

2014 Statewide Land Use Mapping Accuracy Assessment Results

After completion of the final classification dataset, a comprehensive accuracy assessment is completed. Independent ground truthing samples set aside for this purpose (25% of the final ground truth data) are used in this process. A stratified random sampling method is used for accuracy assessment sample selection. The datasets are stratified by land cover type and county boundary. In the 2014 analysis, more than 6,300 samples were selected for accuracy assessment. These sites are not used to train the classification algorithm and therefore represent unbiased reference information.

The overall accuracy result for the crop mapping statewide was 96.6% (Table 1). Accuracy and error results vary among crop types. In particular, some less extensive crops that have very few validation samples may have a skewed accuracy result depending on the number and nature of validation sample points. Some land cover types (e.g., apples, avocados, bush berries, carrots, cole crops, dates, kiwis) are not included in the error matrix due to insufficient data. In these cases there were either no or less than 5 samples available for accuracy assessment. Full error statistics including errors of omission and commission indicate the nature of any misclassifications by crop. Omission errors are those where the analysis missed a field in a crop class and commission errors are those where the analysis included a field erroneously in a crop class. These are shown at the statewide level in Table 2.

TABLE 1. STATEWIDE LAND USE MAPPING OVERALL ACCURACY AND ERROR

	Reference Sample Total	No. Correct	No. Wrong	% Corr	Omission Error
Alfalfa and Alfalfa Mixtures	484	474	10	97.9%	2.1%
Almonds	1356	1331	25	98.2%	1.8%
Beans (Dry)	35	34	1	97.1%	2.9%
Cherries	53	48	5	90.6%	9.4%
Citrus	472	462	10	97.9%	2.1%
Corn, Sorghum and Sudan	593	562	31	94.8%	5.2%
Cotton	159	154	5	96.9%	3.1%
Flowers, Nursery and Christmas Tree Farms	13	12	1	92.3%	7.7%
Grapes	690	679	11	98.4%	1.6%
Idle	419	389	30	92.8%	7.2%
Lettuce/Leafy Greens	7	6	1	85.7%	14.3%
Melons, Squash and Cucumbers	49	47	2	95.9%	4.1%
Miscellaneous Deciduous	18	15	3	83.3%	16.7%
Miscellaneous Grain and Hay	41	38	3	92.7%	7.3%
Miscellaneous Grasses	13	11	2	84.6%	15.4%
Miscellaneous Truck Crops	13	10	3	76.9%	23.1%
Mixed Pasture	251	238	13	94.8%	5.2%
Olives	104	102	2	98.1%	1.9%
Onions and Garlic	8	8	0	100.0%	0.0%
Peaches/Nectarines	132	124	8	93.9%	6.1%
Pistachios	199	193	6	97.0%	3.0%
Plums, Prunes and Apricots	152	146	6	96.1%	3.9%
Pomegranates	24	23	1	95.8%	4.2%
Potatoes and Sweet Potatoes	27	26	1	96.3%	3.7%
Rice	234	231	3	98.7%	1.3%
Sunflowers	16	16	0	100.0%	0.0%
Tomatoes	159	156	3	98.1%	1.9%
Walnuts	558	543	15	97.3%	2.7%
Wheat	73	62	11	84.9%	15.1%
Young Perennials	20	16	4	80.0%	20.0%
Total	6372	6156	216	96.61%	

