

Table S1. Frequency in magnitude of correlation coefficient (r) between regions by crop models.
(a) PRYSBI2

Crops	Periods	n / nt	$r < -0.4$	$-0.4 < r < -r_NZ$	$-r_NZ < r < r_NZ$	$r_NZ < r < 0.4$	$0.4 < r$
Rice	T1	35 / 595	16.6%	4.0%	54.5%	4.5%	20.3%
	T2	35 / 595	0.0%	2.0%	47.6%	20.7%	29.7%
	T3	35 / 595	0.2%	3.5%	39.8%	35.5%	21.0%
Wheat	T1	35 / 595	4.9%	1.7%	82.8%	4.2%	6.4%
	T2	35 / 595	4.9%	13.4%	48.1%	23.5%	10.1%
	T3	35 / 595	15.3%	7.4%	14.6%	14.3%	48.4%
Maize	T1	37 / 666	9.5%	3.5%	55.1%	3.3%	28.7%
	T2	36 / 630	0.0%	4.1%	61.1%	27.8%	7.0%
	T3	36 / 630	0.0%	0.0%	3.5%	17.5%	79.0%
Soybeans	T1	34 / 561	4.5%	2.1%	86.1%	2.5%	4.8%
	T2	36 / 630	0.0%	1.0%	46.8%	28.4%	23.8%
	T3	36 / 630	0.5%	3.5%	49.2%	31.3%	15.6%

(b) pDSSAT

Crops	Periods	n / nt	$r < -0.4$	$-0.4 < r < -r_NZ$	$-r_NZ < r < r_NZ$	$r_NZ < r < 0.4$	$0.4 < r$
Rice	T1	35 / 595	16.6%	4.0%	54.5%	4.5%	20.3%
	T2	35 / 528	0.0%	3.6%	81.4%	13.4%	1.5%
	T3	35 / 528	0.0%	6.3%	61.7%	27.3%	4.7%
Wheat	T1	35 / 595	4.9%	1.7%	82.8%	4.2%	6.4%
	T2	35 / 595	0.0%	1.2%	86.6%	10.1%	2.2%
	T3	35 / 595	0.0%	1.8%	61.0%	32.3%	4.9%
Maize	T1	37 / 666	9.5%	3.5%	55.1%	3.3%	28.7%
	T2	36 / 630	0.0%	2.7%	85.7%	10.3%	1.3%
	T3	36 / 630	0.2%	2.7%	60.3%	30.3%	6.5%
Soybeans	T1	34 / 561	4.5%	2.1%	86.1%	2.5%	4.8%
	T2	36 / 595	0.0%	0.7%	87.6%	8.4%	3.4%
	T3	36 / 595	0.0%	4.0%	64.9%	26.1%	5.0%

(note) This table is an estimate of Table 4 in the main text by crop models. Values for T1 are the same as Table 4. In the cases of T2 and T3, the correlation coefficient itself becomes the value between the values of the two models when calculating Table 4. However, since these tables are summarized by the frequency according to the magnitude of the correlation coefficient, Table 4 and the above table differ in two points. First, Table 4 has a large sample size because it is calculated by pooling the yield estimates of two crop models. Therefore, the border correlation coefficient (r_NZ) is different from the case where the two models are calculated separately. Second, if the correlation coefficient is large in either one crop model, the correlation coefficient based on the pooled data may exceed the border of r_NZ or 0.4, and the frequency by each border divisions is different from Table 4.

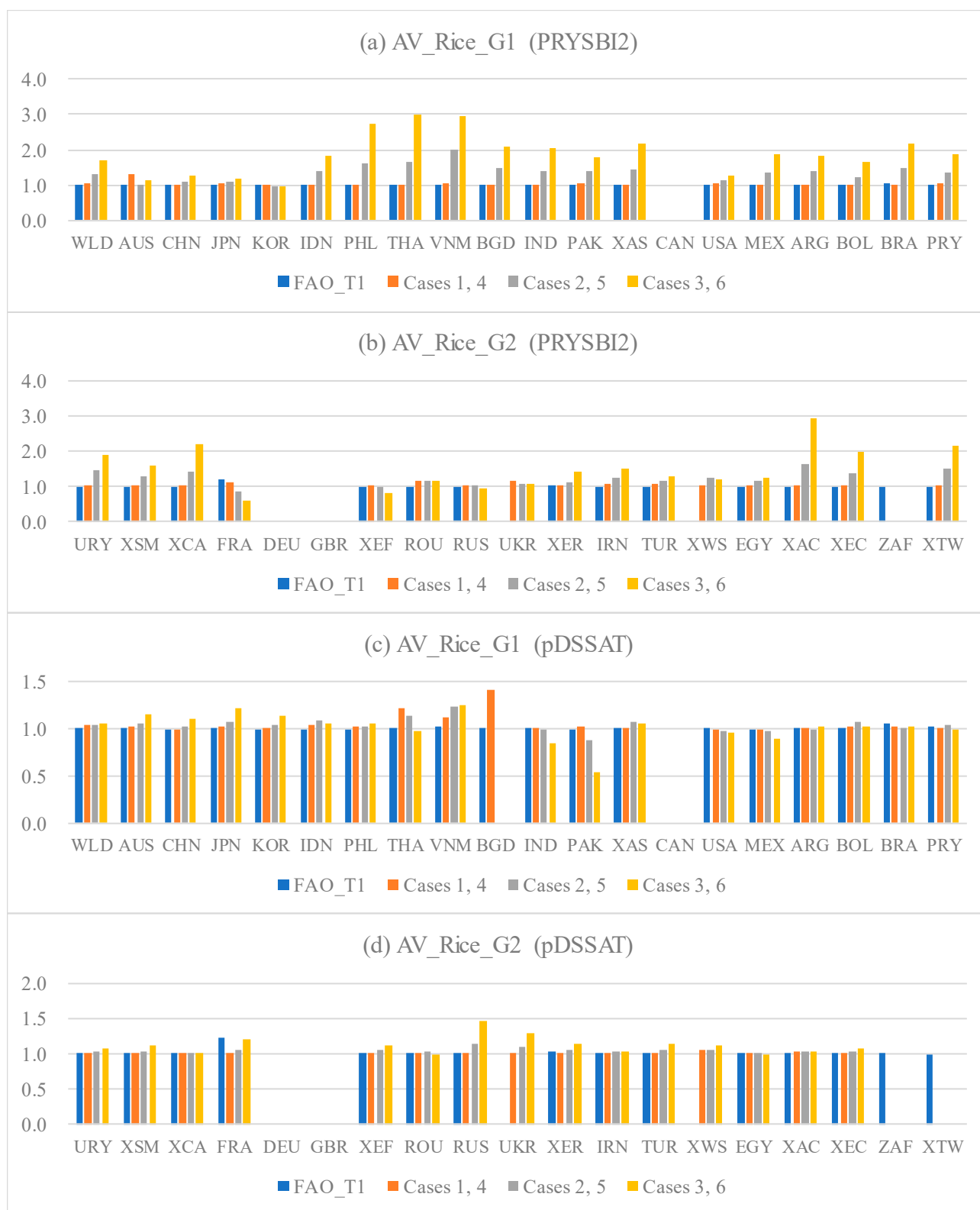


Figure S1. The average EFP of rice by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

