



-PP0077-

Improving the productivity of dairy cattle and buffalo on small-holder dairy farms in Pakistan

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Abstract

Pakistan is one of the largest milk producing countries in the world with the majority of the 8.5 million dairy farms consisting of less than ten milking cows or buffalo producing less than 5 litres of milk per day. With a national herd exceeding 50 million animals in a relatively small agricultural area it is important that the productivity per animal be increased with the aim of reducing the size of the national herd while increasing national milk production.

We have studied the responsiveness of small-holder dairy farmers to dairy extension programs to improve the productivity in two regions of Punjab state. The farmers were either serviced by basic industry support services for the management of cow health and reproduction and provision of the feed base (Okara, n= 123) or where services were limited in the desert region of western Punjab (Bhakkar, n=107). We conducted a longitudinal survey of daily farm productivity over 2 years until December 2009.

The key extension messages related to untying animals to give the full access to water and feed and to the provision of greater quantities of high quality forages and concentrates where they were available. The other concepts introduced included appropriate vaccination against foot and mouth disease, drenching, calf rearing and reproductive efficiency. The extension team were instructed on how to work effectively with farmers with the ultimate goal of increasing farm income.

Farms based on buffalo did not record milk production responses to the extension protocols. By contrast dramatic increases of 1.9 litres per day were recorded in crossbred cattle based on Holstein Friesian and local tropically adapted breeds. Close to pure-bred Holstein-Friesian cattle responded with an increase of 6.8 litres per day, while with Sahiwal cattle the response was a modest 1.7 litres per day. Non-descript local cattle provided only a modest increment of 0.6 litres.

These results demonstrate that routine farm production systems are not meeting the needs of cattle breeds, whereas buffalo appear to be much better adapted to these environments. This would suggest that strategies used for boosting milk output from cattle will vary from those adopted in buffalo production systems. It is likely that the nutritional requirements for peak milk production will vary between genotypes: the physiological basis for this differential response requires closer investigation.

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Introduction

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Material and Method

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Result and Discussion

The responses in mean weekly milk yield over 2008 and 2009, varied according to species.

Figure 1: Changes in lactation performance in response to a concerted extension program focused on increasing water and feed intake in buffalo and different cattle genotypes

L milk /animal/day	Buffalo	Crossbreds	Desi/Local	Exotic	Sahiwal
Traditional management	5.505424	5.019251	3.8736467	6.767788	3.974141
Improved management	5.021151	6.959829	4.6101449	13.35881	5.648401
% change in production	0.93	53.74	14.89	100.36	46.130

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