S 1. Classification of GAEZ crops and crop groups adapted based on Fischer et al. (2021)

GAEZ crop	FAO item code	Crop group
Banana	486	Fruits & nuts
Barley	44	Cereals
Cassava	125	Roots & tubers
Cotton	328	Cotton
Fodder crops	639, 640, 643, 637, 638, 641, 645, 647, 651, 655	Fodder crops
Fruits and nuts	217, 220, 222, 225, 234, 249, 490, 495, 507, 515, 521, 526, 534, 536, 558, 560, 567, 568, 571, 572, 574, 577, 587, 592, 603, 619, 491, 492, 493, 494, 497, 512, 569, 591, 600, 523, 530, 531, 541, 542, 544, 547, 549, 550, 552, 554, 489	Fruits & nuts
Groundnut	242	Oilcrops
Maize	56	Cereals
Millet	79	Cereals
Oil palm	254	Oilcrops
Olive	260	Oilcrops
Other cereals	71, 75, 89, 108, 68, 92, 94, 97, 101, 103	Cereals
Potato and sweet potato	116, 122	Roots & tubers
Pulses	176, 181, 187, 191, 195, 201, 211, 203, 205, 210, 197	Pulses
Rapeseed	270, 292	Oilcrops
Rest of crops	161, 280, 289, 333, 339, 687, 689, 720, 723, 777, 782, 788, 789, 263, 265, 275, 296, 299, 336, 773, 780, 800, 809, 821, 216, 221, 223, 224, 226, 671, 677, 692, 693, 698, 702, 711, 748, 754, 836, 839, 277, 305, 310	Rest
Sorghum	83	Cereals
Soybean	236	Oilcrops
Stimulants	656, 661, 667	Stimulates
Sugar beet	157	Sugar crops
Sugar cane	156	Sugar crops
Sunflower	267	Oilcrops
Tobacco	826	Stimulates
Vegetables	358, 372, 373, 388, 393, 394, 397, 399, 402, 406, 423, 426, 446, 449, 463, 366, 367, 401, 407, 414, 417, 420, 430, 459, 461, 1735	Vegetables
Wetland rice	27	Cereals
Wheat	15	Cereals
Yams and other roots	135, 136, 137, 149	Roots & tubers

S 2. Classification of SPAM crops and crop groups adapted based on Yu et al. (2020)

SPAM crop	Crop long name	FAO item code	Crop group
acof	Arabica Coffee	656	Stimulates
bana	Banana	486	Fruits
barl	Barley	44	Cereals
bean	Bean	176	Pulses
cass	Cassava	125	Roots & tubers
chic	Chickpea	191	Pulses
cnut	Coconut	249	Oilcrops
coco	Cocoa	661	Stimulates
cott	Cotton	328	Fibres
cowp	Cowpea	195	Pulses
grou	Groundnut	242	Oilcrops
lent	Lentil	201	Pulses
maiz	Maize	56	Cereals
ocer	Other Cereals	68, 71, 75, 89, 92, 94, 97, 101, 103, 108	Cereals
ofib	Other Fibre Crops	773, 777, 780, 782, 788, 789, 800, 809, 821	Fibres
oilp	Oilpalm	254	Oilcrops
ooil	Other Oil Crops	260, 263, 265, 275, 277, 280, 296, 299, 333, 336, 339, 305, 310	Oilcrops
opul	Other Pulses	181, 187, 203, 205, 210, 211	Pulses
orts	Other Roots	135, 136, 149	Roots & tubers
pige	Pigeon Pea	197	Pulses
plnt	Plantain	489	Fruits
pmil	Pearl Millet	79	Cereals
pota	Potato	116	Roots & tubers
rape	Rapeseed	270, 292	Oilcrops
rcof	Robusta Coffee	656	Stimulates
rest	Rest Of Crops	161, 216, 217, 220, 221, 222, 223, 224, 225, 226, 234, 671, 677, 687, 689, 692, 693, 698, 702, 711, 720, 723, 748, 754, 836, 839	Rest
rice	Rice	27	Cereals
sesa	Sesame Seed	289	Oilcrops
smil	Small Millet	79	Cereals
sorg	Sorghum	83	Cereals
soyb	Soybean	236	Oilcrops
sugb	Sugarbeet	157	Sugar crops
sugc	Sugarcane	156	Sugar crops
sunf	Sunflower	267	Oilcrops