TABLE 2. STATEWIDE LAND USE MAPPING ERROR MATRIX

	Predicted																											Grand Total	No. Correct	No. Wrong	% Corr	Omission Error							
	Alfalfa and Alfalfa Mixtures	Almonds	Beans (Dry)	Cherries	Citrus	Corn, Sorghum and Sudan	Cotton	Flowers, Nursery and Christmas Tree Farms	Grapes	Idle	Lettuce/Leafy Greens	Melons, Squash and Cucumbers	Miscellaneous Deciduous	Miscellaneous Grain and Hay	Miscellaneous Grasses	Miscellaneous Truck Crops	Mixed Pasture	Olives	Onions and Garlic	Peaches/Nectarines	Pistachios	Plums, Prunes and Apricots	Pomegranates	Potatoes and Sweet Potatoes	Rice	Sunflowers	Tomatoes						Walnuts	Wheat	Young Perennials				
Alfalfa and Alfalfa Mixtures	474					9																													484	474	10	97.9%	2.1%
Almonds	2	1331		3					3	1										4	1	2								6	1	2	1356	1331	25	98.2%	1.8%		
Beans (Dry)			34							1																								35	34	1	97.1%	2.9%	
Cherries		1		48	1															1									2			53	48	5	90.6%	9.4%			
Citrus		1		1	462					1										5		2										472	462	10	97.9%	2.1%			
Corn, Sorghum and Sudan	9	2	3		2	562	1			5			2												1	2		1	3		593	562	31	94.8%	5.2%				
Cotton	1					2	154														1						1				159	154	5	96.9%	3.1%				
Flowers, Nursery and Christmas Tree Farms							12													1											13	12	1	92.3%	7.7%				
Grapes		6		1					679	1										1		1	1								690	679	11	98.4%	1.6%				
Idle	2	1	3			9	1			389				3			1		1						1		1	1	6		419	389	30	92.8%	7.2%				
Lettuce/Leafy Greens										1	6																					7	6	1	85.7%	14.3%			
Melons, Squash and Cucumbers	1									1		47																				49	47	2	95.9%	4.1%			
Miscellaneous Deciduous					1				1				15								1											18	15	3	83.3%	16.7%			
Miscellaneous Grain and Hay														38												1		2				41	38	3	92.7%	7.3%			
Miscellaneous Grasses	1														11									1								13	11	2	84.6%	15.4%			
Miscellaneous Truck Crops										1	2					10																13	10	3	76.9%	23.1%			
Mixed Pasture	4					1				4			2				238												2			251	238	13	94.8%	5.2%			
Olives										1								102															104	102	2	98.1%	1.9%		
Onions and Garlic																			8													8	8	0	100.0%	0.0%			
Peaches/Nectarines						1							1								124		2						2			132	124	8	93.9%	6.1%			
Pistachios	1				1				1	1										1	193								1			199	193	6	97.0%	3.0%			
Plums, Prunes and Apricots		1							1				2										146						1			152	146	6	96.1%	3.9%			
Pomegranates																					1		23									24	23	1	95.8%	4.2%			
Potatoes and Sweet Potatoes												1													26								27	26	1	96.3%	3.7%		
Rice										2																231		1					234	231	3	98.7%	1.3%		
Sunflowers																											16						16	16	0	100.0%	0.0%		
Tomatoes			1						1						1													156					159	156	3	98.1%	1.9%		
Walnuts		1								1		1					1			1		1							543		9	558	543	15	97.3%	2.7%			
Wheat	2					2				7																				62			73	62	11	84.9%	15.1%		
Young Perennials		1			1					2																							20	16	4	80.0%	20.0%		
Total	497	1345	41	53	468	586	156	12	686	419	8	48	19	45	12	10	240	102	9	139	196	154	24	27	234	19	161	559	72	31	6372								
No. Correct	474	1331	34	48	462	562	154	12	679	389	6	47	15	38	11	10	238	102	8	124	193	146	23	26	231	16	156	543	62	16		6156							
No. Wrong	23	14	7	5	6	24	2	0	7	30	2	1	4	7	1	0	2	0	1	15	3	8	1	1	3	3	5	16	10	15			216						
% Corr	95.4%	99.0%	82.9%	90.6%	98.7%	95.9%	98.7%	100.0%	99.0%	92.8%	75.0%	97.9%	78.9%	84.4%	91.7%	100.0%	99.2%	100.0%	88.9%	89.2%	98.5%	94.8%	95.8%	96.3%	98.7%	84.2%	96.9%	97.1%	86.1%	51.6%					96.61%				
Commission Error	4.6%	1.0%	17.1%	9.4%	1.3%	4.1%	1.3%	0.0%	1.0%	7.2%	25.0%	2.1%	21.1%	15.6%	8.3%	0.0%	0.8%	0.0%	11.1%	10.8%	1.5%	5.2%	4.2%	3.7%	1.3%	15.8%	3.1%	2.9%	13.9%	48.4%									