

2015 Cost of Potato Production Study
for Colorado, Idaho, Washington and Wisconsin:

Cost per Acre by Major Cost Category
Cost per Hundredweight by Major Cost Category – Field Run
Cost per Hundredweight by Major Cost Category – Paid Yield
Storage Costs per Hundredweight By Month – Field Run
Storage Costs per Hundredweight By Month – Paid Yield

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Report Submitted to:

United Potato Growers of America
The Idaho Cost of Potato Production Advisory Committee,
and the Idaho Potato Commission R & E Committee

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This project was funded by the United Potato Growers of America and the Idaho Potato Commission.

2015 Cost of Potato Production Study for Colorado, Idaho, Washington and Wisconsin

Cost of production estimates in the following tables are typical or representative production costs for these states. These are not average cost of production for these states. Farm size, crop rotation, water source, type of irrigation system, age and type of equipment, and the quality and intensity of management all influence costs. Each farm has a unique set of resources with different levels of productivity, different production problems, and therefore, different costs. While acknowledging its limitations, a single cost of production estimate is presented for Colorado, Washington and Wisconsin. These studies were funded by United Potato Growers of America. There are six cost of production estimates presented for Idaho, representing three major commercial areas of southern Idaho. The Idaho studies were funded by the Idaho Potato Commission. All studies presented here were conducted by Paul Patterson, retired University of Idaho Extension Agricultural Economist.

Procedures and Assumptions

Production practice information was collected from potato growers in each state or region. This data formed the basis for developing the model farms shown in Table 1. Growers provided information on tillage practices, inputs used, irrigation practices, harvesting and storage; basically all aspects of raising potatoes. All resources used in the production process are valued at a market rate, or "opportunity cost". Therefore, costs in the following tables are economic costs, not accounting or cash costs. Washington's and Idaho's potato enterprise budgets are for Russet Burbank. Budgets for Colorado and Wisconsin are for Russet Norkotah. Input prices were collected in 2015 from chemical fertilizer dealers and other input suppliers. A center pivot irrigation system was used on all model farms. Irrigation power costs for Washington's and all Idaho budgets are based on pressurization only for surface water delivered through a canal. Irrigation power costs for Colorado's potato budget were based on pressurization and a lift of 75 feet. Irrigation power costs for Wisconsin's potato budget were based on pressurization and a lift of 100 feet. Power rates specific to each state was used in these calculations. Labor rates include a base wage, plus a percentage to account for various payroll taxes (FICA, FUTA, SUTA), workman's compensation, as well as typical benefits for that class of labor such as paid vacation/personal leave days, health insurance, and bonuses.

A general overhead charge was calculated at ~2.5% of cash operating costs. A management charge was calculated at ~5% of total expenses. Machinery prices used in calculating capital recovery (or depreciation and interest) were 75% of replacement cost new. Land costs were based on a 1-year cash rent equivalent specifically for potatoes. Costs of production estimates were calculated using the *Budget Planner* software from the University of California, Davis.

The base cost of production in tables 2-4 include the cost to grow, harvest and sort potatoes. Storage costs are not included in these tables. Storage costs (ownership, repairs and monthly operating costs) are added to the base production cost and shown in tables 5 and 6.

Table 1. Model farm size, potato acres, yield and total production

Table 2. Cost per acre summary by major cost categories & per hundredweight for field-run & paid-yield

Table 3. Cost per hundredweight summary by major cost categories for field-run yield

Table 4. Cost per hundredweight summary by major cost categories for paid-yield

Table 5. Cost per hundredweight storage cost summary by month for field-run yield