swpo	Sweet Potato	122	Roots & tubers
teas	Tea	667	Stimulates
temf	Temperate Fruit	515, 521, 523, 526, 530, 531, 534, 536, 541, 542, 544, 547, 549, 550, 552, 554, 558, 560, 592, 619	Fruits
toba	Tobacco	826	Stimulates
trof	Tropical Fruit	490, 491, 492, 493, 494, 495, 497, 507, 512, 567, 568, 569, 571, 572, 574, 577, 587, 591, 600, 603	Fruits
vege	Vegetables	358, 366, 367, 372, 373, 388, 393, 394, 397, 399, 401, 402, 406, 407, 414, 417, 420, 423, 426, 430, 446, 449, 459, 461, 463, 1735	Vegetables
whea	Wheat	15	Cereals
yams	Yams	137	Roots & tubers

S 3. List of eleven household surveys to estimate the percentage of irrigated area per farm size from RuLIS (Fao, 2021)

Country	Year	Survey
Albania	2005	Living Standard Measurement Survey
Cambodia	2009	Cambodia Social-Economic Survey
Ethiopia	2014	Ethiopia Socialeconomic Survey
India	2012	India Human Development survey
Malawi	2011	Integrated Household Survey
Mali	2014	Enquête Agricole de conjoncture integree aux Conditions de Vie des Menages
Niger	2011	National Survey on Household Living Conditions and Agriculture
Nigeria	2013	General Household Survey
Timor-Leste	2008	Survey of Living Standards
United Republic of Tanzania	2009	National Panel Survey
Uganda	2010	The Uganda National Panel Survey

S 4. Percentage of the irrigated area by farm size in the eleven countries based on household survey and our downscaled maps

Country	Farm size	0 - 1	1 - 2	2 - 5	5 - 10	10 - 20	20 - 50	50 - 100	100 - 200	200 - 500	500 - 1000	> 1000
Albania	Survey	55.2%	36.4%	25.5%								
	SPAM based	26.2%	30.4%	26.8%	33.2%	38.2%	3.9%	55.8%				
	GAEZ based	47.3%	46.2%	47.8%	44.8%	43.8%	47.4%	88.9%				
Cambodia	Survey	49.1%	43.6%	42.7%	29.0%							
	SPAM based	24.2%	19.4%	18.3%	21.3%	21.5%	14.0%	21.5%	11.1%	10.5%		
	GAEZ based	31.2%	19.5%	16.1%	13.3%	8.4%	17.1%	5.5%	10.7%	4.5%		
Ethiopia	Survey	5.1%	3.1%	2.4%	2.9%							
	SPAM based	1.5%	1.1%	1.0%	1.1%	6.5%	4.3%	6.9%	0.9%	3.6%	1.9%	3.1%
	GAEZ based	3.0%	2.2%	1.8%	1.4%	5.5%	9.9%	40.9%	8.5%	2.9%	2.5%	3.2%
India	Survey	62.5%	64.5%	70.7%	76.8%	74.1%	55.9%					
	SPAM based	41.3%	33.0%	31.8%	30.5%	30.8%	26.7%	26.7%	21.3%	17.3%	33.1%	31.1%
	GAEZ based	48.3%	41.7%	42.7%	44.1%	46.3%	42.8%	45.3%	33.5%	45.0%	52.0%	18.5%
Malawi	Survey	1.8%	2.6%	2.6%								
	SPAM based	0.5%	0.9%	0.1%			0.1%					
	GAEZ based	1.8%	2.8%	3.2%								
Mali	Survey	39.0%	26.6%	12.3%	7.3%	4.7%	1.7%					
	SPAM based	27.4%	25.8%	19.7%	9.6%	14.2%	4.9%	9.5%	4.1%	2.2%	31.6%	5.5%
	GAEZ based	56.1%	33.9%	15.9%	8.0%	9.1%	3.9%	7.0%	5.8%	2.2%	15.3%	53.1%
Niger	Survey	19.4%	10.5%	3.8%	2.0%	1.6%	0.1%					
	SPAM based	0.0%	0.1%	0.0%			0.0%					
	GAEZ based	2.4%	0.8%	1.5%	4.9%	4.7%	0.6%	0.7%	1.7%	15.8%		
Nigeria	Survey	1.8%	1.8%	0.6%	0.0%							