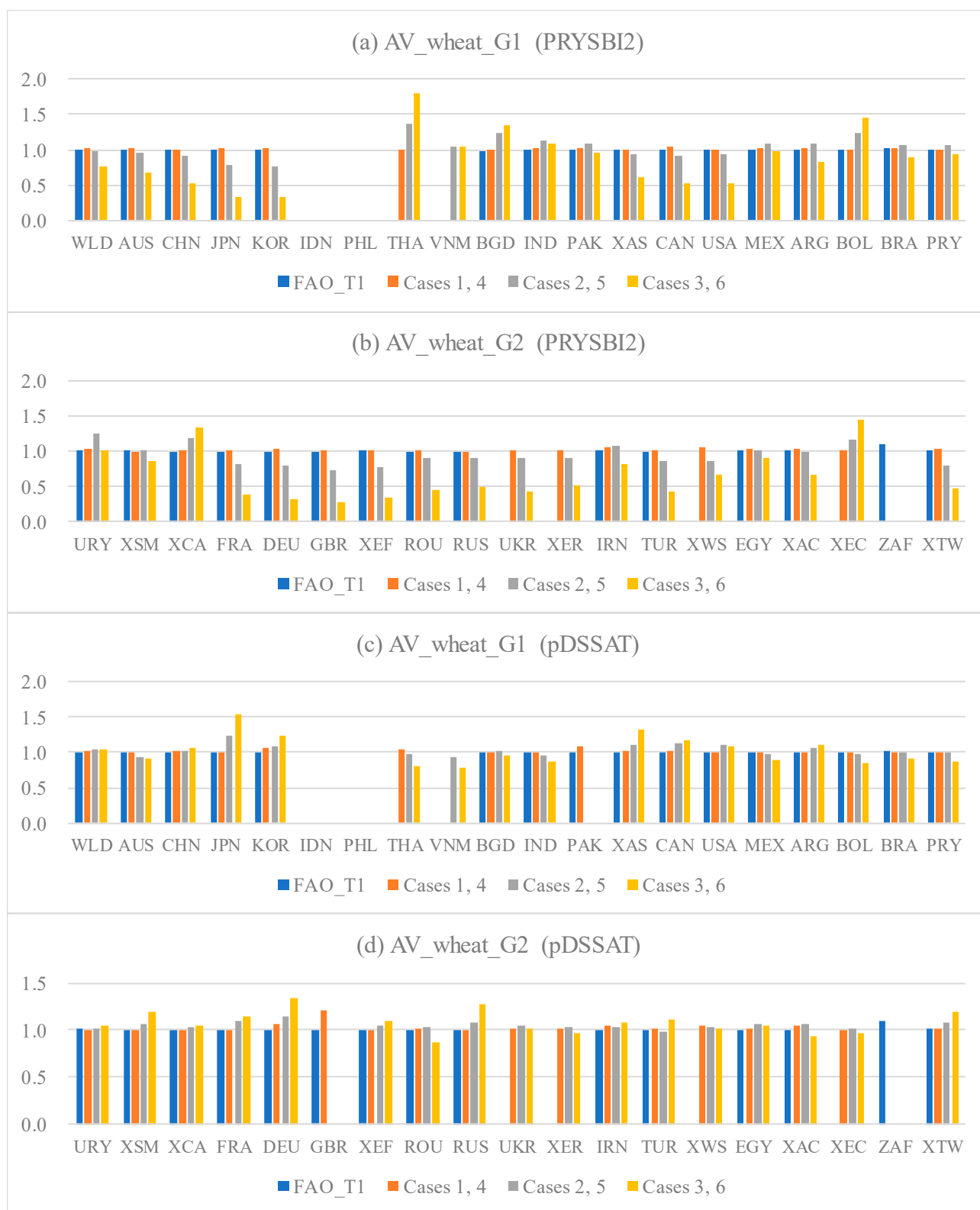


Figure S2. The average EFP of wheat by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

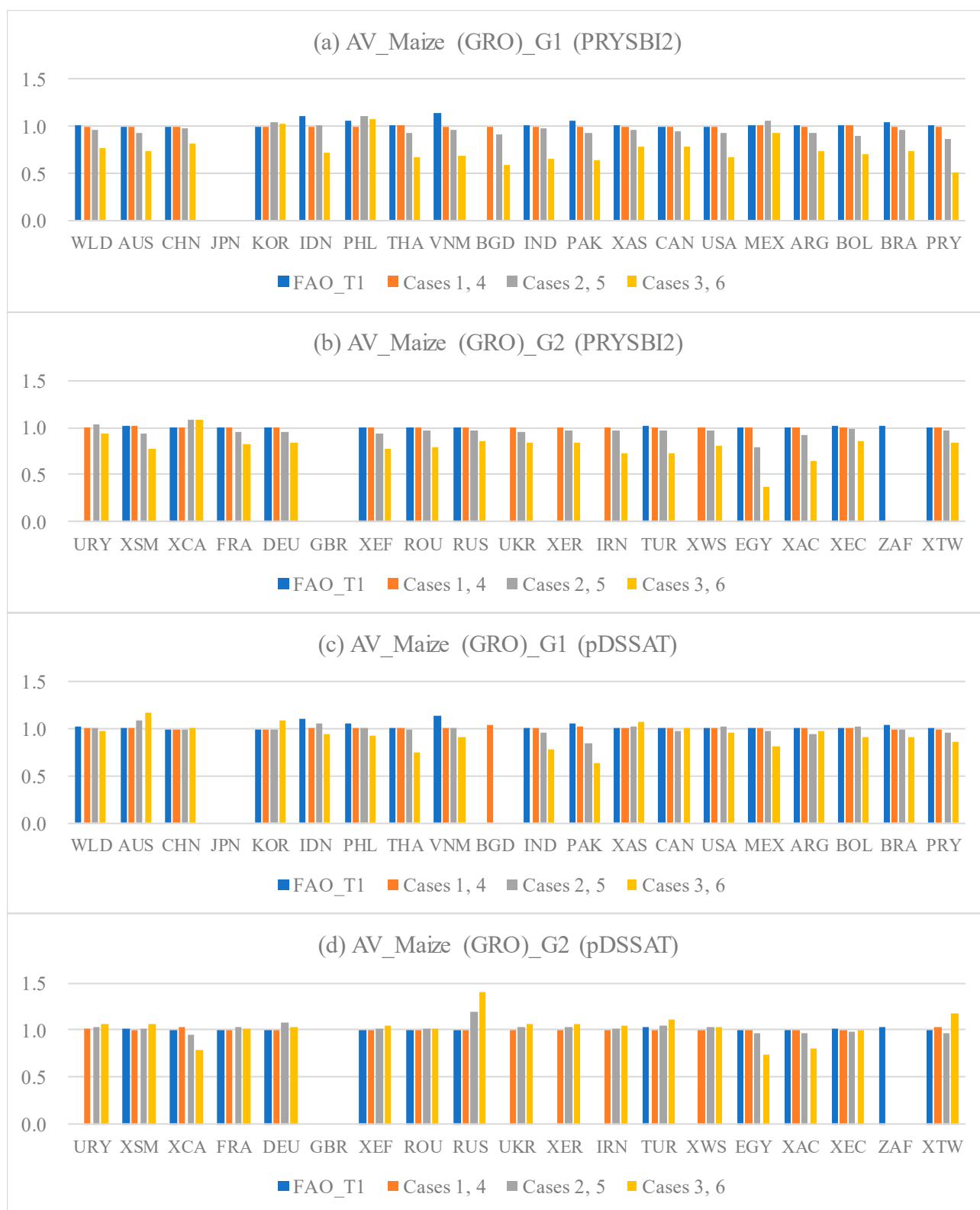


Figure S3. The average EFP of other cereal grains including maize (GRO) by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