Table 6. Cost per hundredweight storage cost summary by month for paid-yield

Table 1. 2015 Potato Cost of Production Study. Model farm size, potato acres, yield and total production.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	<u>Colorado</u>	<u>Washington</u>	<u>Wisconsin</u>	<u>Southwest</u>	<u>Southcentral</u>	<u>Eastern-S</u>	<u>Southcentral</u>	<u>Eastern-S</u>	<u>Eastern-N</u>
Model Farm:									
Farm Size	2,400	3,500	3,000	1,600	2,200	2,400	2,200	2,400	2,400
Potato Acres	1,000	1,500	800	500	550	800	550	800	800
% Potatoes	42%	43%	27%	31%	25%	33%	25%	33%	33%
Yield:									
Field-Run: Fumigated	445	625	460	515	470	425	425	385	360
% Paid Yield	85%	92%	92%	95%	95%	95%	95%	95%	95%
Paid Yield	378	575	423	489	447	404	404	366	342
Total Potato Production	445,000	937,500	368,000	257,500	258,500	340,000	233,750	308,000	288,000
Potato Variety:	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank

Eastern Idaho south: Bannock, Bingham and Power counties. Eastern Idaho north: Bonneville and Madison counties.

Note: cost of production studies for Idaho were funded by the Idaho Potato Commission.

Cost of production studies for Colorado, Washington and Wisconsin were funded by United Potato Growers of America.

Cost of production studies were conducted by Paul Patterson, retired Extension Agricultural Economist, University of Idaho.

Note: potato yields are based on a base yield that is adjusted using a 3-year average yield, currently 2012-2014. USDA's potato yield data for 2015 is preliminary and was not used.

Yields for the Washington and the Wisconsin cost of production estimates were the same as 2014. The yield for Colorado was down 5 cwt over that used for 2014, the yield for western Idaho was down 10 cwt, and the yields for southcentral and southeastern (both north and south) were up 5 cwt over the values used in 2014.

Table 2. 2015 Potato cost of production study. Cost per acre summary by major cost categories & per hundredweight for field-run and paid-yield.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	Colorado	Washington	Wisconsin	SWI	SCI	EI-S	SCI	EI-S	EI-N
Variety	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank
Field-Run	445	630	460	515	470	425	425	385	360
% Paid Yield	85%	92%	92%	95%	95%	95%	95%	95%	95%
Paid Yield	378	580	423	489	447	404	404	366	342
Operating Costs:									
Seed	\$428	\$434	\$307	\$356	\$330	\$290	\$330	\$290	\$279
Fertilizer	\$472	\$656	\$434	\$546	\$489	\$448	\$449	\$414	\$391
Pesticides/Chemicals	\$308	\$846	\$612	\$633	\$544	\$476	\$318	\$267	\$239
Custom/Consultants	\$40	\$152	\$73	\$158	\$157	\$120	\$113	\$76	\$67
Irrigation	\$259	\$169	\$86	\$125	\$116	\$96	\$111	\$93	\$68
Other	\$127	\$87	\$142	\$158	\$150	\$153	\$138	\$146	\$132
Field Labor	\$161	\$221	\$174	\$223	\$177	\$158	\$171	\$155	\$157
Machinery: FOLR	\$132	\$161	\$132	\$155	\$125	\$127	\$124	\$127	\$127
Sorting	\$63	\$96	\$74	\$73	\$67	\$60	\$60	\$55	\$51
Interest	\$61	\$96	\$61	\$84	\$73	\$65	\$54	\$47	\$44
Total Operating	\$2,051	\$2,918	\$2,095	\$2,511	\$2,228	\$1,993	\$1,868	\$1,670	\$1,555
Operating/cwt: F-R	\$4.61	\$4.63	\$4.55	\$4.88	\$4.74	\$4.69	\$4.40	\$4.34	\$4.32
Operating/cwt: P-Y	\$5.42	\$5.03	\$4.95	\$5.13	\$4.99	\$4.94	\$4.63	\$4.57	\$4.55
Ownership Costs:									
General Overhead	\$51	\$73	\$53	\$63	\$47	\$42	\$47	\$41	\$39
Management Fee	\$131	\$200	\$140	\$178	\$138	\$123	\$138	\$123	\$112
Land	\$270	\$725	\$395	\$700	\$625	\$535	\$625	\$535	\$440
Equip. Tax & Insurance	\$10	\$10	\$11	\$6	\$6	\$5	\$6	\$5	\$5
Sorting Equip. D & I	\$66	\$92	\$67	\$75	\$69	\$61	\$61	\$56	\$52
Field Equip. D & I	\$178	\$181	\$186	\$201	\$188	\$172	\$185	\$170	\$170
Total Ownership	\$706	\$1,281	\$852	\$1,223	\$1,073	\$938	\$1,062	\$930	\$818
Ownership/cwt: F-R	\$1.59	\$2.03	\$1.85	\$2.37	\$2.28	\$2.21	\$2.50	\$2.42	\$2.27
Ownership/cwt: P-Y	\$1.87	\$2.21	\$2.01	\$2.50	\$2.40	\$2.32	\$2.63	\$2.54	\$2.39
Total Costs:									
Total cost per acre	\$2,757	\$4,199	\$2,947	\$3,734	\$3,301	\$2,931	\$2,930	\$2,600	\$2,373
Total Cost/cwt: F-R	\$6.20	\$6.67	\$6.41	\$7.25	\$7.02	\$6.90	\$6.89	\$6.75	\$6.59
Total Cost/cwt: P-Y	\$7.29	\$7.24	\$6.96	\$7.63	\$7.39	\$7.26	\$7.26	\$7.11	\$6.94