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
	SPAM based	1.8%	0.9%	0.8%	0.5%	2.5%	1.8%	0.1%	0.6%	0.6%	0.9%	0.4%
	GAEZ based	0.5%	0.4%	0.4%	0.2%	0.4%	0.3%	0.4%	0.1%	0.1%		0.2%
Timor-Leste	Survey	12.5%	8.3%	7.1%								
	SPAM based	22.7%	11.0%	14.9%	2.7%	18.6%		64.7%				
	GAEZ based	20.6%	9.1%	20.3%	0.8%	6.7%		100.0%				
United Republic of Tanzania	Survey	4.0%	2.9%	3.0%	2.8%	1.0%						
	SPAM based	1.8%	1.2%	1.0%	1.1%	1.0%	1.7%	1.5%	1.3%	1.8%	2.5%	1.5%
	GAEZ based	5.2%	2.4%	1.5%	1.6%	1.2%	0.8%	0.7%	0.9%	1.6%	0.8%	0.0%
Uganda	Survey	0.6%	1.0%	0.9%	0.0%							
	SPAM based	1.0%	0.7%	4.8%	1.7%	1.0%						
	GAEZ based	0.0%	0.2%	0.6%	1.0%	0.0%						

S 5. Percentage of the harvested area by farm size from Lowder's dataset (Lowder et al., 2016) and our downscaled maps

Country		0-1	1-2	2-5	5-10	10-20	20-50	50-100	100-200	200-500	500-1000	>1000
Albania	Lowder's	6.8%	10.5%	82.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	16.1%	27.9%	38.3%	9.4%	6.4%	1.1%	0.8%	0.0%	0.0%	0.0%	0.0%
	GAEZ based	12.3%	25.4%	45.7%	10.2%	5.3%	0.8%	0.4%	0.0%	0.0%	0.0%	0.0%
Austria	Lowder's	0.0%	2.2%	5.3%	9.7%	17.8%	24.0%	9.6%	31.5%	0.0%	0.0%	0.0%
	SPAM based	0.0%	0.6%	1.4%	3.5%	10.2%	34.9%	30.6%	18.7%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.5%	1.9%	4.4%	13.3%	38.0%	26.9%	14.8%	0.0%	0.0%	0.0%
Belgium	Lowder's	0.0%	0.9%	2.2%	4.4%	10.8%	38.6%	29.8%	13.4%	0.0%	0.0%	0.0%
	SPAM based	0.0%	0.0%	0.7%	2.6%	8.2%	30.3%	32.4%	25.8%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.1%	0.7%	2.4%	7.1%	29.2%	34.9%	25.7%	0.0%	0.0%	0.0%
Brazil	Lowder's	0.1%	0.2%	0.7%	1.3%	2.8%	7.2%	7.8%	9.3%	14.3%	11.4%	45.1%
	SPAM based	1.4%	1.8%	4.1%	4.1%	7.1%	10.5%	7.2%	7.3%	10.7%	9.5%	36.3%
	GAEZ based	1.1%	1.4%	3.4%	3.7%	6.0%	10.8%	7.9%	7.3%	11.1%	10.2%	37.0%
Bulgaria	Lowder's	6.6%	0.0%	8.3%	0.0%	0.0%	6.6%	78.5%	0.0%	0.0%	0.0%	0.0%
	SPAM based	2.4%	0.0%	2.2%	1.7%	2.2%	4.1%	4.4%	82.9%	0.0%	0.0%	0.0%
	GAEZ based	3.2%	0.0%	2.6%	2.0%	2.8%	4.7%	5.0%	79.7%	0.0%	0.0%	0.0%
Burkina Faso	Lowder's	1.8%	7.4%	34.6%	36.7%	19.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	0.3%	1.6%	7.3%	10.1%	11.0%	17.7%	10.5%	10.4%	11.5%	3.1%	16.5%
	GAEZ based	0.3%	1.5%	7.3%	10.1%	11.0%	17.7%	10.5%	10.4%	11.5%	3.2%	16.4%
Colombia	Lowder's	0.4%	0.8%	2.7%	4.0%	6.2%	13.6%	14.8%	14.9%	22.9%	19.8%	0.0%
	SPAM based	6.9%	11.8%	28.5%	18.3%	16.2%	10.7%	2.0%	1.5%	4.0%	0.0%	0.0%
	GAEZ based	7.1%	11.8%	27.8%	19.7%	16.1%	10.9%	1.3%	1.4%	3.8%	0.0%	0.0%
Croatia	Lowder's	5.9%	7.4%	19.9%	21.1%	15.1%	30.5%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	2.7%	2.8%	12.4%	12.4%	12.0%	16.8%	12.7%	28.2%	0.0%	0.0%	0.0%
	GAEZ based	2.7%	2.8%	14.5%	13.6%	13.3%	16.7%	11.4%	24.9%	0.0%	0.0%	0.0%
Cyprus	Lowder's	6.4%	6.8%	14.4%	12.6%	13.6%	16.4%	11.5%	18.4%	0.0%	0.0%	0.0%
	SPAM based	11.7%	11.8%	16.7%	10.2%	9.3%	14.1%	9.8%	16.5%	0.0%	0.0%	0.0%
	GAEZ based	9.3%	9.2%	14.7%	10.7%	11.0%	16.7%	11.9%	16.5%	0.0%	0.0%	0.0%
Czech Republic	Lowder's	0.1%	0.3%	0.8%	1.2%	2.0%	3.7%	3.5%	4.2%	8.0%	15.2%	60.8%

