FALLOW input parameters and their definition.

A = Agroforest
B = Biodiversity
C = Crop
CP = Crop Production
D = Decision to Crop
F = Farm
H = Household
L = Landscape
LC = Land Cover
M = Maps
P = Productivity
R = Ruthenberg
S = Soil
W = Water

No	Acronym	Definition	Dimensions	Range of value (Default value)
1.	A_AF_development?	Parameter governing development of plots that were cleared for food crops into agroforests. 0 = no development, 1 = development into agroforest. .	Dimensionless	0 or 1 (0)
2.	A_AFFlucPriceRatio	Equivalent value of agroforest products to rice. Graphical input.	dimensionless	-
3.	A_AFkgperday(Vegetation)	Potential returns to labour in agroforests of various age ('vegetation') classes, expressed as kg rice-equivalent per day work. Only for agroforest vegetation class: early, full and late-productive stage. Graphical input	Kg rice day^{-1}	0 – 20
4.	A_AFMgperha(Vegetation)	Maximum yield per unit area from agroforest vegetation class, expressed as Mg rice-equivalent per ha. Only for agroforest vegetation class: early, full and late-productive stage. Graphical input.	Mg rice ha^{-1}	0 – 20
5.	A_DistFactorForP	Parameter influencing the impact of distance on field attactiveness in collecting forest products	Dimensionless	0 – 1 (0.3)
6.	A_ForPFlucPriceRatio	Equvalent value of forest products to rice. Graphical input.	dimensionless	-
7.	A_MaxHarvForP(Field)	Maximum yield of forest product harvested per ha from each vegetation class. Graphical input.	Mg rice ha^{-1}	-
8.	A_MaxRettoLabForP(Vegetation)	Maximum return to labour for forest products harvested from each vegetation class. Graphical input.	Person days	-

No	Acronym	Definition	Dimensions	Range of value (Default value)
9.	B_RelRichnessWithoutForNb	Species richness in plot without forest neighbour relative to its maximum value.	dimensionless	0 – 1 (0.6)
10.	B_SpecOverlap(Vegetation,Vegetation)	Probability (fraction) of species overlap in species composition between two vegetaion types	Dimensionless	0 – 1, arrays
11.	B_SpecRich_K	Parameter influencing how species richness increase with time, indication of 'half-enrich-time'. Biodiversity parameter at plot level	Year	5 – 100 (30)
12.	B_SpecRichMax	Maximum of species richness (number of species) per field reached. Biodiversity parameter at plot level	# Species/plot	50 – 500 (200)
13.	B_SpecRichPowe(Vegetation)	Biodiversity parameter at landscape level: power of relation between number of fields and total richness for each vegetation class	Dimensionless	0.1 – 0.4 (0.2)
14.	B_VegClassBound(Vegetation)	Minimum age of vegetation class. For young secondary forest, old secondary forest, old growth primary forest, early, full and late-productive AF stage. Values for the first three vegetation class has to be in ascending order.	Year	(5, 20, 50, 10, 20, 45)
15.	C_AccumRateF	Yearly increment in C stock during fallow periods	Mg ha^{-1} $year^{-1}$	2 – 15 (8)
16.	C_CropYStock	Time-averaged aboveground C stock for cropping years	Mg ha^{-1}	1 – 10 (5)
17.	C_RelAccumAF	Ratio of C accumulation for Agroforest relative to forest or fallow	dimensionless	0 – 1 (0.5)
18.	C_StockAGMax	Maximum aboveground C stock for a forest (end-point of fallow development)	Mg ha^{-1}	100 – 400 (250)
19.	C_StockBGmax	Belowground C stock at maximum soil fertility	Mg ha^{-1}	20 – 100 (50)
20.	CP_CropWorstW	Parameter defining weather/climate in relation to crop growth. 0 = weather are bad for crop, 0.99 = weather are appropriate for growing crop	dimensionless	0 – 0.99 (0.5)
21.	D_DistWghtCropping	Parameter defining the relative importance of distance to village relative to soil fertility in selecting of plots to open for next years crop	dimensionless	0 – 2 (0)
22.	D_TimeCrop	Number of consecutive years that a field is cropped, once the fallow vegetation has been removed	Year	1 – 5 (2)
23.	F_LabClear	Amount of labour needed to clear land per ha	person day $year^{-1}$	20 – 100 (60)
24.	F_LabCrop	Amount of labour needed to plant crop in 1 field	person day $year^{-1}$	20 – 100 (60)
25.	H_DailyFoodReqPC	Daily food requirement pro capita	Mg $person^{-1}$ $year^{-1}$	0.1 – 1 (0.5)
26.	H_ForestResFrac	Fraction of reserved forest area	dimensionless	0 – 1 (0)

