

What policies should be implemented to promote agro-ecological intensification and reduce inequalities in the Peanut Basin of Senegal?

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PITCH

In the north of the peanut basin, the arid climate limits the efficiency of fertilization too much for it to be relevant to intensify grain production. It is more legitimate to support the groundnut sector, or even to develop other legumes with a shorter cycle (cowpeas). In the rest of the basin, for the poorest, it is better to target subsidies for mineral fertilizers and ensure that these inputs reach all farmers.

ISSUES

In Sahelian countries, although the considerable impact of the development of the agricultural sector on growth is well known, yields remain well below the potential allowed by the climate. The ecological intensification of agricultural production systems (agro-ecological intensification) can meet the three main objectives of agricultural policies: increasing the production of grain in order to strengthen food sovereignty, increasing the income of farmers, and reducing the negative

impact of agriculture on natural resources.

The Senegalese “old peanut basin” was chosen for this study because it is a region emblematic of rain-fed agriculture in the Sudano-Sahelian strip of Africa. The objective is thus to evaluate measures simultaneously promoting ecological intensification and the reduction of inequalities in a region strongly affected by poverty, where demographic pressure has led to such a shrinkage of pastoral areas that the possibilities of intensification through the sole optimization of local biomass flows are limited.

METHODS

In order to assess the impact of public policies on income inequalities and on agro-ecological intensification, a bio-physical model was used to model crop yields under a variety of cropping practices. Data from 1,770 household surveys were used in an economic farm model simulating the decisions of two types of farmers, in three areas of the peanut basin: Sine, Saloum, and the Louga region. Eight

types of policies were considered and chosen in order to correspond to a total budget for the state of around 60 billion CFA francs, i.e. 100,000 CFA francs per household (150 €). The model allows for each policy to simulate income, production, household self-consumption, or even the adoption of ecologically intensive production techniques.

The accompanying policies considered aim to reduce the two main constraints to agro-ecological intensification: risk and liquidity. The policies of direct transfer of liquidity to households and credit subsidy, combined with greater access to credit (the interest rate is divided by 10 and each farmer can borrow a third of their income), are intended to directly alleviate the liquidity constraint. By reducing the price of fertilizers by 50%, the fertilizer subsidy acts in a similar manner. Each of these policies may be combined or not with index insurance for drought risk, in order to reduce this risk and thus the economic impact on households of year-to-year fluctuations in climate.

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Geography Senegal

Find out more about this project: <https://www.afd.fr/en/carte-des-projets/agroecology-public-policies-and-income-inequalities-rural-regions-senegal>

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RESULTS

Fertilizer subsidy policies, with or without insurance, would be the most effective in reducing poverty and inequalities.

The ratio between the income of the richest and the poorest, which is 12.3 in the basic simulation (i.e. without a specific policy), increases to 9.5 with a fertilizer subsidy with insurance due to the growth of the income of the poorest farmers. In Sine, their income increases by 30% (and 26% without insurance). In Saloum, although the interest rate subsidy is the most favorable, the income of the poorest still increases by 22% (and 20% without insurance) after the introduction of a fertilizer subsidy. Despite its positive impact on the income of the poorest groups, however, it should be noted that this measure does not allow the poorest farmers to be above the poverty line in Sine or in Saloum. There is also no significant impact on income in the Louga area for two reasons. First, as millet becomes more profitable, its production

increases at the expense of groundnuts, so that income increases very slightly. Then, households in the area derive most of their income from the migration of some of their members to countries of the North. Therefore, they are not very sensitive to the measures tested, since agriculture is a marginal activity which is less profitable than migration.

Fertilizer subsidy policies, with or without insurance, would allow balanced growth in grain production.

Fertilizer subsidies would entail an increase in millet production by 132% with insurance and 91% without insurance for the poorest farms. The less poor should also benefit from an increase in their production by 51% with insurance and 49% without insurance. However, this increase once again comes at the expense of groundnut production. In Saloum, there is an increase in corn production by around 50% for both types of farms studied; for the poorest farmers, this comes with an increase in millet production (by 42%

without insurance and 49% with) and a sharp decrease in groundnut production. On the other hand, the latter remains constant for the least poor farms and that of millet decreases slightly (by 8% with insurance and by 6% without).

Areas cultivated with agro-ecologically intensive techniques would become larger with the fertilizer subsidy, with or without insurance.

This subsidy would lead to the general use of balanced organic and mineral fertilization over most of the area cultivated. Indeed, the areas where agro-ecological techniques are used would increase from 46% in the basic simulation to 68% with the implementation of a fertilizer subsidy combined with insurance (and 66% with the fertilizer subsidy only). The reasonable use of nitrogen fertilizers could also serve as a lever to increase the biomass available to maintain sufficient soil fertility in the long run through organic fertilization, thereby making it possible to increase agro-ecological areas.

RECOMMENDATIONS

- ▶ Expanding mineral fertilizer subsidies by ensuring that these inputs reach all farmers, even the poorest (it is assumed here that farmers have access to subsidized fertilizers). Jointly, supporting the legume sector (groundnuts and cowpeas) to prevent fertilizer subsidies from disrupting the grain-legume rotation.
- ▶ In the medium run, observing the evolution of fertilization practices to anticipate the implementation of additional measures to prevent fertilizer abuse, if necessary.
- ▶ Protecting the existing agroforestry park and the remaining uncultivated areas to maintain the current carbon storage, and preserving extensive livestock farming and the integrated management of fertility that it allows.
- ▶ Developing activities upstream (supply of inputs or mechanized services) and downstream (transformation) of farming to provide the extra-agricultural jobs necessary to fight poverty and inequalities.