

CHAPTER 17

SWAT INPUT DATA: FERT.DAT

SWAT uses five databases to store information related to plant growth, urban land characteristics, tillage implements, fertilizer components and pesticide properties. The fertilizer database summarizes the relative fractions of nitrogen and phosphorus pools in the different fertilizers. Information on levels of bacteria in manure is also stored in this file. Appendix A documents the source of parameter values in the database file provided with the model.

Following is a brief description of the variables in the fertilizer database file. They are listed in the order they appear within the file.

Variable name	Definition
IFNUM	Fertilizer identification number. IFNUM is the reference number used in the management file to identify the fertilizer type being applied. The different fertilizers/manures in the fertilizer database must have unique values for IFNUM. Required.
FERTNM	Name of fertilizer/manure (up to 8 characters allowed). Required.
FMINN	Fraction of mineral N (NO_3 and NH_4) in fertilizer (kg min-N/kg fertilizer). Value should be between 0.0 and 1.0. Required.
FMINP	Fraction of mineral P in fertilizer (kg min-P/kg fertilizer). Value should be between 0.0 and 1.0. Required.
FORGN	Fraction of organic N in fertilizer (kg org-N/kg fertilizer). Value should be between 0.0 and 1.0. Required.
FORGP	Fraction of organic P in fertilizer (kg org-P/kg fertilizer). Value should be between 0.0 and 1.0. Required.
FNH3N	Fraction of mineral N in fertilizer applied as ammonia (kg $\text{NH}_3\text{-N}$/kg min-N). Value should be between 0.0 and 1.0. Required.
BACTPDB	Concentration of persistent bacteria in manure/fertilizer (# cfu/g manure). Optional.

Variable name	Definition
BACTLPDB	Concentration of less-persistent bacteria in manure/fertilizer (# cfu/g manure). Optional.
BACTKDDB	Bacteria partition coefficient. Value should be between 0.0 and 1.0. As the bacteria partition coefficient approaches 0.0, bacteria is primarily sorbed to soil particles. As the bacteria partition coefficient approaches 1.0, bacteria is primarily in solution. Optional.

The format of the fertilizer database file is:

Variable name	Line #	Position	Format	F90 Format
IFNUM	ALL	space 1-4	integer	i4
FERTNM	ALL	space 6-13	character	a8
FMINN	ALL	space 14-21	decimal(xxxx.xxx)	f8.3
FMINP	ALL	space 22-29	decimal(xxxx.xxx)	f8.3
FORGN	ALL	space 30-37	decimal(xxxx.xxx)	f8.3
FORGP	ALL	space 38-45	decimal(xxxx.xxx)	f8.3
FNH3N	ALL	space 46-53	decimal(xxxx.xxx)	f8.3
BACTPDB	ALL	space 54-61	decimal(xxxx.xxx)	f8.3
BACTLPDB	ALL	space 62-71	decimal(xxxxxxxx.xx)	f10.2
BACTKDDB	ALL	space 72-81	decimal(xxxxxxxx.xx)	f10.2