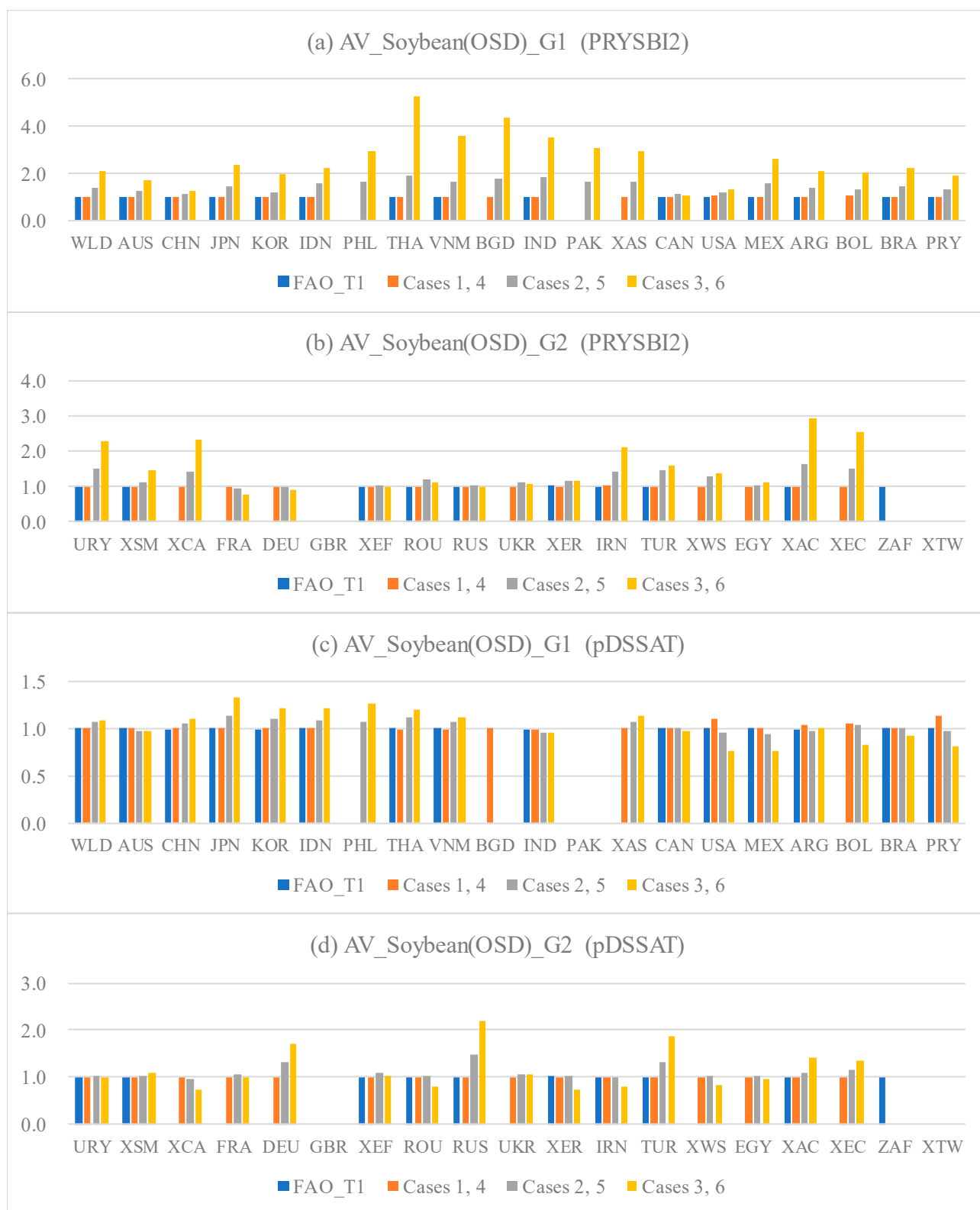


Figure S4. The average EFP of oil seeds including soybean (OSD) by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

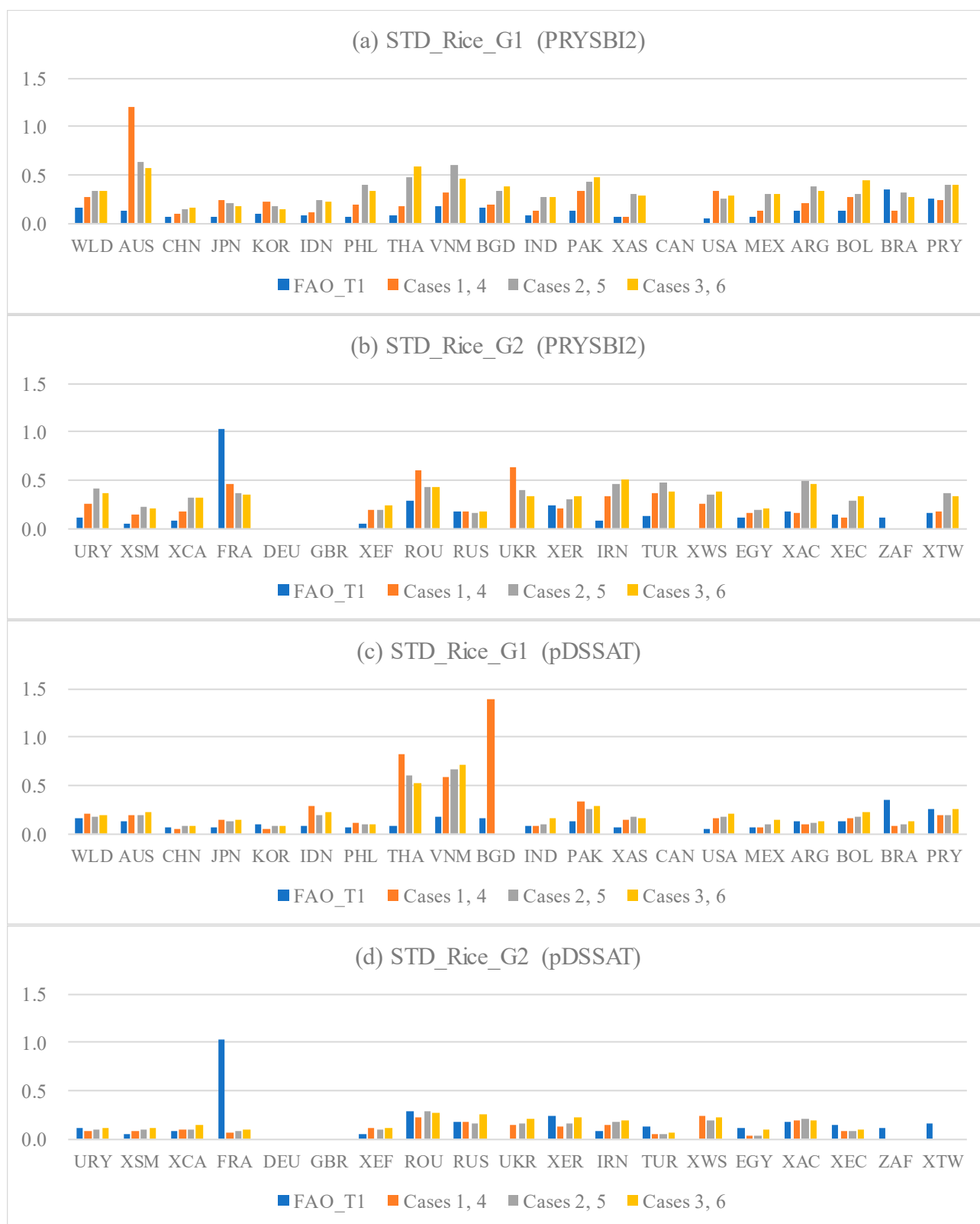


Figure S5. The standard deviation of rice EFP by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