F-R = Field-Run Yield

P-Y = Paid Yield

Machinery FOLR = Fuel, Oil, Lube and Repairs

D & I = Depreciation and Interest, or Capital Recovery for machinery and equipment.

EI-N = Eastern Idaho northern counties (north of Blackfoot), no fumigation.

EI-S = Eastern Idaho northern counties (South of Blackfoot), no fumigation.

Note: Cost to grow, harvest and sort potatoes only. Storage costs are not included in this table.

Cost of production studies for Idaho were funded by the Idaho Potato Commission.

Cost of production studies for Colorado, Washington and Wisconsin were funded by United Potato Growers of America.

Cost of production studies were conducted by Paul Patterson, retired Extension Agricultural Economist, University of Idaho.

Table 3. 2015 Potato cost of production study. Cost per hundredweight summary by major cost category: field-run yield.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	Colorado	Washington	Wisconsin	SWI	SCI	EI-S	SCI	EI-S	EI-N
Variety	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank
Field-Run	445	630	460	515	470	425	425	385	360
% Paid Yield	85%	92%	92%	95%	95%	95%	95%	95%	95%
Paid Yield	378	580	423	489	446.5	404	404	366	342
Operating Costs:									
Seed	\$0.96	\$0.69	\$0.67	\$0.69	\$0.70	\$0.68	\$0.78	\$0.75	\$0.78
Fertilizer	\$1.06	\$1.04	\$0.94	\$1.06	\$1.04	\$1.05	\$1.06	\$1.08	\$1.09
Pesticides/Chemicals	\$0.69	\$1.34	\$1.33	\$1.23	\$1.16	\$1.12	\$0.75	\$0.69	\$0.66
Custom/Consultants	\$0.09	\$0.24	\$0.16	\$0.31	\$0.33	\$0.28	\$0.27	\$0.20	\$0.19
Irrigation	\$0.58	\$0.27	\$0.19	\$0.24	\$0.25	\$0.23	\$0.26	\$0.24	\$0.19
Other	\$0.29	\$0.14	\$0.31	\$0.31	\$0.32	\$0.36	\$0.32	\$0.38	\$0.37
Field Labor	\$0.36	\$0.35	\$0.38	\$0.43	\$0.38	\$0.37	\$0.40	\$0.40	\$0.44
Machinery: FOLR	\$0.30	\$0.26	\$0.29	\$0.30	\$0.27	\$0.30	\$0.29	\$0.33	\$0.35
Sorting	\$0.14	\$0.15	\$0.16	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14	\$0.14
Interest	\$0.14	\$0.15	\$0.13	\$0.16	\$0.16	\$0.15	\$0.13	\$0.12	\$0.12
Total Op. Cost per Cwt	\$4.61	\$4.63	\$4.55	\$4.88	\$4.74	\$4.69	\$4.40	\$4.34	\$4.32
Ownership Costs:									
General Overhead	\$0.11	\$0.12	\$0.12	\$0.12	\$0.10	\$0.10	\$0.11	\$0.11	\$0.11
Management Fee	\$0.29	\$0.32	\$0.30	\$0.35	\$0.29	\$0.29	\$0.32	\$0.32	\$0.31
Land	\$0.61	\$1.15	\$0.86	\$1.36	\$1.33	\$1.26	\$1.47	\$1.39	\$1.22
Equip. Tax & Insurance	\$0.02	\$0.02	\$0.02	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
Sorting Equip. D & I	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.14	\$0.14	\$0.15	\$0.14
Field Equip. Cap. Recover	\$0.40	\$0.29	\$0.40	\$0.39	\$0.40	\$0.40	\$0.44	\$0.44	\$0.47
Total Cost per Cwt	\$6.20	\$6.67	\$6.41	\$7.25	\$7.02	\$6.90	\$6.89	\$6.75	\$6.59

