THESIS™
BY THE SUSTAINABILITY CONSORTIUM

Interpretation Guide of Quantitative Responses to THESIS KPIs in Select Produce Assessments

Contents

THE SUSTAINABILITY CONSORTIUM™

Description

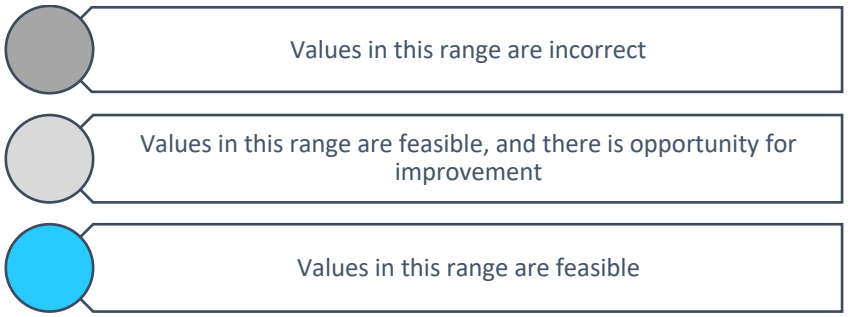
This Guide provides a benchmark for the evaluation of responses to TSC's THESIS KPIs with quantitative response options in select produce categories. Field and controlled environment agriculture (CEA) values are listed together unless otherwise noted which may provide a wide range of values.

The purpose of this guide is to determine feasibility of the responses.[i] The following KPIs are covered in this Guide: [ii]

- *Fertilizer Application – Growing Operations (GO)*
- *Food Loss and Waste Generation - Distribution*
- *Food Loss and Waste Generation – Processing*
- *Greenhouse Gas Emissions – Growing Operations (GO)*
- *Irrigation Water Use – Growing Operations (GO)*
- *Yield – Growing Operations (GO)*

Please note that the feasibility ranges provided in this document are based on normal conditions and, therefore, may change due to extreme weather events and climate change

Classification



Interpretation Tables of Quantitative Responses

APPLES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.31	0.31 - 2.08	>2.08	>15	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-2.3	<-1.2	-1.2 - 1.2	>1.2	≥4.7	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<50	50 - 500	>500	≥1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	1 - 694	>694	≥1388	Not possible to determine "too low” and “low" ranges because apples can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 75	>75	≥100	Higher values are desirable.

APRICOTS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.7	1.7 - 11	>11	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-11	<-5.4	-5.4 - 5.4	>5.4	≥22	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<85	85 - 400	>400	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 1196	>1196	≥2392	Not possible to determine "too low and low ranges" because apricots can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<6	6 - 60	>60	>75	Higher values are desirable.

AVOCADOS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<2.4	2.4 - 16	>16	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-6.8	<-3.4	-3.4 - 3.4	>3.4	≥13.6	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<160	160 - 1100	>1100	≥2200	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 1132	>1132	≥2264	Not possible to determine "too low and low ranges" because avocados can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<3	3 - 90	>90	≥112	Higher values are desirable.

BANANAS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.7	1.7 - 8.7	>8.7	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-2.4	<-1.2	-1.2 - 1.2	>1.2	≥4.9	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<70	70 - 290	>290	≥600	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 757	>757	≥1514	Not possible to determine "too low and low ranges" because bananas can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<4	4 - 130	>130	≥163	Higher values are desirable.

BLACKBERRY

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.7	1.7 - 11	>11	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-15	<-7.6	-7.6 - 7.6	>7.6	≥30	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<155	155 - 310	>310	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 675	>675	≥1350	Not possible to determine "too low and low ranges" because blackberries can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<5	5 - 34	>34	≥43	Higher values are desirable.

BLUEBERRY

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.9	0.9 - 6	>6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4	<-2.1	-2.1 - 2.1	>2.1	≥8.6	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<135	135 - 1800	>1800	>3600	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 675	>675	≥1350	Not possible to determine "too low and low ranges" because blueberries can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<5	5 - 34	>34	≥43	Higher values are desirable.

CHERRIES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.3	1.3 - 8.5	>8.5	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-16	<-8	-8 - 8	>8	≥32	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<105	105 - 640	>640	>1500	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 1492	>1492	≥2984	Not possible to determine "too low and low ranges" because cherries can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<4	4 - 44	>44	>55	Higher values are desirable.

CRANBERRIES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.6	0.6 - 3.7	>3.7	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-7	<-3.5	-3.5 - 3.5	>3.5	≥14	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<75	75 - 150	>150	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 199	>199	≥398	Not possible to determine "too low and low ranges" because cranberries can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<2	2 - 44	>44	>55	Higher values are desirable.

