Strengths and weaknesses of small dairy farms
A comparative study in a taluka of Anand district, Gujarat

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Introduction

The district of Anand is well known in India for having given birth in the late 1940s to the cooperative model Amul considered as very inclusive for the smallholder dairy farmers. This issue is crucial in India, which has 70 millions of farms producing milk, 80% of them having less than one hectare of land. But what are these Indian small dairy farms? What are their strengths in the current context, but also their weaknesses compared to other farms?
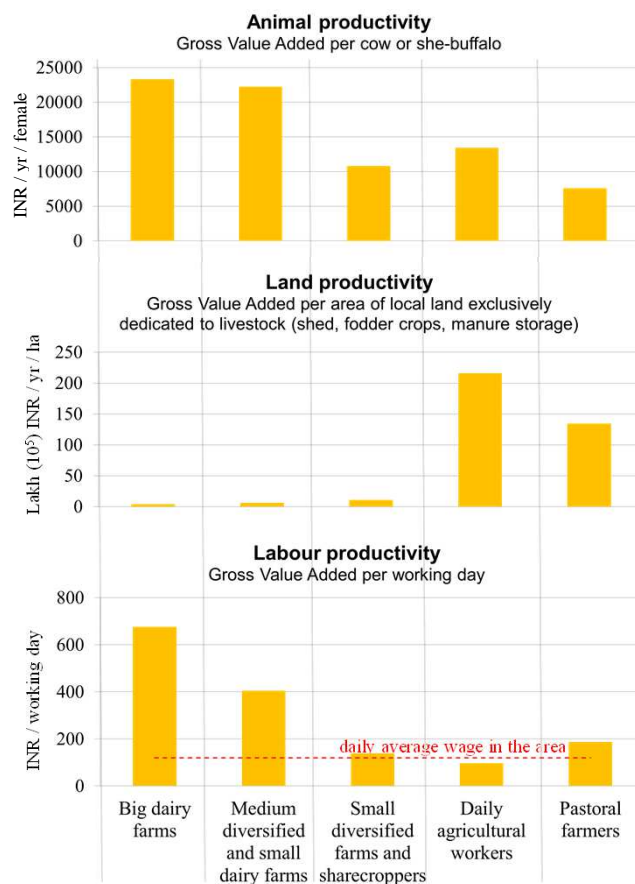
Materials and methods

To answer these questions, we led an agrarian system analysis in Petlad taluka, Gujarat, based on an intensive 4-months field work and in-depth interviews with farmers about their livestock practices. The characterization of the ecosystem resources and the reconstitution of the history of their tenure and use by the local population enabled us to capture the diversity of farms, which was then expressed through the modelling of farm archetypes and the assessment of their technical and economical results. These farms are here compared using three main indicators of productivity: the gross value added per animal, per hectare of land dedicated to livestock and per working day.

Results 1 – Dairy farms typology

Farm type	Surface (ha)*	Livestock	Feeding practices	Milk production (L/yr/fem.)
Big dairy farms	1-6	12-200 CC	Fodder crops (alfalfa, maize, sorghum) Purchased wheat chopped straw Purchased concentrates	2500
Medium diversified farms	0,4-2	4-12 CC	Cultivated napier Millet and rice straw Purchased concentrates	1800
Small dairy farms	0,08-0,25	3-4 CC and SB	Cultivated napier Millet and rice straw Purchased concentrates	1800
Small diversified farms	0,08-0,4	1-2 SB	Spontaneous green fodder, napier Millet and rice straw Purchased concentrates	1000
Sharecroppers	0 (0,5-3 sharecropping)	0-2 SB	Spontaneous green fodder, napier Millet and rice straw Purchased concentrates	1000
Daily agricultural workers	0	0-1 SB	Spontaneous green fodder from field borders and weeding Purchased concentrates	800
Pastoral farmers	0	5-35 IC and SB	Pastoral management Purchased straw or green fodder Purchased concentrates	1100

CC: Crossbred Cows; SB: She-Buffalo; IC: Indigenous Cow
* Almost all of the land in the taluka is irrigated

Results 2 – Compared productivities

Animal productivity
Gross Value Added per cow or she-buffalo

Land productivity
Gross Value Added per area of local land exclusively dedicated to livestock (shed, fodder crops, manure storage)

Labour productivity
Gross Value Added per working day

daily average wage in the area

Conclusions

As expected, the animal productivity is higher in the dairy farms rearing crossbred cows than in the small and landless farms with buffaloes. However, biggest dairy farms (> 75 cows) face troubles for management reasons, with consequences on animal productivity. Landless and pastoral farms appear to be more efficient in terms of land productivity than all the dairy farms, which make them very relevant in a context of low availability of land and food feed competition. However, the very low labour productivity of the small and landless farms – Rs. 100 to 200 per working day dedicated to livestock – shows that they are highly work demanding for spontaneous fodder collection. That is the reason why some daily agricultural workers quit livestock farming, thus losing this helpful income and questioning the future inclusiveness of the dairy sector.