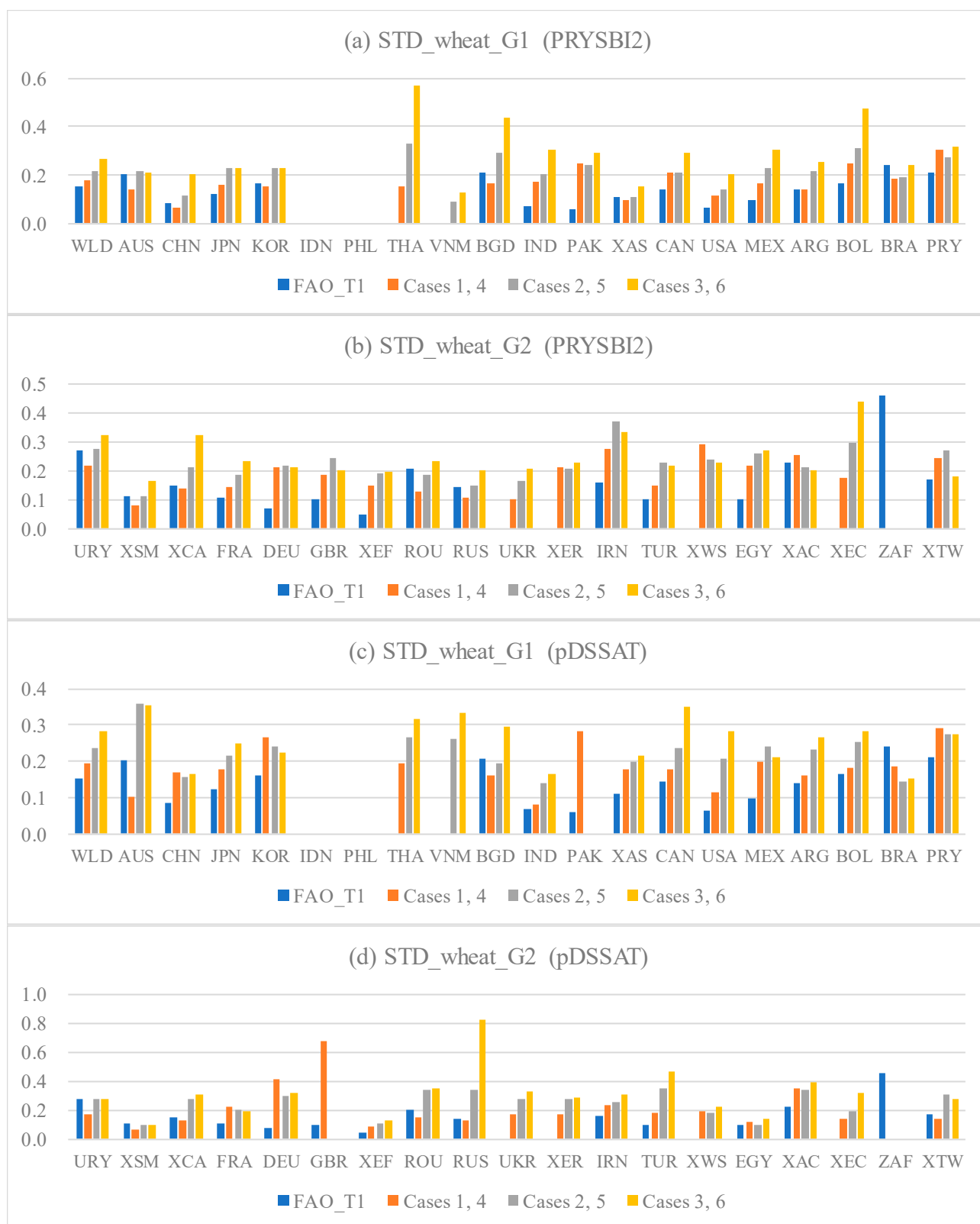


Figure S6. The standard deviation of wheat EFP by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