CUCUMBERS (CEA & Field)

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.75	0.75 - 5	>5	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/ Metric t of crop	-4.5	<-2.3	-2.3 - 2.3	>2.3	≥9.1	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<100	100 - 3500	>3500	≥5000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/ Metric t of crop						Insufficient data to estimate range.
Yield - GO	Metric t of crop/ha	0	<5	5 - 750	>750	≥1000	Higher values are desirable.

FRESH CUT FLOWERS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.7	0.7 - 29	>29	≥200	Not possible to determine "too low range" because production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/ Metric t of crop	-3.4	<-1.7	-1.7 - 8	>8	≥16	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<20	20 - 4100	>4100	≥8200	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 306	>306	≥612	Not possible to determine "too low and low ranges" because flowers can grow without irrigation.

GRAPES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.9	0.9 - 6	>6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/ Metric t of crop	-3.4	<-1.7	-1.7 - 1.7	>1.7	≥6.9	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<50	50 - 500	>500	≥1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 522	>522	≥1044	Not possible to determine "too low” and “low” ranges because grapes can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<1	1 - 40	>40	≥50	Higher values are desirable.

GRAPEFRUIT

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<0.9	0.9 - 6.1	>6.1	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-3.5	<-1.7	-1.7 - 1.7	>1.7	≥6.9	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<37	37 - 800	>800	≥1600	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop	N/A	N/A	0 - 452	>452	≥904	Not possible to determine "too low" and "low" ranges because grapefruit can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<2	2 - 85	>85	≥100	Higher values are desirable.

LEMON

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<1.3	1.3 - 8.8	>8.8	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.1	<-2	-2 - 2	>2	≥8.1	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<45	45 - 500	>500	≥1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop	N/A	N/A	0 - 584	>584	≥1168	Not possible to determine "too low" and "low" ranges because lemons can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 95	>95	≥115	Higher values are desirable.

LETTUCE AND SALAD GREENS (CEA & Field)

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<1.5	1.5 - 10	>10	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-10	<-5	-5 - 5	>5	≥20	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<100	100 - 3500	>3500	≥5000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop						Insufficient data to estimate range.
Yield - GO	Metric t of crop/ha	0	<5	5 - 750	>750	≥1000	Higher values are desirable.

LIMES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<0.8	0.8 - 5.6	>5.6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.7	<-2.4	-2.4 - 2.4	>2.4	≥9.5	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<45	45 - 500	>500	≥1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop	N/A	N/A	0 - 584	>584	≥1168	Not possible to determine "too low" and "low" ranges because limes can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 80	>80	≥100	Higher values are desirable.

MANDARINS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<1	1 - 6.5	>6.5	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.3	<-2.2	-2.2 - 2.2	>2.2	≥8.6	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<40	40 - 700	>700	≥1400	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop	N/A	N/A	0 - 597	>597	≥1194	Not possible to determine "too low" and "low" ranges because mandarins can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<3	3 - 80	>80	≥100	Higher values are desirable.

NECTARINES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.3	1.3 - 8.5	>8.5	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-6	<-3	-3 - 3	>3	≥11.9	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<44	44 - 400	>400	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 711	>711	≥1542	Not possible to determine "too low and low ranges" because nectarines can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<11	11 - 80	>80	>100	Higher values are desirable.

ORANGES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/ Metric t of crop	N/A	<1.1	1.1 - 7.5	>7.5	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.3	<-2.1	-2.1 - 2.1	>2.1	≥8.6	Desirable value is 0.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<20	20 - 600	>600	≥1200	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity – GO	m^3 of irrigation water/Metric t of crop	N/A	N/A	0 - 511	>511	≥1022	Not possible to determine "too low" and "low" ranges because oranges can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 80	>80	≥100	Higher values are desirable.

PEACHES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.1	1.1 to 7.3	>7.3	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-6	<-3	-3 - 3	>3	≥12	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<55	55 - 480	>480	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 711	>711	≥1542	Not possible to determine "too low and low ranges" because peaches can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<11	11 - 80	>80	>100	Higher values are desirable.

PEARS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.4	0.4 - 2.9	>2.9	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.6	<-2.3	-2.3 - 2.3	>2.3	≥9	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<43	43 - 450	>450	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 739	>739	≥1478	Not possible to determine "too low” and “low" because pears can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<14	14 - 76	>76	≥95	Higher values are desirable.