	SPAM based	0.2%	0.1%	0.7%	0.7%	1.4%	3.5%	4.3%	4.4%	8.0%	15.2%	61.5%
	GAEZ based	0.2%	0.1%	0.2%	0.6%	1.3%	3.3%	4.0%	4.4%	8.2%	15.5%	62.2%
Denmark	Lowder's	0.0%	0.1%	0.2%	2.8%	6.4%	20.8%	29.7%	40.0%	0.0%	0.0%	0.0%
	SPAM based	0.0%	0.0%	0.0%	0.9%	2.7%	9.8%	14.9%	71.7%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.0%	0.1%	1.8%	3.5%	9.6%	14.6%	70.4%	0.0%	0.0%	0.0%
Estonia	Lowder's	0.5%	2.2%	6.0%	8.7%	12.3%	14.4%	7.6%	48.2%	0.0%	0.0%	0.0%
	SPAM based	0.1%	0.1%	0.5%	1.0%	1.9%	4.5%	6.1%	85.9%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.1%	0.6%	1.2%	2.2%	5.8%	7.1%	83.0%	0.0%	0.0%	0.0%
Ethiopia	Lowder's	27.1%	33.3%	32.6%	5.5%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	35.5%	35.9%	25.5%	2.5%	0.1%	0.1%	0.0%	0.0%	0.4%	0.0%	0.0%
	GAEZ based	35.9%	35.7%	25.5%	2.2%	0.1%	0.1%	0.0%	0.0%	0.4%	0.0%	0.0%
Finland	Lowder's	0.0%	1.1%	2.9%	7.1%	18.6%	42.6%	20.4%	7.3%	0.0%	0.0%	0.0%
	SPAM based	0.1%	0.1%	0.1%	1.0%	4.9%	24.8%	33.7%	35.3%	0.1%	0.1%	0.0%
	GAEZ based	0.1%	0.0%	0.4%	1.9%	6.7%	26.8%	33.1%	30.9%	0.0%	0.0%	0.0%
France	Lowder's	0.0%	0.7%	1.3%	1.9%	4.2%	17.3%	30.6%	44.0%	0.0%	0.0%	0.0%
	SPAM based	0.0%	0.2%	0.5%	0.9%	2.2%	8.5%	21.2%	66.6%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.2%	0.6%	0.9%	2.1%	9.9%	25.2%	61.1%	0.0%	0.0%	0.0%
Germany	Lowder's	0.0%	0.3%	2.1%	3.7%	8.3%	22.4%	21.4%	12.2%	8.1%	6.2%	15.4%
	SPAM based	0.3%	0.2%	0.8%	1.2%	3.8%	11.3%	18.3%	19.0%	12.5%	9.3%	23.3%
	GAEZ based	0.1%	0.1%	0.3%	1.2%	4.0%	13.1%	22.0%	17.4%	11.5%	8.7%	21.6%
Greece	Lowder's	0.0%	11.4%	20.6%	20.4%	19.1%	18.3%	5.8%	4.4%	0.0%	0.0%	0.0%
	SPAM based	0.0%	11.2%	20.1%	20.3%	19.3%	20.2%	6.4%	2.6%	0.0%	0.0%	0.0%
	GAEZ based	0.1%	10.6%	19.8%	20.1%	19.6%	20.7%	6.5%	2.6%	0.0%	0.0%	0.0%
India	Lowder's	18.7%	20.2%	31.2%	16.7%	8.3%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	23.7%	22.5%	30.6%	14.0%	5.9%	2.9%	0.3%	0.0%	0.0%	0.0%	0.0%
	GAEZ based	24.8%	23.0%	30.9%	13.5%	5.2%	2.4%	0.3%	0.0%	0.0%	0.0%	0.0%
Ireland	Lowder's	0.0%	0.1%	0.8%	3.0%	11.5%	39.6%	29.0%	16.0%	0.0%	0.0%	0.0%
	SPAM based	0.4%	0.1%	0.1%	0.7%	3.1%	19.5%	32.4%	43.6%	0.1%	0.0%	0.0%
	GAEZ based	0.1%	0.0%	0.3%	1.3%	5.9%	27.5%	33.1%	31.8%	0.0%	0.0%	0.0%
Italy	Lowder's	2.4%	3.6%	8.5%	9.3%	11.2%	16.1%	10.9%	37.9%	0.0%	0.0%	0.0%
	SPAM based	2.2%	3.2%	11.9%	13.3%	15.4%	21.6%	14.9%	17.5%	0.0%	0.0%	0.0%