No	Acronym	Definition	Dimensions	Range of value (Default value)
27.	H_LossStoreFrac	Fraction of rice lost from the store per year	dimensionless	0.1 – 1 (0.15)
28.	K_YieldMemory	Parameter governing farmer's memory of past crop yield: 0 = last years results replace all memory, 1 = no learning from recent experience	dimensionless	0 – 1 (0.75)
29.	L_BestActPref	Weighting factor for the relative share of the activity type with the highest returns to labour: 1 = proportional time allocation, >1 more than proportional time allocation	dimensionless	1 – 5 (1)
30.	L_FoodSecPref	Preference to growing food crops in time allocation, even if other activities have higher returns to labour	dimensionless	1 – 5 (1.5)
31.	L_IncludeForestProduct?	Parameter governing inclusion of forest product gathering into labour allocation. 0 = forest product not simulated, 1 = otherwise	dimensionless	0 or 1 (0)
32.	L_Persondays	Average labour time available per person per year	person day $year^{-1}$	150 – 300 (200)
33.	LC_OldAFRelNBvalue	Relative land cover value of plot with old agroforests as neighbour.	dimensionless	0 – 1 (0.5)
34.	LC_OldSecRelNBvalue	Relative land cover value of plot with old secondary forest as neighbour.	dimensionless	0 – 1 (0.5)
35.	LC_Pfireescape[vegetation]	Probability of a plot of a certain vegetation type to catch fire from adjacent cleared neighbouring plots (4 possibillities). Actual probability is LC_Pfireescape[vegetation] to the power of LC_SocialCapFireControl	dimensionless	(0 – 1)
36.	LC_SocialCapFireControl	Parameter representing how strong the local institutions in controlling fire. The magnitude of probability of fire is influenced by this parameter. Actual probability is LC_Pfireescape[vegetation] to the power of LC_SocialCapFireControl. The higher 'the social capital of fire prevention' the lower the probability	dimensionless	(0 – 4)
37.	M_AFHist?	1 = field is an agroforest, 0 = non-agroforest. Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
38.	M_Crop_Type	Type of crop planted. There are 4 type of crop. 1 = landrace, 2 = newselection, 3 = HYV_1 (High Yielding Variety_1) and 4 = HYV_2	dimensionless	1 – 4 (1)
39.	M_CropConvLib(CropSelection)	Parameter influencing conversion from soil fertility units into crop yields. e.g. for S_Finf = 10 & S_FertDeplet = 0.2, then a value of 3 will lead to a maximum yield of 6 Mg ha^{-1}	Mg ha^{-1} per FertUnit	0.1 – 5 (0.5,0.8,1.2,2)
40.	M_CropSensLib(CropSelection)	Parameter influencing impacts of weather on crop production	dimensionless	1 – 5 (1,1.5,2,2.5)
41.	M_DistToStream	Distance to stream. Only if M_InitFromMap?=1. Input from Excel.	users defined	

No	Acronym	Definition	Dimensions	Range of value (Default value)
42.	M_DistToVillage	Distance to Village. Only if M_InitFromMap?=1. Input from Excel.	users defined	
43.	M_FinfFieldMap	Soil fertility value to which the soil returns after an infinitely long fallow period . Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
44.	M_ForestReserve?map	1 = Field is forest reserve, 0 = non forest-reserve. Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
45.	M_InitCropHist	Intial vegetation type of field. Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
46.	M_InitFertFieldMap	Initial soil fertility of the field. Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
47.	M_InitFromMap?	Parameter governing type of input values for some of parameters. 0 = from inside the stella file, 1 = from excel file (FALLOW-Output.xls)	dimensionless	0 or 1 (0)
48.	M_KFertFieldMap	Half recovery time for soil fertility. Only if M_InitFromMap?=1. Input from Excel.	year	
49.	M_SlopeClassMap	Slope class of field. Only if M_InitFromMap?=1. Input from Excel.	dimensionless	
50.	P_MaxEmigrFrac	Maximum rate of person migrated out per year as a fraction of current population. Related to P_Migration = 1	$year^{-1}$	0 – 0.3 (0.1)
51.	P_MaxImmigr	Maximum rate of person migrated in per year as a fraction of current population. Related to P_Migration = 1	$year^{-1}$	0 – 10 (4)
52.	P_Migration?	Parameter governing migration dynamic. 0 = no migration 1 = migration is simulated	dimensionless	0 or 1 (0)
53.	P_PopDensInit	Initial human population density	person km^{-2}	0 – 100 (10)
54.	P_PopEffectHunger	Effect of food sufficiency on population. If availability of food is fully sufficient than no effect on population. If food sufficiency is almost 0, then high rate of mortality.	person km^{-2} year	-1 – 0 (graphical input)
55.	P_PopGrowth?	Parameter governing population growth dynamic. 0 = constant population, 1 = dynamic population	dimensionless	0 or 1 (0)
56.	P_PopGrowthRate	Population growth rate as a fraction of current population. Related to P_PopGrowth? = 1	$year^{-1}$	0 – 0.08 (0.03)
57.	P_Quality_oflife_Elsewhere	Quality of life in other places as a driving factor for migration. Related to P_Migration = 1	dimensionless	0.2 – 5 (1)
58.	P_Quality_oflife_Here	Quality of life locally as a driving factor for migration. Only for P_Migration = 1	dimensionless	0.2 – 5 (1)
59.	P_Returntolab_Elsewhere	Return to labour (wage) in other places as a driving factor for migration. Only for P_Migration = 1	dimensionless	1 – 10 (2)

