



Livestock and nutrition: Summary of a discussion paper for the Livestock Emergency Guidelines and Standards Research summary¹

By Kate Sadler



Dr Kate Sadler is a public nutritionist with over 20 years of experience in the design, management, evaluation and research of nutrition interventions in Africa and Asia. She has a PhD in nutrition and has worked as a programme nutritionist, as assistant professor at Tufts University and is now an independent consultant.

The Livestock Emergency Guidelines and Standards (LEGS) is an independent initiative that aims to improve the quality and livelihoods impact of livestock-related projects in humanitarian contexts and commissioned this work. This article results from the work that LEGS commissioned.



Kelley Lynch-Save the Children

GLOBAL

What we know: Livestock interventions rarely consider the critical impact they can have on human health and nutrition outcomes.

What this article adds: Recently, there has been more focus on the potential for nutrition-sensitive agriculture and livestock interventions to improve nutrition outcomes including the release of a technical guidance by the Food and Agriculture Organization. A review of the key issues relating to nutrition in the context of livestock-based emergency interventions was conducted with particular attention to the contribution of livestock to nutrition at household level, the impact of emergencies on this contribution and the nutritional benefits of appropriate livestock-based emergency interventions. While the evidence for the direct impacts of livestock interventions on nutritional status is limited, there is considerable evidence that such interventions can improve household access to nutritious foods and the quality of mothers' and young children's diets. Evidence also increasingly suggests that agriculture and livestock interventions may be more impactful when they are focused on improving access to, and consumption of, nutritious food and diverse diets rather than on reducing malnutrition (stunting and wasting) directly.

Introduction

Livestock are ubiquitous in poor communities across the developing world. An estimated 68% of resource-poor rural households keep some type of livestock (Pica-Ciamarra, 2011). Livestock are a source of income and food, support crop production and provide insurance and social status for these households (Figure 1). The design of livestock interventions has rarely considered the critical livelihood outcomes of human health and nutrition. Instead, they have traditionally involved livestock support for the

primary purposes of income generation and poverty reduction (Ruel, 2018). Recently, there has been more focus on the potential for nutrition-sensitive¹ agriculture and livestock interventions to improve nutrition outcomes including the release of a technical guidance by the Food and Agriculture Organization (FAO, 2020).

A discussion paper was commissioned by the Livestock Emergency Guidelines and Standards (LEGS)² to review the key issues relating to nutrition in the context of livestock-based emergency interventions with particular attention

to the following key topics:

- The contribution of livestock to nutrition at household level
- The impact of emergencies on this contribution
- The nutritional benefits of appropriate livestock-based emergency interventions

The aim of the discussion paper was to provide detailed recommendations for the LEGS Advisory Committee on how nutrition can be better represented in the revised edition of the LEGS Handbook and the wider LEGS programme. Findings of the report were presented in a webinar in November 2020.³