	GAEZ based	1.7%	2.5%	10.1%	11.6%	15.4%	23.5%	16.2%	19.0%	0.0%	0.0%	0.0%
Latvia	Lowder's	0.0%	0.4%	3.3%	8.0%	17.5%	31.0%	18.0%	9.4%	5.7%	6.7%	0.0%
	SPAM based	0.0%	0.5%	1.5%	2.5%	4.8%	8.2%	8.6%	73.8%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.3%	1.7%	4.3%	8.9%	14.1%	11.2%	59.4%	0.0%	0.0%	0.0%
Lithuania	Lowder's	0.0%	1.1%	13.9%	15.1%	17.7%	17.2%	8.3%	6.2%	6.2%	14.3%	0.0%
	SPAM based	0.1%	0.9%	4.8%	5.1%	6.3%	10.0%	12.5%	14.0%	13.9%	32.3%	0.0%
	GAEZ based	0.0%	1.2%	6.0%	6.7%	7.9%	13.8%	14.0%	11.6%	11.6%	27.0%	0.1%
Luxembourg	Lowder's	0.0%	0.3%	0.9%	1.6%	2.7%	15.3%	50.7%	28.6%	0.0%	0.0%	0.0%
	SPAM based	0.8%	0.2%	0.5%	1.6%	2.2%	8.4%	29.7%	56.4%	0.2%	0.0%	0.0%
	GAEZ based	0.0%	0.1%	0.2%	0.8%	1.2%	7.3%	32.7%	57.6%	0.1%	0.0%	0.0%
Malta	Lowder's	33.1%	24.9%	29.0%	9.6%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	20.4%	15.2%	38.8%	18.6%	7.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	GAEZ based	22.5%	16.9%	35.7%	17.1%	6.7%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Netherlands	Lowder's	0.0%	1.0%	2.7%	5.5%	12.2%	42.6%	21.9%	14.1%	0.0%	0.0%	0.0%
	SPAM based	0.1%	0.1%	0.8%	2.5%	6.7%	24.3%	33.0%	32.5%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.1%	1.1%	3.3%	7.7%	32.1%	34.7%	20.9%	0.0%	0.0%	0.0%
Norway	Lowder's	0.0%	0.3%	3.6%	11.7%	31.0%	42.8%	8.9%	1.4%	0.2%	0.0%	0.0%
	SPAM based	0.3%	0.1%	0.6%	3.7%	13.4%	35.7%	27.8%	16.3%	1.8%	0.1%	0.1%
	GAEZ based	0.2%	0.0%	1.1%	5.6%	17.7%	43.8%	22.1%	8.6%	0.9%	0.0%	0.0%
Panama	Lowder's	0.6%	1.0%	2.7%	3.7%	7.2%	17.5%	17.8%	15.2%	15.0%	6.5%	12.7%
	SPAM based	6.4%	1.9%	1.5%	3.0%	4.2%	16.9%	18.5%	15.1%	19.9%	12.5%	0.0%
	GAEZ based	6.4%	1.7%	5.1%	6.4%	7.3%	18.1%	17.2%	13.6%	15.1%	9.0%	0.0%
Paraguay	Lowder's	0.0%	0.1%	0.8%	1.8%	3.4%	3.6%	2.1%	2.4%	4.4%	4.2%	77.1%
	SPAM based	0.2%	0.8%	2.5%	4.6%	5.8%	5.2%	4.9%	7.9%	15.4%	12.8%	40.0%
	GAEZ based	0.2%	1.3%	4.0%	7.2%	8.6%	7.0%	5.8%	5.9%	12.2%	10.8%	37.0%
Peru	Lowder's	0.0%	0.0%	5.4%	5.0%	4.4%	7.5%	77.6%	0.0%	0.0%	0.0%	0.0%
	SPAM based	7.2%	36.5%	1.4%	18.9%	14.0%	12.0%	4.6%	1.7%	1.4%	0.7%	1.7%
	GAEZ based	7.5%	38.7%	2.1%	19.4%	13.7%	10.4%	3.7%	1.6%	0.9%	0.6%	1.3%
Poland	Lowder's	2.8%	4.6%	12.6%	18.1%	21.4%	15.5%	4.9%	2.7%	4.4%	4.2%	8.8%
	SPAM based	1.1%	1.8%	9.9%	16.1%	20.7%	20.0%	9.5%	2.9%	4.7%	4.5%	8.8%
	GAEZ based	1.1%	1.8%	9.8%	14.8%	19.6%	21.0%	10.0%	3.0%	4.9%	4.7%	9.3%