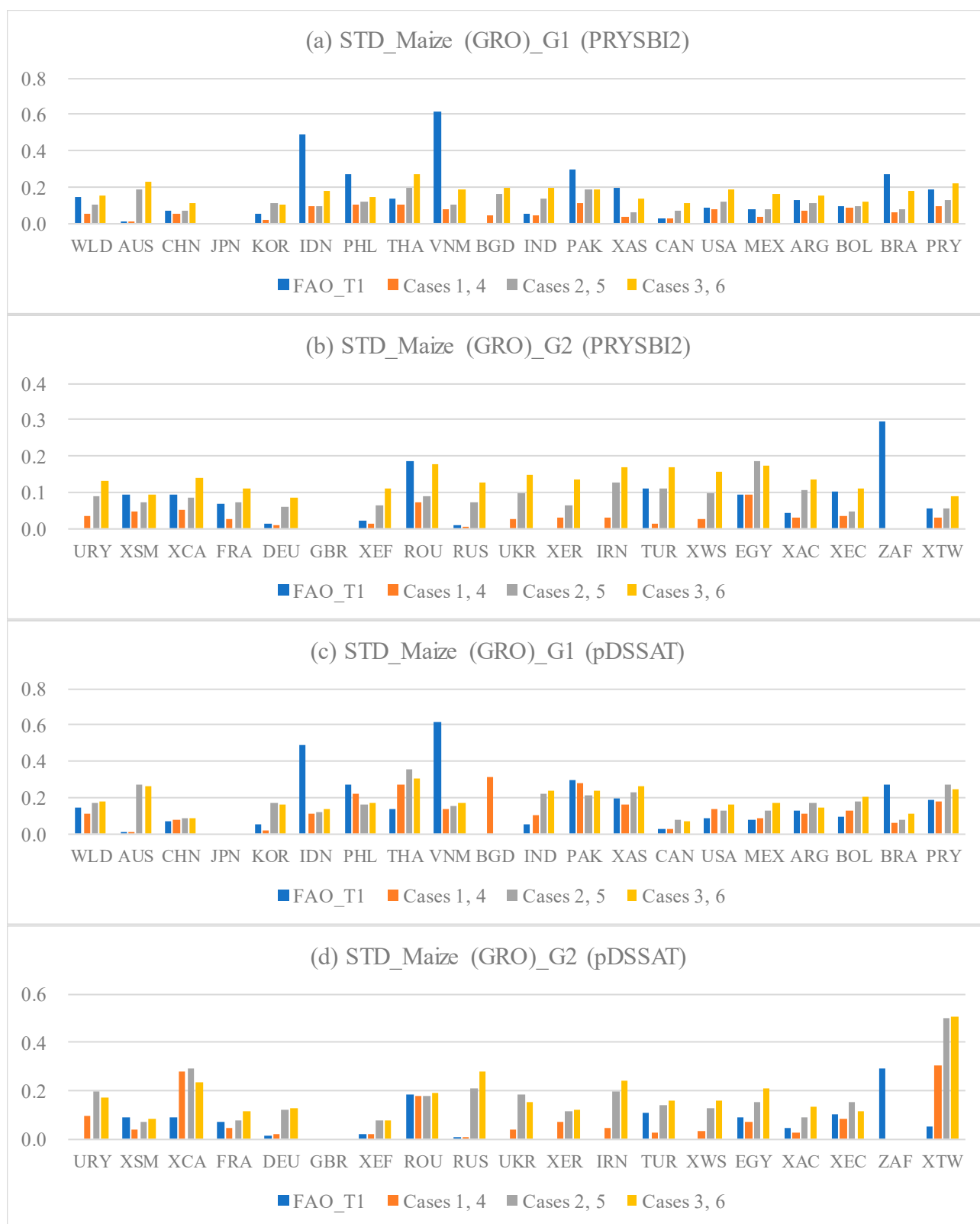


Figure S7. The standard deviation of GRO's EFP including maize by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

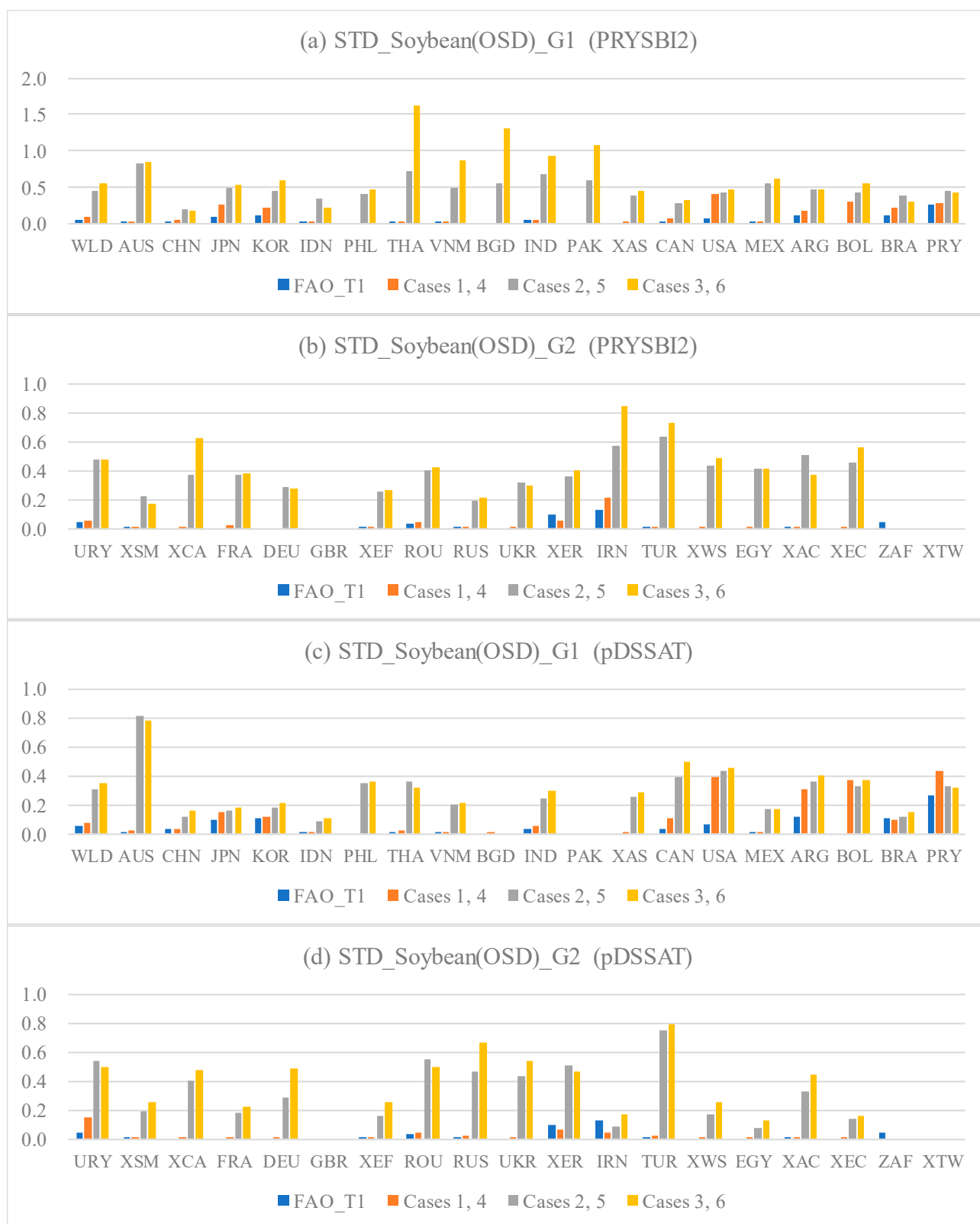


Figure S8. The standard deviation of OSD's EFP including soybean by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.



Figure S9. Average agricultural price (P_{agr}) without trade liberalization comparing by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

