

29. Are Algerian agro-pastoralists adapting to climate change?

by

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Climate change in Algeria has led to increasing drought and erosion, damaging the livelihoods of agro-pastoralists trying to eke out a living on the steppe. In trying to adapt, herders have altered their traditional practices and behaviour over the years. Government policies – mainly subsidies – have had largely negative consequences. This is a good example of maladaptation.

Introduction

The Algerian steppe, which covers about 300 000 km² with 100 to 400 mm per year of rain (MARA, 1974), is pastoral feeding ground for 15 to 23 million livestock animals. It has experienced recurrent droughts since the 1970s and is highly exposed to wind and water erosion, mainly as a result of overgrazing and unregulated land clearing. Agro-pastoralists have had to change their farming practices to adapt to these increasing droughts. Their changed practices are not entirely because of climate change, however; they may be related to altered consumption patterns and to government policies regarding subsidies. This article explores Algerian agro-pastoralists' perceptions of climate change, whether they have changed their behaviour to adapt to climate change and other contextual changes, and the different types of behaviour they exhibit.

Methods

A survey was undertaken at the weekly livestock markets in the northern province of Laghouat during the summer of 2011. Approximately 600 agro-pastoralists from the 12 isolated communities in this region agreed to answer the questionnaire. An agro-pastoralist typology was created with the logistical tool STATISTICA 8 by means of the principal component analysis method. Three criteria were selected, each with a significant weight in the correlation analysis of the quantitative and qualitative variables: herd size, the size of the tilled area and the size of the areas used for grazing.

Four types of agro-pastoralists were identified (see Table 29.1).

Table 29.1. **Characteristics of the average holdings of a sample of pastoralists in rural Algeria, per agro-pastoralist type**

	Number of agro-pastoralists	Herd size (number)	Tilled area (ha)	Grazing areas (ha)
Type 1	416	16	44	67
Type 2	138	33	91	176
Type 3	34	32	109	562
Type 4	12	38	55	2 000
Total	600	22	58	159

Perceptions of climate change

About 55% of the respondents had heard about climate change and knew what it is about. Of these, 70% had heard about it on the radio. Those who had heard about climate change saw it as lack of rain, higher temperatures, more frequent sand storms, sand accumulations and a decrease in the land cover. About 88% added that climate changes had led to a lack of water in freshwater springs and wadis.¹

Changes over the last 60 years

Several changes, which are not all related to climate change, have occurred over the last 60 years and increased pressure on the land:

- Population density has increased, which, combined with weak job creation in the non-agricultural sectors, has put pressure on the land.
- The increase in purchasing power due to the wide-scale redistribution of oil revenues – mainly to city dwellers – has led to an increase in the demand for lamb, the most popular meat for festive purposes in Algeria.
- Government policy has maintained free-to-harvest natural fodder units on state grazing land, which has led urban investors to invest in extensive sheep farming. This has resulted in an increase in livestock and, consequently, in overgrazing.
- Various government subsidy schemes, aimed at maintaining livestock numbers, have also led agro-pastoralists to change their practices.

Changing practices of different agro-pastoralists

There have been various changes in farming practices. The reaction of some agro-pastoralists to increasingly frequent droughts, which have caused a decrease in the vegetation-covered area, is – if they can afford it – to increase the size of the areas previously used for grazing and clear them to produce cereals (Bédrani, 1995). The questionnaire shows that 45% of the agro-pastoralists cultivate a broader area now than they did before. Only 30% of the respondents said they cultivated a smaller area, probably because of the impact of soil erosion on the available areas of arable land.

Most respondents (95%) said that the land supports fewer cattle than it did in the 1960s: of the respondents, 52% – mostly small-scale agro-pastoralists – reported having fewer sheep than before. Nevertheless, 28% mentioned that they owned more sheep and, of these, 67% were large-scale agro-pastoralists (type 4). The growing demand for meat and the state policy of providing low-price fodder during periods of scarcity could explain this anomaly.

Sheep fattening was traditionally undertaken in the north of the country, but 16% of the respondents now buy fodder to fatten their sheep directly on the steppe. This new fattening practice started in the 1980s and 1990s, when the state started to import and distribute livestock feed at subsidised rates or at prices much below market prices.

Irrigation is another new agro-pastoralist practice on the Algerian steppe. About 37% of the respondents irrigated their land. Although droughts have been frequent since the 1970s, about 79% of those who are currently irrigating only started doing so in the 2000s, when the state started to subsidise irrigation. Only 12% of those who irrigate the land produce fodder to feed their own animals. It has become more profitable for agro-pastoralists to produce vegetables than fodder, as buying imported fodder is less expensive.

Livestock feeding methods have also changed: of the respondents, 40% reported supplementing their cattle's yearly regimen with bought fodder rather than with grazing as they had done before. Of the agro-pastoralists, 60% said they only resorted to imported fodder in bad years.

Since the 1960s, the most relevant change in farming management has been the decrease in transhumance. In the 1960s, about 65% of the agro-pastoralists practised transhumance, but in 2011 only 22% did so. These were mainly small and medium-scale agro-pastoralists. This change is causing overgrazing, as the pastures now support sheep all year round.

Poor agro-pastoralists are abandoning cattle breeding along with their nomadic lifestyle. To mitigate the negative effects of frequent droughts, the poorest agro-pastoralists herd the cattle of others in exchange for wages. Of the respondents, 29% reported doing this, most of whom (76%) were small-scale agro-pastoralists. Of these, 44% had been doing so since the 1960s and 1970s, with only 9% starting after the 1990s and in the 2000s. Herding the cattle of others is therefore a traditional practice that is slowly decreasing in popularity as the poorest agro-pastoralists are increasingly settling down.

Conclusion

Most of the survey respondents appeared to know about climate change and its consequences for their land and livelihoods. In response to increased droughts, they have been altering their approaches to managing their herds, by increasing the area of cleared pasture and their herd size, buying more subsidised imported fodder and decreasing transhumance. It is nevertheless difficult to say to what extent these new herd-managing practices follow from climate change, or from other processes and contextual changes.

Increased irrigation and subsidies have not resulted in increased fodder production, which might have reduced overgrazing. These strategies have led to an increase in wind and water erosion and a decrease in vegetation or land cover on the steppe. Government measures and subsidy policies have not only failed to achieve what they were supposed to, but have to some extent exacerbated the situation. These maladaptation strategies are unlikely to lead to the sustainability of pastures and livestock, as Barnett and O'Neill (2010) point out.

To reverse this trend and ensure sustainable conservation of the Algerian steppe, the government needs to abandon its undifferentiated policy of supporting fodder production, and instead target the poorest agro-pastoralists. It should also require the large agro-

pastoralists, who are primarily urban investors, to pay for the use of natural pasture. In addition, such a “grazing tax” would allow the government to invest more in effective policies to conserve grazing land.

Finally, participatory research methods are needed to design and experiment with sustainable rangeland management, while increasing the income of the poorest agro-pastoralists.

Notes

1. A valley, gully or streambed that remains dry except during the rainy season.

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