Contribution of animal source foods to nutrition and dietary diversity

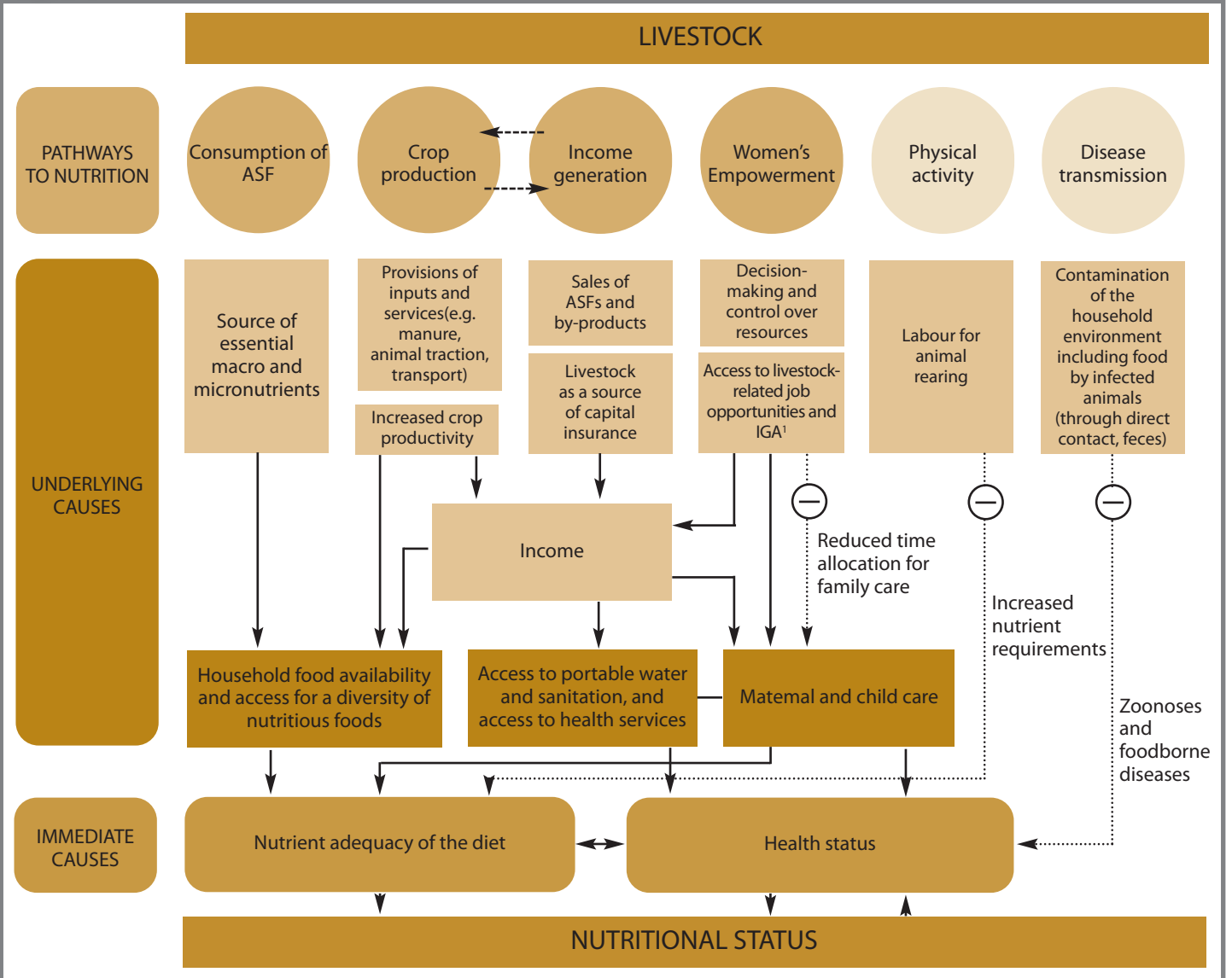
Animal source foods (ASF) are rich in micronutrients and proteins. The proteins they contain are of good quality and are highly digestible and the micronutrients include iron, zinc and vitamins A and B12 that are often

¹ Nutrition-sensitive interventions are designed to address the underlying causes of malnutrition. As nutrition is affected by access, availability and quality of food, a nutrition-sensitive intervention may focus on increasing agricultural productivity for own-consumption or sale. Such interventions may serve as an effective platform for nutrition-specific interventions which directly address the immediate causes of malnutrition – disease and poor dietary intake.

² <https://www.livestock-emergency.net/general-resources-legs-specific/>

³ Recording of the webinar is available at: <https://www.livestock-emergency.net/resources/legs-webinars-2/>

Figure 1 Impact Pathways from Livestock to Nutrition



⊖ represents a negative influence

Source: Food and Agriculture Organization (FAO, 2020)

lacking in the diets of the nutritionally vulnerable. The bioavailability (how much of a nutrient can be absorbed and used by the body) of these nutrients is also higher in ASF than in many plant-derived foods. For all these reasons, consumption of even small amounts of milk, meat, blood and eggs can contribute substantially to ensuring adequate nutrition. Organisations like the World Health Organization (WHO) recommend that they are included as part of balanced diets for nutritionally vulnerable groups. While ASF have traditionally made up a large part of the diet of some minority groups such as pastoralists, for most rural poor they are rarely eaten because they are relatively more expensive than foods from other food groups. ASF are considered a 'luxury' and livestock are used primarily for income generation.