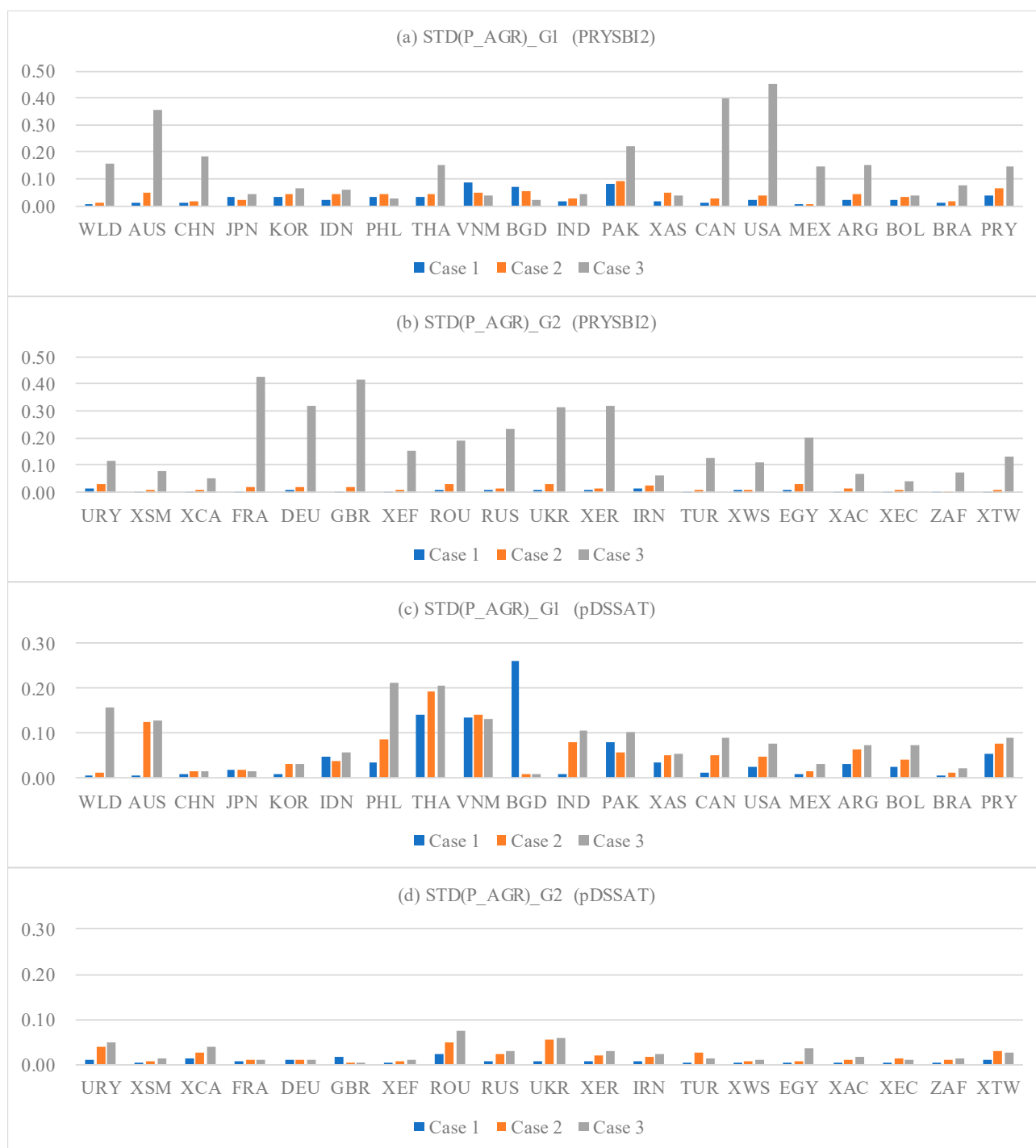


Figure S10. The standard deviation of agricultural price (P_{agr}) without trade liberalization comparing by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

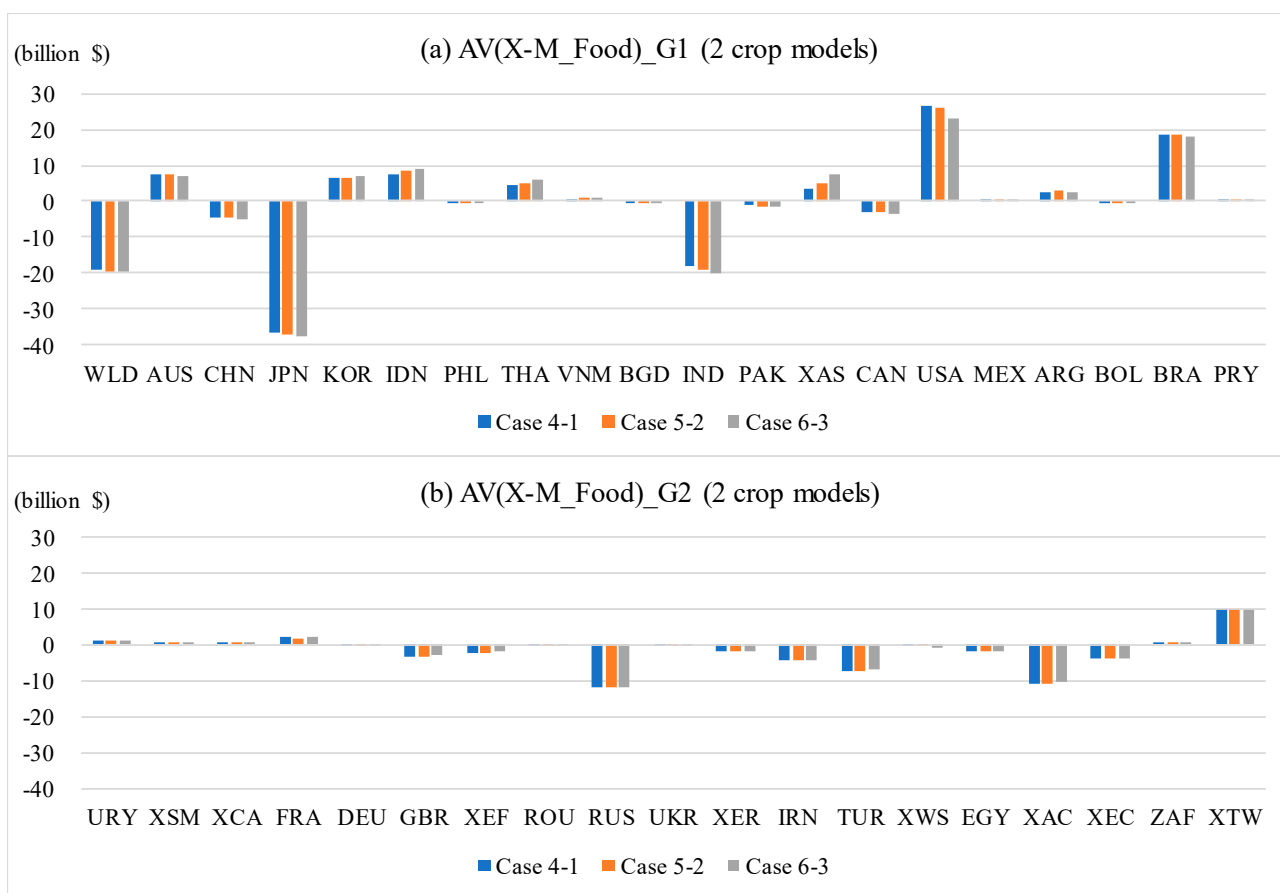


Figure S11. Average food net exports (exports – imports) by regions (average of two crop models). (a) Group 1 regions, (b) Group 2 regions. These values are about the net exports of agriculture and food processing sectors (PDR, WHT, GRO, OSD, OCR, OAP, VOL, PCR, OFD). The values of Cases 4-1 (non-SYF) and Cases 5-2 (SYF in T2) and Cases 6-3 (SYF in T3) show the amount of change in X-M due to trade liberalization by cases. In major food-exporting regions (e.g. Australia, Indonesia, Thailand, USA, Argentina, Brazil, Uruguay, France) these values were positive and in major food-importing regions (e.g. China, Japan, Russia, Iran, Turkey) these values became negative.

