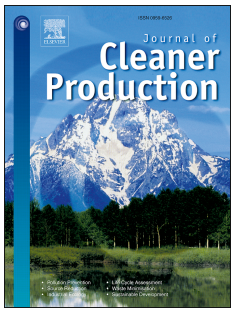
Accepted Manuscript



Environmental, economic and social analysis of peri-urban pig production

S. Wei, Z.H. Bai, W. Qin, L.J. Xia, O. Oenema, R.F. Jiang, L. Ma

PII: S0959-6526(16)30205-0

DOI: 10.1016/j.jclepro.2016.03.133

Reference: JCLP 6982

To appear in: *Journal of Cleaner Production*

Received Date: 3 November 2015

Revised Date: 15 March 2016

Accepted Date: 15 March 2016

Please cite this article as: Wei S, Bai ZH, Qin W, Xia LJ, Oenema O, Jiang RF, Ma L, Environmental, economic and social analysis of peri-urban pig production, *Journal of Cleaner Production* (2016), doi: 10.1016/j.jclepro.2016.03.133.

Environmental, economic and social analysis of peri-urban pig production

S. Wei [a,b], Z.H. Bai [b], W. Qin [c], L.J. Xia [a], O. Oenema [c], R.F. Jiang*[,a], L. Ma *[,b]

[a] College of Resources and Environmental Sciences, China Agriculture University, Beijing 100193, P.R. China;

[b] Key Laboratory of Agricultural Water Resources, Center for Agricultural Resources Research, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, 286 Huaizhong Road, Shijiazhuang 050021, Hebei, China;

[c] Department of Soil Quality, Wageningen University, P.O. Box 47, 6700 AA, Wageningen, The Netherlands.

Abstract:

Intensive livestock production expands rapidly around cities to meet the food demand and the improvement of people's living standard in developing countries, such as China. However，little is known about the environmental costs and socio-economic performances of these systems. Here, the performance of peri-urban pig farms in Beijing was assessed, using data of a comprehensive survey conducted on 92 pig farms during 2012-2013 and calculations with the Nutrient flows in Food chains, Environment and Resources model. 13 indicators related to environmental, economic, and social aspects were selected for this assessment. This is an important study unravelling the complexity and dynamics of the pig production system in peri-urban area. Results show that larger farms performed better than smaller farms, mainly because large farms had lower feed cost and better manure management. Nitrogen and phosphorus surplus were negatively related to farm size and farm income positively, when expressed per unit of pork produced. Nitrogen and phosphorus use efficiency at animal level ranged from 21 to 26% and 28 to 34%, respectively. Meanwhile, the rate of nutrient surplus