No	Acronym	Definition	Dimensions	Range of value (Default value)
60.	R_ForestRFrac	Fraction of plot as forest reserves	dimensionless	0 – 1 (0)
61.	R_RegulMeth	Parameter to adjust cropping intensity: 0 = constant cropping intensity, 1 = based on the rice store only, 2 = includes consumption and yield estimates, based on recent experience.	dimensionless	0, 1 or 2 (2)
62.	R_RiceStockTarget	Target number of years annual rice consumption can be met from the rice store	year	0 – 3 (2)
63.	R_StepIntensif	Parameter influencing maximum changes in cropping intensity due to deviation of yield from target. Maximum changes is H_MaxStep * H_IntensificationStep	dimensionless	0.01 – 0.3 (0.05)
64.	R_StepMax	Parameter influencing maximum changes in cropping intensity due to deviation of yield from target. Maximum changes is H_MaxStep * H_IntensificationStep	dimensionless	1 – 5 (2.5)
65.	S_FertDepletion	Fraction by which soil fertility decreases during 1 year of cropping	dimensionless	0.1 – 1 (0.2)
66.	S_FertilizUse?	Parameter determining use of fertilizer. 0 = system not using fertilizer, 1 = using fertilizer	dimensionless	0 or 1 (0)
67.	S_FieldRule	Parameter influencing decision on which fiel to crop. 1 = Decisions on which fields to crop are not based on current fertility; 2 = Farmers classify fields by soil fertility (& distance to village) and choose the best fields to crop	dimensionless	1 or 2 (2)
68.	S_Finf_Avg	Soil fertility value to which the soil returns after an infinitely long fallow period	fertility units	1 – 20 (10)
69.	S_Finf_range	The range of S_Finf_Avg variation between fields	dimensionless	0 – 2 (0.3)
70.	S_InitRFH	Parameter defining a maximum multiplier for initial soil fertility units.		0.2 – 1 (0.95)
71.	S_InitRFL	Parameter defining a minimum multiplier for initial soil fertility units. Initial soil fertility is varied, relative to F_infinity, within a range of (Sinit RFH - InitRFL)	dimensionless	0.01 – 1 (0.7)
72.	S_Kfert_Avg	Half recovery time for soil fertility during fallow period. Suggested values: Natural fallow =10–20, Improved fallow = 5–10, Cover crop = 2–5,Fertilizer = 0.5–2	year	0 – 20 (15)
73.	S_Kfert_Range	The range of S_Kfert variation between fields	dimensionless	0 – 2 (0.3)
74.	S_Kfertfertil	Parameter influencing impact of fertilizer use on soil fertility	dimensionless	0.1 – 10 (2)
75.	W_FiltMaxVegType	Maximum filter effect by each vegetation type. Linked from WATBAL sheet in fallow.xls. 1=Pioneer, 2 = Young Secondary Forest, 3 = Old Secondary Forest, 4 = Primary Forest, 5 = Agroforestry System – Pioneer, 6 = Agroforestry System – Early Production,		
76.	W_InitSoilPhysQ	Initial value of the soil physical quality of all plots, determining infiltration rates	dimensionless	(1)

No	Acronym	Definition	Dimensions	Range of value (Default value)
77.	W_K_Filter	Half-saturation value for the filter effect of land covers close to the river on sediment flows from plots up-hill (units Mg soil ha-1 yr-1)	Mg soil ha-1 yr-1	(1000)
78.	W_Parameters	Water parameters. Linked from WATBAL sheet in fallow.xls.		
79.	W_RainMaxImpact	Linked from WATBAL sheet in fallow.xls.		
80.	W_SedFloDistFactor	Factor determining how strong the 'distance to river' influences sediment transfer to the streams and rivers	dimensionless	(0.7)
81.	W_SedProdVegType	Potential sediment load from each vegetation type. Linked from WATBAL sheet in fallow.xls.		
82.	W_SoilPhysQChange	Soil physical changes due to vegetation, for each vegetation type. Linked from WATBAL sheet in fallow.xls.		
83.	W_WusePerClass	Average water use for each vegetation type. Linked from WATBAL sheet in fallow.xls.		