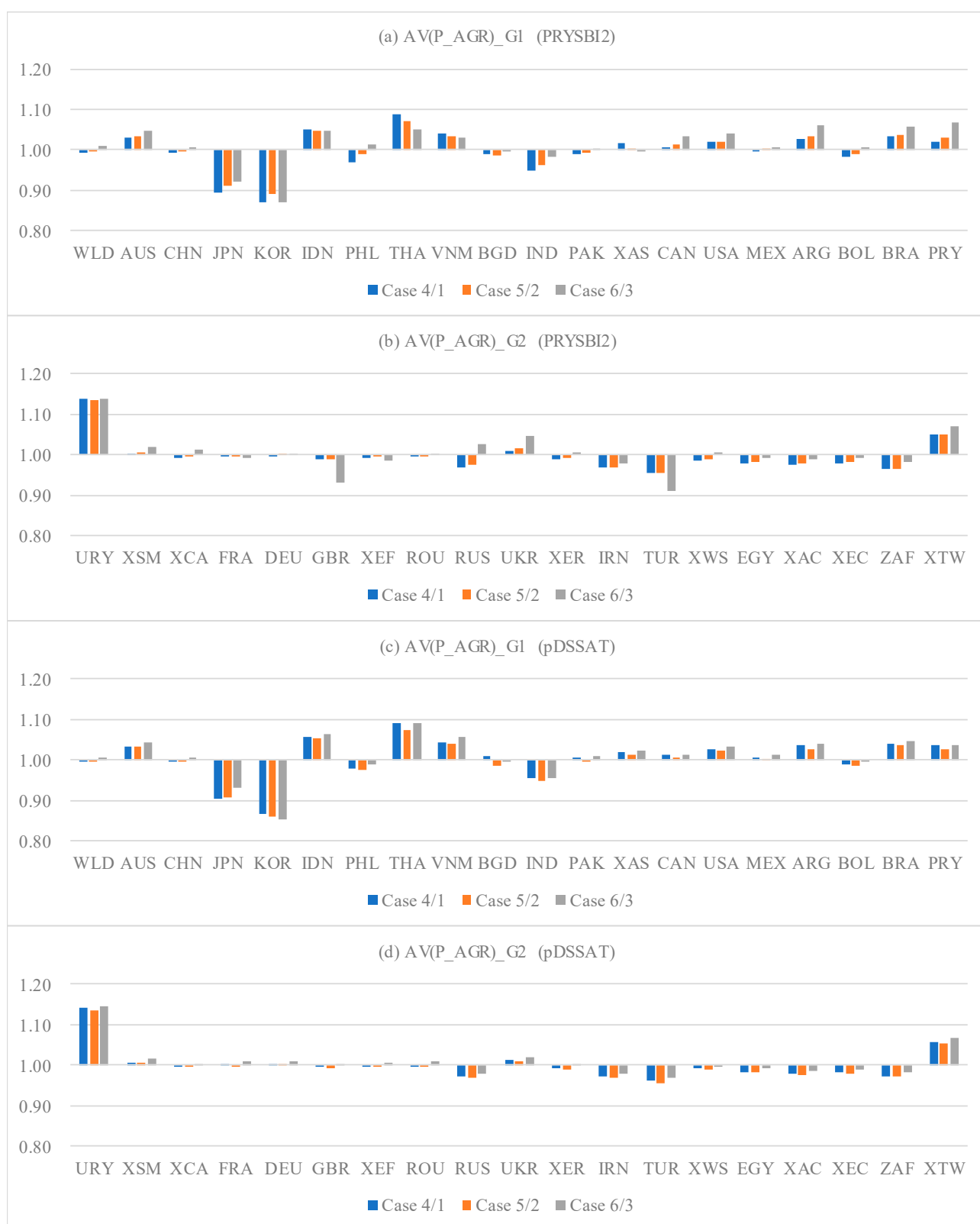


Figure S12. Net effects of trade liberalization in average agricultural price (P_{agr}) comparing by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

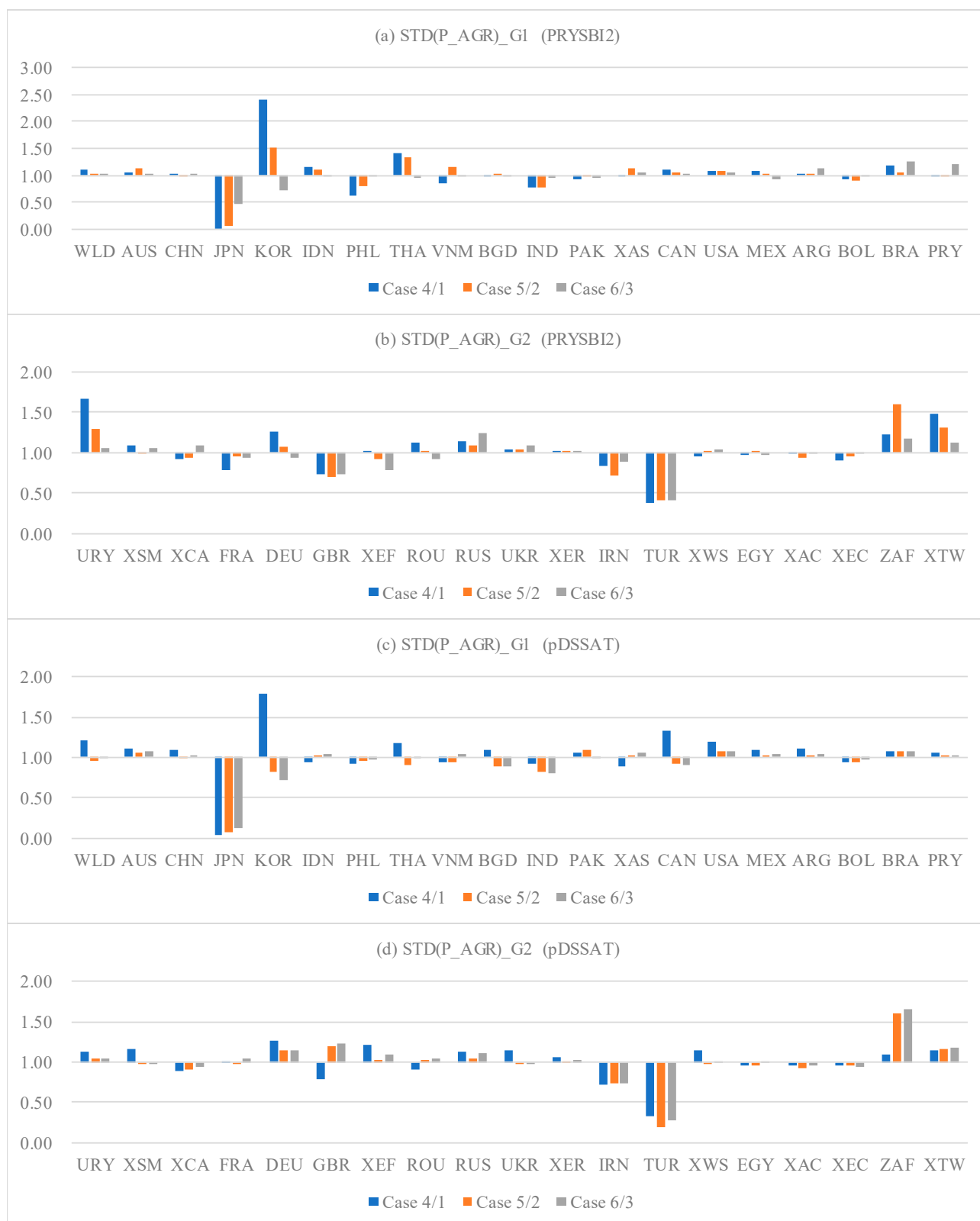


Figure S13. Net effects of trade liberalization in the standard deviation of agricultural price (P_{agr}) comparing by regions and crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