Machinery FOLR = Fuel, Oil, Lube and Repairs

D & I = Depreciation and Interest, or Capital Recovery for machinery and equipment.

EI-N = Eastern Idaho northern counties (north of Blackfoot), no fumigation.

EI-S = Eastern Idaho northern counties (South of Blackfoot), no fumigation.

Note: Cost to grow, harvest and sort potatoes only. Storage costs are not included in this table.

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Cost of production studies for Colorado, Washington and Wisconsin were funded by United Potato Growers of America.

Cost of production studies were conducted by Paul Patterson, retired Extension Agricultural Economist, University of Idaho.

Table 4. 2015 Potato cost of production study. Cost per hundredweight summary by major cost categories: paid-yield.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	Colorado	Washington	Wisconsin	SWI	SCI	EI-S	SCI	EI-S	EI-N
Variety	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank
Field-Run	445	630	460	515	470	425	425	385	360
% Paid Yield	85%	92%	92%	95%	95%	95%	95%	95%	95%
Paid Yield	378.25	580	423	489	447	404	404	366	342
Operating Costs:									
Seed	\$1.13	\$0.75	\$0.73	\$0.73	\$0.74	\$0.72	\$0.82	\$0.79	\$0.82
Fertilizer	\$1.25	\$1.13	\$1.03	\$1.12	\$1.10	\$1.11	\$1.11	\$1.13	\$1.14
Pesticides/Chemicals	\$0.81	\$1.46	\$1.45	\$1.29	\$1.22	\$1.18	\$0.79	\$0.73	\$0.70
Custom/Consultants	\$0.11	\$0.26	\$0.17	\$0.32	\$0.35	\$0.30	\$0.28	\$0.21	\$0.20
Irrigation	\$0.68	\$0.29	\$0.20	\$0.26	\$0.26	\$0.24	\$0.27	\$0.25	\$0.20
Other	\$0.34	\$0.15	\$0.34	\$0.32	\$0.34	\$0.38	\$0.34	\$0.40	\$0.39
Field Labor	\$0.43	\$0.38	\$0.41	\$0.46	\$0.40	\$0.39	\$0.42	\$0.42	\$0.46
Machinery: FOLR	\$0.35	\$0.28	\$0.31	\$0.32	\$0.28	\$0.31	\$0.31	\$0.35	\$0.37
Sorting	\$0.17	\$0.17	\$0.17	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15
Interest	\$0.16	\$0.17	\$0.14	\$0.17	\$0.16	\$0.16	\$0.13	\$0.13	\$0.13
Total Op. Cost per Cwt	\$5.42	\$5.03	\$4.95	\$5.13	\$4.99	\$4.94	\$4.63	\$4.57	\$4.55
Ownership Costs:									
General Overhead	\$0.13	\$0.13	\$0.13	\$0.13	\$0.11	\$0.10	\$0.12	\$0.11	\$0.11
Management Fee	\$0.35	\$0.35	\$0.33	\$0.36	\$0.31	\$0.30	\$0.34	\$0.34	\$0.33
Land	\$0.71	\$1.25	\$0.93	\$1.43	\$1.40	\$1.33	\$1.55	\$1.46	\$1.29
Equip. Tax & Insurance	\$0.03	\$0.02	\$0.03	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01
Sorting Equip. D & I	\$0.17	\$0.16	\$0.16	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15	\$0.15
Field Equip. Cap. Recovery	\$0.47	\$0.31	\$0.44	\$0.41	\$0.42	\$0.43	\$0.46	\$0.46	\$0.50
Total Cost per Cwt	\$7.29	\$7.24	\$6.96	\$7.63	\$7.39	\$7.26	\$7.26	\$7.11	\$6.94