Country	Method											
Portugal	Lowder's	2.8%	6.4%	10.5%	8.6%	9.7%	9.8%	7.0%	45.3%	0.0%	0.0%	0.0%
	SPAM based	3.1%	7.0%	14.8%	12.6%	11.7%	14.0%	9.4%	27.3%	0.0%	0.0%	0.0%
	GAEZ based	1.9%	4.2%	10.2%	9.8%	11.1%	14.8%	9.2%	38.9%	0.0%	0.0%	0.0%
Romania	Lowder's	4.9%	8.1%	20.2%	11.1%	3.9%	2.0%	1.7%	48.1%	0.0%	0.0%	0.0%
	SPAM based	4.9%	8.1%	15.1%	7.8%	3.9%	4.1%	3.7%	52.1%	0.1%	0.1%	0.1%
	GAEZ based	5.0%	8.2%	17.6%	10.1%	5.1%	4.9%	4.0%	45.0%	0.0%	0.0%	0.0%
Sweden	Lowder's	0.0%	1.6%	3.9%	9.3%	13.8%	24.8%	22.2%	24.5%	0.0%	0.0%	0.0%
	SPAM based	0.1%	0.1%	0.1%	0.4%	1.9%	8.6%	16.7%	72.1%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.0%	1.0%	3.3%	6.1%	13.9%	19.0%	56.6%	0.0%	0.0%	0.0%
Uganda	Lowder's	11.0%	15.8%	24.8%	18.2%	30.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	SPAM based	54.9%	26.4%	15.9%	1.5%	0.6%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
	GAEZ based	55.6%	25.7%	16.5%	1.0%	0.7%	0.4%	0.0%	0.1%	0.1%	0.0%	0.0%
United Kingdom	Lowder's	0.0%	0.3%	0.5%	1.3%	2.9%	10.1%	16.4%	68.6%	0.0%	0.0%	0.0%
	SPAM based	0.0%	0.0%	0.0%	0.1%	0.5%	3.9%	11.4%	84.0%	0.0%	0.0%	0.0%
	GAEZ based	0.0%	0.0%	0.0%	0.3%	0.9%	4.9%	13.0%	80.9%	0.0%	0.0%	0.0%
United States of America	Lowder's	0.0%	0.0%	0.1%	0.4%	1.1%	3.9%	6.4%	9.0%	16.4%	62.6%	0.0%
	SPAM based	0.2%	0.1%	0.1%	0.1%	0.2%	1.6%	3.8%	8.1%	22.1%	63.6%	0.1%
	GAEZ based	0.1%	0.0%	0.2%	0.2%	0.3%	1.8%	3.9%	7.9%	21.4%	64.2%	0.1%
Uruguay	Lowder's	0.0%	0.0%	0.1%	0.3%	0.6%	1.7%	2.9%	5.5%	13.2%	16.6%	59.1%
	SPAM based	0.6%	0.0%	0.2%	0.0%	0.1%	0.3%	0.9%	2.7%	9.5%	13.0%	72.6%
	GAEZ based	0.6%	0.0%	0.2%	0.1%	0.1%	0.4%	1.0%	2.3%	10.0%	16.8%	68.6%