There have been many studies in the past 10 years that have found positive associations between livestock ownership, dietary diversity (at household, child and/or women level) and, when measured, with increased intake of es-

sential micronutrients. A recent Field Exchange article described an agronomy and livestock programme implemented by Agronomes et Vétérinaires Sans Frontières in Mali that improved both child and maternal dietary diversity scores during a lean season (Bonde, 2016). Several other studies from Bolivia, Ethiopia, Nepal and Tanzania suggest that livestock ownership can significantly increase consumption of nutrient dense ASF by nutritionally vulnerable groups and thereby improve dietary diversity and quality.

Evidence of associations between livestock ownership, intake of ASF and nutritional status outcomes (stunting and wasting) is more limited. Much of the evidence comes from observational cross-sectional studies which do not allow for causal inferences. In addition, most studies examine height-for-age (stunting) only as an outcome which is usually less relevant than weight-for-height (wasting) for examining the impact of emergency interventions. The strongest evidence is seen for the association between milk

intake and improved linear growth (height) in children and, in some contexts, the magnitude of associations was greater for households that had limited access to markets and/or were poorer or affected by conflict – all factors particularly relevant for emergencies.

Factors that influence associations between livestock and nutrition

Women's empowerment has been considered a strategy to enhance household food security and nutrition for some time. The Women's Empowerment in Livestock Index (WELI) is a standardised measure now available to assess this. A study in pastoral communities in Tanzania found that women's control over livestock assets and income was positively associated with individual dietary diversity as it increased women's ability to produce or purchase more diverse nutritious foods. This suggests that opportunities to enhance gender equity can be particularly important for nutrition in vulnerable communities.

Knowledge can shape attitudes and behaviour towards improved family and child feeding habits. However, knowledge can only translate into improved nutrition if those acquiring that knowledge have some control over resources. Increasing the knowledge of those making consumption choices and empowering them to have more control over their resources has been found to be key to realising the potential of livestock production on nutrition. Linked to knowledge is a whole set of issues around taboos and cultural practice. Numerous cultural and religious beliefs and taboos influence consumption of ASF including restrictions on which ASF can be eaten by whom, with women and children in particular subject to such restrictions.

In low- and middle-income countries, the availability of animal milk may sometimes support sub-optimal **child-feeding practices**. Although WHO does not recommend animal milk for young children before 9 to 12 months of age, there is considerable evidence in the literature that shows that cow and other milk is often given to infants. Data from different studies have shown that cattle-keeping and other households with easy access to dairy cattle gave cow milk to children at a younger age compared to households with more limited access. The 'Milk Matters' study in Ethiopia, summarised in Field Exchange (Sadler and Catley, 2010), found that the introduction of animal milk to infants below nine months was common. This was practiced in response to mothers' perception that their breastmilk was not sufficient in quantity/quality because they themselves felt sick and/or fatigued.

The impact of exposure to animals and animal faeces on child health

There is on-going debate around the theory that child nutrition and health outcomes in developing countries may be adversely affected by exposure to animals and their faeces. The thinking behind this risk stems from several factors including the widespread ownership of livestock and pets in developing countries, the lack of housing and enclosure structures for livestock that separate animals from household members and, of course, the very high concentration of potentially harmful bacteria in animal faeces. Some research has focused on examining the association between the presence of animals/animal faeces and found there may be an association between hygiene practices, cattle numbers and acute malnutrition in some contexts and between animal faeces in household compounds and poor child nutrition outcomes.

However, despite strong plausible associations between household Water, sanitation and hygiene (WASH) practices and child growth, recent large robust trials have found that household level WASH interventions had no impact on the linear growth of children (Pickering, et al., (2019)) and this has reignited the debate amongst nutrition and WASH researchers regarding the

linkages between poor sanitation and nutrition. The authors concluded that community sanitation may be the crucial factor and highlight the need for more research on faecal contamination in the domestic environment including complete separation of animal faeces from people's living environments. As such, WHO guidelines, and other guidance, recommend that, given the association between diarrhoeal infection and nutrition, improving access to sound WASH practices should remain important for programmes that aim to address malnutrition.