Machinery FOLR = Fuel, Oil, Lube and Repairs

D & I = Depreciation and Interest, or Capital Recovery for machinery and equipment.

EI-N = Eastern Idaho northern counties (north of Blackfoot), no fumigation.

EI-S = Eastern Idaho northern counties (South of Blackfoot), no fumigation.

Note: Cost to grow, harvest and sort potatoes only. Storage costs are not included in this table.

Cost of production studies for Idaho were funded by the Idaho Potato Commission.

Cost of production studies for Colorado, Washington and Wisconsin were funded by United Potato Growers of America.

Cost of production studies were conducted by Paul Patterson, retired Extension Agricultural Economist, University of Idaho.

Table 5. 2015 Potato cost of production study. Cost per hundredweight storage cost summary by month: field-run yield.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	<u>Colorado</u>	<u>Washington</u>	<u>Wisconsin</u>	<u>SWI</u>	<u>SCI</u>	<u>EI-S</u>	<u>SCI</u>	<u>EI-S</u>	<u>EI-N</u>
Variety	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank
Base Cost: Field-Run Yield	\$6.20	\$6.67	\$6.41	\$7.25	\$7.02	\$6.90	\$6.89	\$6.75	\$6.59
Storage Ownership Cost	\$0.357	\$0.357	\$0.357	\$0.357	\$0.357	\$0.357	\$0.357	\$0.357	\$0.357
Storage Repair Costs	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041	\$0.041
Total	\$6.59	\$7.06	\$6.80	\$7.65	\$7.42	\$7.29	\$7.29	\$7.15	\$6.99
Cumulative Costs:									
October	\$6.79	\$7.26	\$7.05	\$7.87	\$7.63	\$7.50	\$7.50	\$7.35	\$7.19
November	\$6.95	\$7.42	\$7.22	\$8.04	\$7.80	\$7.67	\$7.67	\$7.52	\$7.36
December	\$7.03	\$7.50	\$7.31	\$8.13	\$7.88	\$7.75	\$7.75	\$7.61	\$7.44
January	\$7.11	\$7.58	\$7.40	\$8.22	\$7.97	\$7.83	\$7.84	\$7.69	\$7.53
February	\$7.19	\$7.66	\$7.49	\$8.30	\$8.05	\$7.92	\$7.92	\$7.77	\$7.61
Marh	\$7.27	\$7.74	\$7.58	\$8.39	\$8.13	\$8.00	\$8.01	\$7.86	\$7.69
April	\$7.44	\$7.92	\$7.76	\$8.58	\$8.32	\$8.18	\$8.19	\$8.04	\$7.88
May	\$7.54	\$8.02	\$7.87	\$8.69	\$8.42	\$8.29	\$8.29	\$8.14	\$7.98
June	\$7.65	\$8.14	\$8.00	\$8.82	\$8.54	\$8.41	\$8.42	\$8.26	\$8.10

Machinery FOLR = Fuel, Oil, Lube and Repairs

D & I = Depreciation and Interest, or Capital Recovery for machinery and equipment.