S 6. Number and percentage of the grid cells that have similar, larger, and smaller dominant farm size in our downscaled maps than Mehrabi's map (Mehrabi et al., 2020)

| Country | Number of pixels | | | | | | Percentage of Pixels | | | | | |
| | SPAM | | | GAEZ | | | SPAM | | | GAEZ | | |
	similar	larger	smaller	similar	larger	smaller	similar	larger	smaller	similar	larger	smaller
Albania	339	47	84	352	39	37	72.1%	10.0%	17.9%	82.2%	9.1%	8.6%
Austria	390	244	170	343	233	221	48.5%	30.3%	21.1%	43.0%	29.2%	27.7%
Belgium	404	99	88	386	103	56	68.4%	16.8%	14.9%	70.8%	18.9%	10.3%
Burkina Faso	820	2001	66	662	2277	49	28.4%	69.3%	2.3%	22.2%	76.2%	1.6%
Bulgaria	1288	358	35	1249	341	24	76.6%	21.3%	2.1%	77.4%	21.1%	1.5%
Bosnia and Herzegovina	302	423	16	203	589	8	40.8%	57.1%	2.2%	25.4%	73.6%	1.0%
Brazil	18218	3912	21303	21956	6891	20596	41.9%	9.0%	49.0%	44.4%	13.9%	41.7%
Colombia	998	408	3276	1145	468	3715	21.3%	8.7%	70.0%	21.5%	8.8%	69.7%
Costa Rica	46	363	14	30	396	1	10.9%	85.8%	3.3%	7.0%	92.7%	0.2%
Cyprus	19	86	0	27	78	0	18.1%	81.9%	0.0%	25.7%	74.3%	0.0%
Czechia	878	289	74	964	310	106	70.7%	23.3%	6.0%	69.9%	22.5%	7.7%
Germany	2769	1810	1574	2784	2085	1462	45.0%	29.4%	25.6%	44.0%	32.9%	23.1%
Denmark	704	128	20	647	109	23	82.6%	15.0%	2.3%	83.1%	14.0%	3.0%
Spain	917	5837	96	752	6014	88	13.4%	85.2%	1.4%	11.0%	87.7%	1.3%
Estonia	474	369	3	468	365	38	56.0%	43.6%	0.4%	53.7%	41.9%	4.4%
Ethiopia	4172	477	885	3647	494	740	75.4%	8.6%	16.0%	74.7%	10.1%	15.2%
Finland	137	1593	11	188	1608	5	7.9%	91.5%	0.6%	10.4%	89.3%	0.3%
France	6506	984	357	6850	1127	130	82.9%	12.5%	4.5%	84.5%	13.9%	1.6%
United Kingdom	2475	182	202	3070	236	158	86.6%	6.4%	7.1%	88.6%	6.8%	4.6%
Ghana	477	1809	0	540	2112	1	20.9%	79.1%	0.0%	20.4%	79.6%	0.0%
Greece	866	491	307	862	552	255	52.0%	29.5%	18.4%	51.6%	33.1%	15.3%
Croatia	256	464	62	249	495	58	32.7%	59.3%	7.9%	31.0%	61.7%	7.2%
Hungary	719	535	23	754	639	46	56.3%	41.9%	1.8%	52.4%	44.4%	3.2%
India	23358	8820	4237	23511	8250	4359	64.1%	24.2%	11.6%	65.1%	22.8%	12.1%
Ireland	713	212	139	777	231	135	67.0%	19.9%	13.1%	68.0%	20.2%	11.8%