The impact of emergencies on the association between livestock and nutrition

Factors that cause a decline in livestock ownership and reduced access to ASF, including milk, have been shown to have a direct negative impact on the nutrition of communities that are dependent on livestock. These factors disrupt the positive impact pathways between livestock and nutrition. They include armed conflict and drought or flooding that result in animal loss through sales, raids, death and disease. In the context of emergencies, there is a particular need to understand the livelihood strategies of affected communities. There are many examples of livestock keepers prioritising livestock wellbeing over the nutritional and wellbeing needs of their households in order to preserve long-term livelihoods. Emergencies can also have a detrimental effect on the health environment, increasing risks to humans for water and food borne disease caused by proximity to animals.

Lessons learnt

In summary, this review has highlighted that, while the evidence for the direct impacts of livestock interventions on nutritional status is limited, there is considerable evidence that such interventions can improve household access to nutritious foods and the quality of mothers' and young children's diets. Evidence increasingly suggests that agriculture and livestock interventions may be more impactful when they are focused on improving access to, and consumption of, nutritious food and diverse diets than on reducing malnutrition (stunting and wasting) directly.

It is important to note that most of the evidence reviewed in this paper comes from the development literature – this review highlights

a scarcity of studies that have examined the relationships between livestock ownership, consumption of ASF and nutrition in emergencies. While this is certainly a gap that needs to be filled, the development literature does provide important learning for nutrition that can be applied to livestock interventions in emergency contexts. This includes the need to consider:

- Designing interventions to maintain and/or improve access to ASF, especially for the nutritionally vulnerable populations
- Minimising exposure to the pathogens associated with livestock and livestock excreta
- Incorporating aspects of gender and women's empowerment for income generation and choices around expenditure
- Supporting nutrition knowledge and recommended care practices, particularly in relation to infant feeding

Recommendations

As an outcome of this review, several recommendations were made to LEGS in order to better address nutrition in a revised version of the handbook. These included some details by handbook chapter which broadly covered the need to:

- Add 'human nutrition' as a cross cutting theme because there are implications for almost every area covered by LEGS
- Use a nutrition lens throughout the programme cycle that examines both the positive and negative potential impacts of livestock interventions for nutrition
- Emphasise the value of measuring nutrition impacts through improving access to, and consumption of, nutritious food and diverse diets as well as through changes in nutritional status

Conclusion

In conclusion, this paper highlights why greater integration between the livestock and nutrition sectors is necessary to ensure livestock livelihoods and ASF contribute to addressing malnutrition. Not using livestock as a pathway out of malnutrition would be a missed opportunity and, as such, the recommendations outlined in this paper could play an important role in achieving global nutrition goals.

For more information, please contact Kate Sadler at ksadlerwork@gmail.com

References

Bonde, Damouko. (2016). Impact of agronomy and livestock interventions on women's and children's dietary diversity in Mali. Rep. Field Exchange Issue 51. Emergency Nutrition Network, Oxford, UK.

FAO. (2020). Nutrition and Livestock - Technical guidance to harness the potential of livestock for improved nutrition of vulnerable populations in programme planning. Food and Agriculture Organization, Rome.

Pica-Ciamarra, U., L.Tasciotti, J.Otte, and A.Zezza. (2011). Livestock Assets, Livestock Income and Rural Households. Cross country evidence from household surveys. the World Bank, FAO, ISS, Washington D.C.

Pickering, A.J., Null, C., Winch, P.J., Mangwadu, G., Arnold, F.J., Prendergast, A.J., Njenga, S.M., Rahman, M., Ntozini, R., Benjamin-Chung, J., Stewart, C.P., Huda, T.M.N., Moulton, L.H., Colford Jr, J.M., Luby, S.P. and Humphrey, J.H. (2019). The WASH Benefits and SHINE Trials: Interpretation of WASH intervention effects on linear growth and diarrhoea. *Lancet Global Health* 2019; 7: e1139-46 Ruel, M.T., A.R. Quisumbing, and M. Balagamwala. (2018). Nutrition-sensitive agriculture: What have we learned so far? *Global Food Security* 17:128-153.

Sadler, Kate and Catley, Andy. (2010). Milk Matters: Improving Health and Nutritional Status of Children in Pastoralist Communities. Field Exchange Issue 51. Emergency Nutrition Network, Oxford, UK.