Accepted Manuscript

Hazardous pollutants emissions and environmental impacts from fuelwood burned and synthetic fertilizers applied by tobacco growers in Pakistan

Majid Hussain, Riffat Naseem Malik, Adam Taylor, Maureen Puettmann

PII: S2352-1864(16)30074-8
DOI: http://dx.doi.org/10.1016/j.eti.2017.02.003
Reference: ETI 112

To appear in: *Environmental Technology & Innovation*

Received date: 16 September 2016

Please cite this article as: Hussain, M., Malik, R.N., Taylor, A., Puettmann, M., Hazardous pollutants emissions and environmental impacts from fuelwood burned and synthetic fertilizers applied by tobacco growers in Pakistan. *Environmental Technology & Innovation* (2017), http://dx.doi.org/10.1016/j.eti.2017.02.003

Hazardous pollutants emissions and environmental impacts from fuelwood burned and synthetic fertilizers applied by tobacco growers in Pakistan

Majid Hussain[1, 2, 3], Riffat Naseem Malik[2]*, Adam Taylor[3], Maureen Puettmann[4]

[1]*Environmental Biology and Ecotoxicology Laboratory, Department of Environmental Sciences, Quaid-i-Azam University, Islamabad, 45320, Pakistan*

[2]*Department of Forestry and Wildlife Management, University of Haripur, Hattar Road Haripur 22620, Khyber Pakhtunkhwa, Pakistan*

[3]*Center for Renewable Carbon, Department of Forestry, Wildlife and Fisheries, University of Tennessee, Knoxville, TN, 37996-4570, USA*

[4]*Woodlife Environmental Consultants LLC, Oregon, USA*

Corresponding author: *Riffat Naseem Malik and Adam Tylor*

Address: *Environmental Biology and Ecotoxicology Laboratory, Department of Environmental Sciences, Quaid-i-Azam University, Islamabad, 45320, Pakistan and [3]Center for Renewable Carbon, Department of Forestry, Wildlife and Fisheries, University of Tennessee, Knoxville, TN, 37996-4570, USA*

Email: r_n_malik2000@yahoo.co.uk, mtylo29@utk.edu

Telephone & Fax No.: 0092 51 90643017

Abstract

This study aimed to estimate hazardous and greenhouse gas (GHG) emissions and associated environmental impacts from fuelwood burning and synthetic fertilizer application by tobacco growers in Pakistan during the cropping year of 2014-2015. Primary data regarding fuelwood and synthetic fertilizers consumption were collected through surveys and interviews with tobacco growers in the Khyber Pakhtunkhwa (KP) and Punjab provinces of Pakistan. Annual fuelwood consumption data (t dm/y) were converted into harvested biomass (m^3) using a general wood density value of 0.65 t dm/m^3. For annual GHG estimations, methodology outlined by the Intergovernmental Panel on Climate Change (IPCC) was applied. The results revealed that fuelwood consumption varies from region to region and amounted to 99,268 t dm and 152,721 m^3 during the cropping year 2014-2015. GHG emissions from fuelwood burned by tobacco curing barns are estimated as 160,245 tCO_2, 705 tCH_4, and 4.74 tN_2O in 2014-15. Moreover, consolidated GHG