Ownership costs for non-field equipment used to sort and move potatoes are included in the base cost. This would include: even-flow bin, sorter/sizer, conveyers, and piler.

Storage ownership and repair costs are for the storage system includes the storage facility and the air system.

EI-N = Eastern Idaho northern counties (north of Blackfoot), no fumigation.

EI-S = Eastern Idaho northern counties (South of Blackfoot), no fumigation.

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Cost of production studies were conducted by Paul Patterson, retired Extension Agricultural Economist, University of Idaho.

Table 6. 2015 Potato cost of production study. Cost per hundredweight storage cost summary by month: paid-yield.

12/15/2015	Non-Fumigated	Fumigated	Fumigated	Idaho Fumigated			Idaho Non-Fumigated		
	<u>Colorado</u>	<u>Washington</u>	<u>Wisconsin</u>	<u>SWI</u>	<u>SCI</u>	<u>EI-S</u>	<u>SCI</u>	<u>EI-S</u>	<u>EI-N</u>
Variety	R. Norkotah	R. Burbank	R. Norkotah	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank	R. Burbank
Base Cost: Paid-Yield	\$7.29	\$7.24	\$6.96	\$7.63	\$7.39	\$7.26	\$7.26	\$7.11	\$6.94
Storage Ownership Cost	\$0.420	\$0.388	\$0.388	\$0.376	\$0.375	\$0.376	\$0.376	\$0.376	\$0.376
Storage Repair Costs	\$0.048	\$0.045	\$0.045	\$0.043	\$0.041	\$0.041	\$0.043	\$0.043	\$0.043
Total	\$7.76	\$7.68	\$7.40	\$8.05	\$7.81	\$7.68	\$7.68	\$7.53	\$7.36
Cumulative Costs:									
October	\$7.95	\$7.87	\$7.60	\$8.28	\$8.03	\$7.89	\$7.89	\$7.74	\$7.57
November	\$8.11	\$8.04	\$7.77	\$8.46	\$8.21	\$8.07	\$8.07	\$7.92	\$7.75
December	\$8.19	\$8.12	\$7.86	\$8.56	\$8.30	\$8.16	\$8.16	\$8.01	\$7.83
January	\$8.27	\$8.20	\$7.95	\$8.65	\$8.38	\$8.25	\$8.25	\$8.09	\$7.92
February	\$8.35	\$8.28	\$8.04	\$8.74	\$8.47	\$8.33	\$8.34	\$8.18	\$8.01
Marh	\$8.43	\$8.36	\$8.13	\$8.84	\$8.56	\$8.42	\$8.43	\$8.27	\$8.10
April	\$8.61	\$8.54	\$8.31	\$9.04	\$8.76	\$8.61	\$8.62	\$8.46	\$8.29
May	\$8.70	\$8.64	\$8.42	\$9.15	\$8.87	\$8.72	\$8.73	\$8.57	\$8.40
June	\$8.82	\$8.75	\$8.55	\$9.28	\$8.99	\$8.85	\$8.86	\$8.70	\$8.52

Machinery FOLR = Fuel, Oil, Lube and Repairs

D & I = Depreciation and Interest, or Capital Recovery for machinery and equipment.

Ownership costs for non-field equipment used to sort and move potatoes are included in the base cost. This would include: even-flow bin, sorter/sizer, conveyers, and piler.

Storage ownership and repair costs are for the storage system includes the storage facility and the air system.

EI-N = Eastern Idaho northern counties (north of Blackfoot), no fumigation.

EI-S = Eastern Idaho northern counties (South of Blackfoot), no fumigation.

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