Italy	1641	1236	1051	1684	1472	913	41.8%	31.5%	26.8%	41.4%	36.2%	22.4%
Cambodia	362	1103	3	603	1245	30	24.7%	75.1%	0.2%	32.1%	66.3%	1.6%
Lithuania	379	746	178	373	602	313	29.1%	57.3%	13.7%	29.0%	46.7%	24.3%
Luxembourg	25	1	0	46	1	0	96.2%	3.8%	0.0%	97.9%	2.1%	0.0%
Latvia	518	498	158	581	401	302	44.1%	42.4%	13.5%	45.2%	31.2%	23.5%
Mexico	7899	3055	2822	8526	3115	2783	57.3%	22.2%	20.5%	59.1%	21.6%	19.3%
Mali	296	3698	0	225	4274	4	7.4%	92.6%	0.0%	5.0%	94.9%	0.1%
Mongolia	83	18	65	556	466	425	50.0%	10.8%	39.2%	38.4%	32.2%	29.4%
Malawi	732	104	0	799	167	0	87.6%	12.4%	0.0%	82.7%	17.3%	0.0%
Niger	1843	1424	107	2050	1385	113	54.6%	42.2%	3.2%	57.8%	39.0%	3.2%
Nigeria	6164	3759	1	6580	3812	2	62.1%	37.9%	0.0%	63.3%	36.7%	0.0%
Netherlands	340	161	79	375	165	82	58.6%	27.8%	13.6%	60.3%	26.5%	13.2%
Norway	99	243	33	131	293	14	26.4%	64.8%	8.8%	29.9%	66.9%	3.2%
Panama	192	111	153	207	116	218	42.1%	24.3%	33.6%	38.3%	21.4%	40.3%
Peru	691	294	2533	1127	483	3721	19.6%	8.4%	72.0%	21.1%	9.1%	69.8%
Poland	2728	1709	1244	2697	1754	1352	48.0%	30.1%	21.9%	46.5%	30.2%	23.3%
Portugal	623	332	171	626	474	94	55.3%	29.5%	15.2%	52.4%	39.7%	7.9%
Paraguay	932	83	766	1289	107	838	52.3%	4.7%	43.0%	57.7%	4.8%	37.5%
Romania	1640	1207	515	1674	1234	565	48.8%	35.9%	15.3%	48.2%	35.5%	16.3%
Russian Federation	28678	12171	9310	38082	15146	9041	57.2%	24.3%	18.6%	61.2%	24.3%	14.5%
Slovakia	494	141	1	551	173	6	77.7%	22.2%	0.2%	75.5%	23.7%	0.8%
Slovenia	21	142	0	34	211	0	12.9%	87.1%	0.0%	13.9%	86.1%	0.0%
Sweden	655	1148	15	617	1128	54	36.0%	63.1%	0.8%	34.3%	62.7%	3.0%
Tajikistan	170	650	20	215	705	14	20.2%	77.4%	2.4%	23.0%	75.5%	1.5%
Timor-Leste	144	4	0	159	5	1	97.3%	2.7%	0.0%	96.4%	3.0%	0.6%
United Republic of Tanzania	1679	3706	5	2328	5416	5	31.2%	68.8%	0.1%	30.0%	69.9%	0.1%
Uganda	1047	109	946	1072	86	1074	49.8%	5.2%	45.0%	48.0%	3.9%	48.1%
Uruguay	1124	250	295	1521	339	139	67.3%	15.0%	17.7%	76.1%	17.0%	7.0%
United States of America	46349	17045	10691	51825	20422	6516	62.6%	23.0%	14.4%	65.8%	25.9%	8.3%
South Africa	1044	78	6869	870	60	6459	13.1%	1.0%	86.0%	11.8%	0.8%	87.4%

Total		176837	87167	71073	199839	101299	67389	52.8%	26.0%	21.2%	54.2%	27.5%	18.3%

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