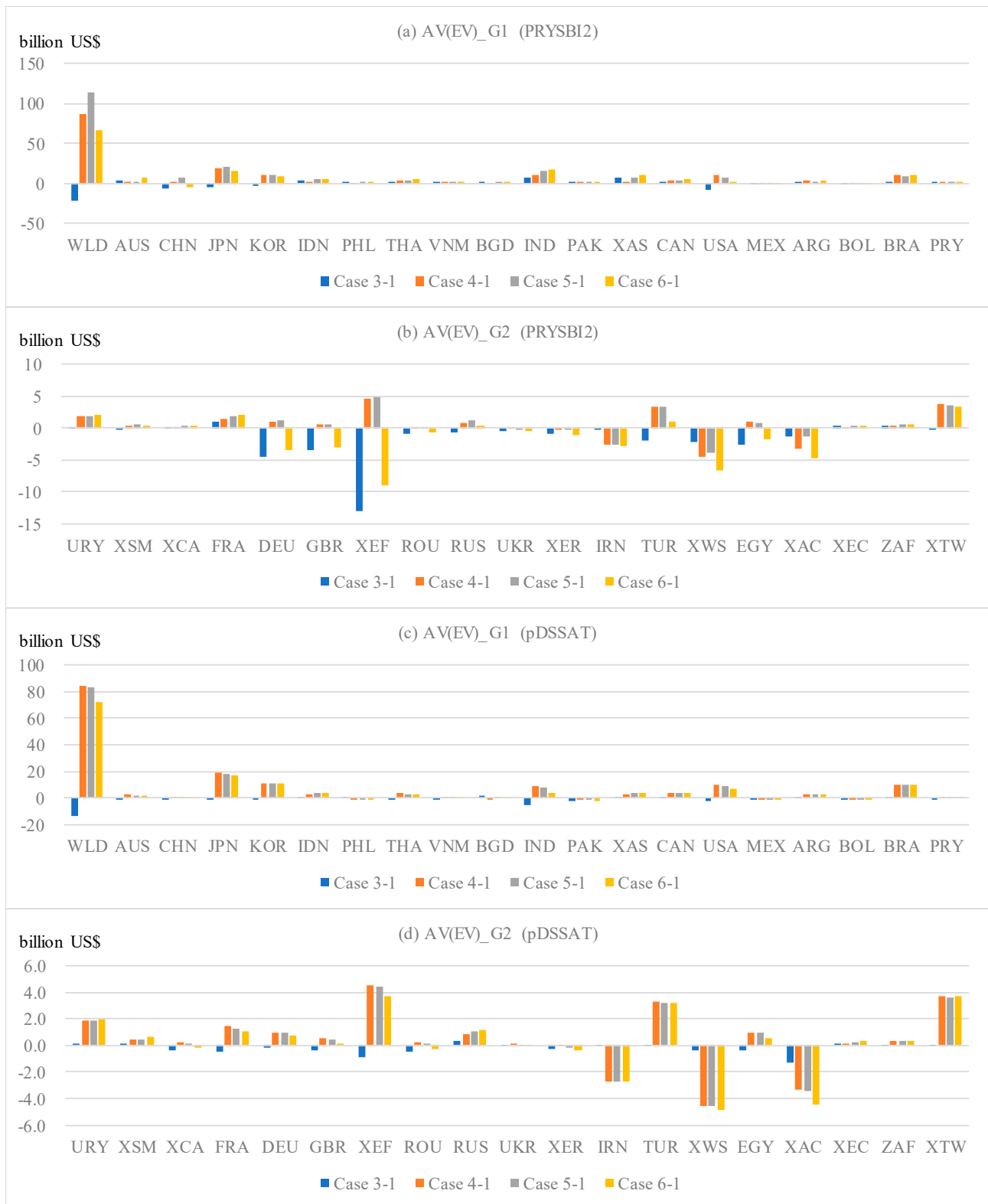


Figure S14. Changes in average EV with and without SYC or trade liberalization comparing by regions and two crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.

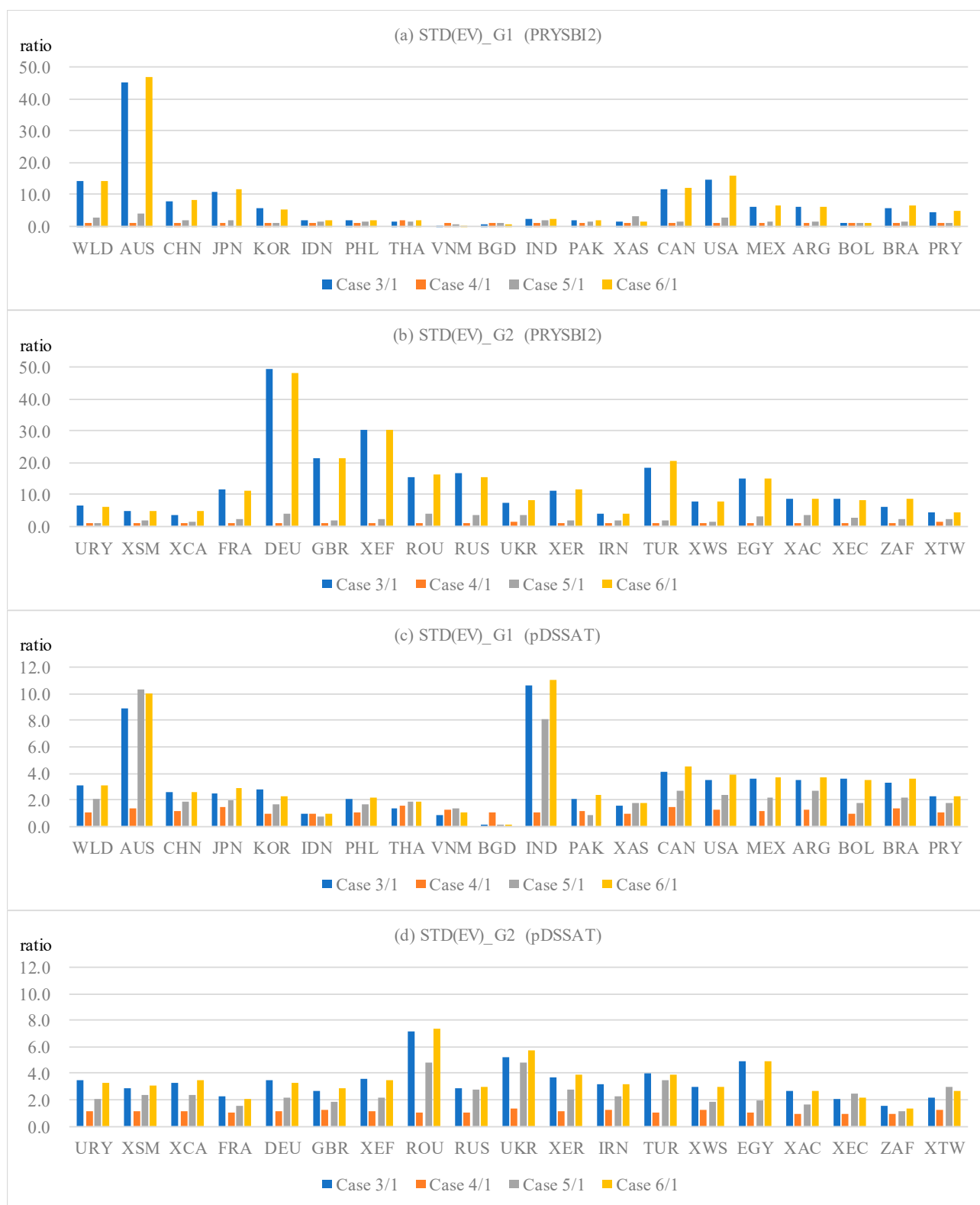


Figure S15. Changes in the standard deviation of EV with and without SYC or trade liberalization comparing by regions and two crop models. (a) Group 1 regions estimated by PRYSBI2, (b) Group 2 regions estimated by PRYSBI2, (c) Group 1 regions estimated by pDSSAT, and (d) Group 2 regions estimated by pDSSAT. Regions or cases without bars are those for which there is no data or cannot be estimated.