PEPPERS - CEA

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.1	1.1 - 7.3	>7.3	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.3	<-2.15	-2.15 - 2.15	>2.15	≥8.6	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<240	240 - 4700	>4700	>7500	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 282	>282	≥564	Insufficient data to determine "too low” and “low” ranges.
Yield - GO	Metric t of crop/ha	0	<22	22 - 123	>123	≥160	Higher values are desirable.

PEPPERS - FIELD

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.1	1.1 - 7.3	>7.3	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-4.3	<-2.15	-2.15 – 2.15	>2.15	≥8.6	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<40	40 - 1500	>1500	>5000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 282	>282	≥564	Not possible to determine "too low” and “low" because peppers can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<14	14 - 68	>68	≥85	Higher values are desirable.

PINEAPPLES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.6	0.6 - 4.3	>4.3	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-2.4	<-1.2	-1.2 – 1.2	>1.2	≥4.8	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<45	45 - 320	>320	>640	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 224	>224	≥448	Not possible to determine "too low and low ranges" because pineapples can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<4	4 - 240	>240	>300	Higher values are desirable.

PLUMS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.8	0.8 - 5.6	>5.6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-12	<-5.8	-5.8 - 5.8	>5.8	≥23	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<105	105 - 880	>880	>2000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 1758	>1758	≥3516	Not possible to determine "too low and low ranges" because plums can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<4	4 - 66	>66	>83	Higher values are desirable.

POTATOES AND SWEET POTATOES

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<2.3	2.3 – 15.6	>15.6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-2.4	<-1.2	-1.2 – 1.2	>1.2	≥4.8	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<50	50 - 200	>200	>250	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 224	>224	≥448	Not possible to determine "too low and low ranges" because potatoes and sweet potatoes can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 75	>75	>100	Higher values are desirable.

RASPBERRIERS

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.4	1.4 - 9.6	>9.6	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-15.3	<-7.6	-7.6 - 7.6	>7.6	≥30.6	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<135	135 - 270	>270	>1000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 346	>346	≥692	Not possible to determine "too low and low ranges" because raspberries can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<3	3 - 26	>26	>33	Higher values are desirable.

STRAWBERRIES - CEA

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.8	0.8 - 5.4	>5.4	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-3.6	<-1.8	-1.8 - 1.8	>1.8	≥7.3	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<270	270 - 5500	>5500	>7500	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 310	>310	≥620	Insufficient data to determine "too low” and “low” ranges.
Yield - GO	Metric t of crop/ha	0	<17	17 - 181	>181	>227	Higher values are desirable.

STRAWBERRIES - FIELD

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<0.8	0.8 - 5.4	>5.4	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/Metric t of crop	-3.6	<-1.8	-1.8 - 1.8	>1.8	≥7.3	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions Intensity - GO	Kg CO_2e/ Metric t of crop	0	<10	10 - 1500	>1500	>3000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use Intensity - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 310	>310	≥620	Not possible to determine "too low and low ranges" because strawberries can grow without irrigation
Yield - GO	Metric t of crop/ha	0	<10	10 - 110	>110	>138	Higher values are desirable.

TOMATOES (CEA & FIELD)

KPI	Metric	Data ranges					Notes
Fertilizer (N) Application - GO	Kg N/Metric t of crop	N/A	<1.1	1.1 - 7.2	>7.2	≥200	Not possible to determine "too low range" because crop production is possible without fertilizer addition.
Fertilizer (P) Application - GO	Kg P surplus/ Metric t of crop	-0.5	<-0.3	-0.3 - 0.3	>0.3	≥1.1	Desirable value is 0.
Food Loss and Waste Generation - Distribution	Composite score	N/A	N/A	0 - 0.1	>0.1	≥1	Not possible to determine “too low” and “low” ranges because it is possible to have zero food loss and waste generation.
Greenhouse Gas Emissions - GO	Kg CO_2e/ Metric t of crop	0	<25	25 - 3500	>3500	≥5000	Lower values are desirable, but a 0 is not possible.
Irrigation Water Use - GO	m^3 of irrigation water/ Metric t of crop	N/A	N/A	0 - 181	>181	≥362	Not possible to determine "too low” and “low” ranges because tomatoes can grow without irrigation.
Yield - GO	Metric t of crop/ha	0	<5	5 - 750	>750	≥1000	Higher values are desirable.

[i] For the purpose of this Interpretation Guide, feasible responses mean that the response is possible in practice and there is no uncertainty regarding the data quality.

[ii] The *Soil Erosion - Growing Operations* KPI was not covered in this Guide because soil erosion levels depend on the local conditions. Thus, no data on plausible ranges can be provided for this KPI.