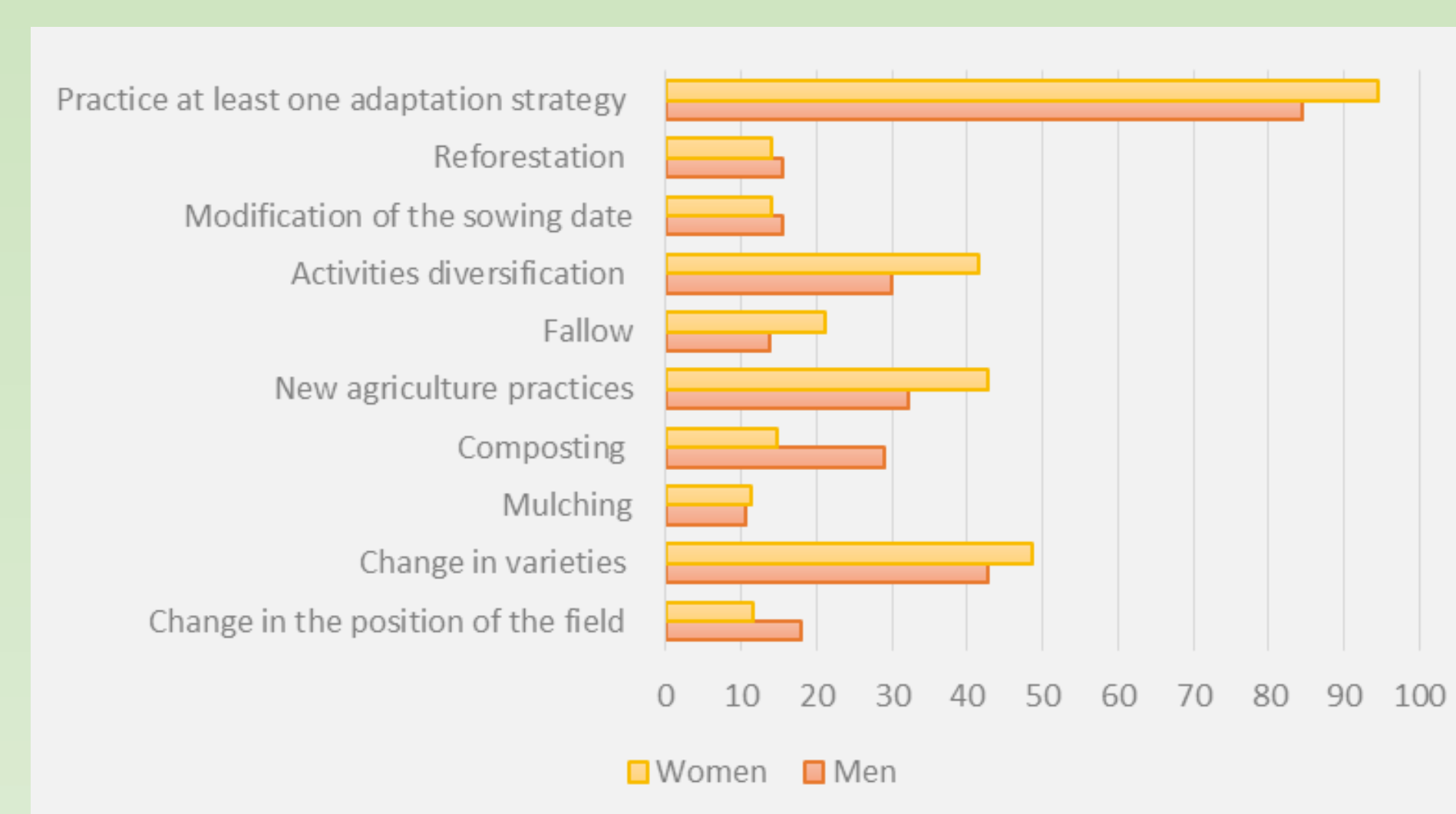


Fig. 2. Farming practice

Type of CIS	Women
Onset date	94,85
Cessation date	94,85
Cumulative rainfall	88,84
Daily rain forecast	93,13
Dry spells	92,27
Wet spells	77,25
Off seasons rains	87,98
Temperature forecast	87,12
Wind forecast	87,55

Table 1: Needs of CIS from women

Variables	Probit Model			Marginal effects		
	Coef.	Std. Err.	P> z	dy/dx	Std. Err.	P> z
Age	0.018	0.009	0.040	0.006	0.003	0.040
Head of the family	0.405	0.275	0.140	0.147	0.102	0.151
Married	-0.490	0.218	0.123	-0.182	0.123	0.139
Literate in local language	-0.548	0.509	0.282	-0.175	0.146	0.230
Literate in french	0.630	0.438	0.150	0.235	0.168	0.163
Origin (Autochton)	-0.881	0.346	0.011	-0.336	0.131	0.010
Size of the household	-0.002	0.014	0.863	-0.001	0.005	0.863
Membership of an organization	1.721	0.322	0.000	0.606	0.080	0.000
Training in climate change	0.870	0.274	0.002	0.329	0.104	0.001
Cultivated area	0.041	0.056	0.466	0.014	0.019	0.464
Net income	0.054	0.103	0.600	0.019	0.036	0.600
Practice at least on adaptation strategy	0.362	0.473	0.444	0.113	0.133	0.388
Not educated	-0.529	0.317	0.095	-0.186	0.112	0.096
Cons	-1.003	1.289	0.437			
Number of obs	= 233					
Wald chi2(15)	= 53.94					
Prob > chi2	= 0.0000					
Log pseudolikelihood	= -115.323					
Pseudo R2	= 0.2122					
McFadden's R2:	0.212					

Table 3: Results of Probit model

Conclusion

The use of CIS has been identified as an effective and relevant strategy for building resilience and reducing risks related to climate variability. This strategy is even more relevant in areas where rainfed agriculture remains the most active, as is the case in several countries in sub-Saharan Africa, particularly Senegal. The results showed that producers have shown a real interest in receiving climate information and that the following products seem to be crucial for improving decision-making in the management of their agricultural production. In order to guarantee an appropriate access to CIS by women, it is important to reach adults and educated women. The training in climate change is a prerequisite to allow people to more understand how to use CIS and take appropriate decision.

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