

**Table S9** Settings of the meteorological variables, soil properties and management practices as model inputs for the sensitivity analysis of ammonia volatilization from the upland and rice paddy field cases.

Items		Upland case (U37) <sup>a</sup>			Rice paddy filed case (P4) <sup>a</sup>		
		Baseline	Lower bounds	Upper bounds	Baseline	Lower bounds	Upper bounds
Meteorological variables	$T_{\text{air}}$ (°C) <sup>b</sup>	30.5	27.5/28.5/29.5	31.5/32.5/33.5	25.0	22.0/23.0/24.0	26.0/27.0/28.0
	$P$ (cm) <sup>b</sup>	4.0	2.8/3.2/3.6	4.4/4.8/5.2	6.5	4.6/5.2/5.9	7.2/7.8/8.5
	$W$ (m s <sup>−1</sup> ) <sup>b</sup>	1.5	1.1/1.2/1.4	1.7/1.8/2.0	1.9	1.3/1.5/1.7	2.1/2.3/2.5
	$R$ (W m <sup>−2</sup> ) <sup>b</sup>	303	212/242/273	333/364/394	264	185/211/238	291/317/343
Soil properties	Clay (%)	15.3	10.7/12.2/13.8	16.8/18.4/19.9	20.6	14.4/16.5/18.5	22.7/24.7/26.8
	pH	8.2	7.3/7.6/7.9	8.5/8.8/8.9	7.1	6.2/6.5/6.8	7.4/7.8/8.1
	SOC (g C kg <sup>−1</sup> ) <sup>b</sup>	8.5	6.0/6.8/7.7	9.4/10.2/11.1	25.5	17.9/20.4/23.0	28.1/30.6/33.2
	BD (g cm <sup>−3</sup> ) <sup>b</sup>	1.32	1.17/1.22/1.27	1.37/1.42/1.47	1.04	0.89/0.94/0.99	1.09/1.14/1.19
Field management practices	Irrigation amount (cm)	0	—	0.2/0.5/5	—	—	—
	Floodwater depth (cm)	—	—	—	4	2.8/3.2/3.6	4.4/4.8/5.2
	N type	Urea	—	ABC <sup>b</sup> /Other	Urea	—	ABC <sup>b</sup> /Other
	N dose (kg N ha <sup>−1</sup> )	148.3	104/119/133	163/178/193	81	57/65/73	89/97/105
	N depth (cm)	0	—	5/10/15	0	—	5/10/15

<sup>a</sup> The definitions of the case codes U37 and P4 are referred to Table 2 and Table S6, respectively.

<sup>b</sup>  $T_{\text{air}}$  and  $W$  are 3-hourly averages of air temperature and wind speed during measurement periods of ammonia volatilization, respectively.  $P$  and  $R$  are 3-hourly totals of precipitation and solar radiation during measurement periods of ammonia volatilization, respectively. SOC and BD are the abbreviations of soil organic carbon content and bulk density, respectively. ABC is the abbreviation of ammonium bicarbonate. Other stands for ammonium-based nitrogen (N) fertilizers excluding ABC.