(A)
Manual Wash vs. Crate System

Crop	Volume in crate	Labor time in minutes for crate based washer system	Labor time in minutes for hand wash	Minutes saved with Carte based washer system	Percentage of improvement
	lb	load /unload washer & rinse	hand wash	reduction	% save
green beans	13	3	9	6	66
beets w tops	12	2	12	10	83
beets wo tops	25	2	10	8	80
carrots w tops	15	2	15	13	86
carrots wo tops	25	2	12	10	83
snap peas	13	3	5	3	60
radishes w tops	8	2	7	5	71
radishes wo tops	20	2	5	3	60
cucumbers	15	1	3	2	66
squash	15	1	4	3	75
potatoes	25	2	20	18	90
turnips w top	12	2	12	10	83
turnips wo tops	25	2	10	8	80
peppers	10	2	5	3	60

NOTE: The time that the wash machine is running is not included in this chart, only the manual labor needs. While the washer is running you are free to be doing other tasks.

(B)

Crate Based System Notes by Crop Type	
Crops	Methods used for harvesting to marketing
Green Beans	Put beans in crate after harvesting, crates aid in cooling and or washing if needed, Note...if picked into crates some may be lost in field through holes in crate
Beets	Can be bundled with top in the field and placed in crates with roots down. Can also have tops trimmed in field and placed in crates for bulk handling
Carrots	Can be bundled with top in the field and placed in crates with roots down. Can also have tops trimmed in field and placed in crates for bulk handling
Snap Peas	Put beans in crate after harvesting, crates aid in cooling and or washing if needed, if picked into crates some may be lost in field through holes in crate
Radishes	Can be bundled with top in the field and placed in crates with roots down. Can also have tops trimmed in field and placed in crates for bulk handling
Cucumbers	Harvest into crates, wash as needed , leave in crates from storage to sales, some free space in crate aids washing
Summer squash	Harvest into crates, wash as needed , leave in crates from storage to sales, note...best if crate is full for washing, minimal free movement in crate
Potatoes	After digging place into crates, can be washed as new potatoes or stored, if stored crates can be shaken to remove excess dirt before washing, leave some free space in crate to create a slight tumbling action in the
Turnips	Can be bundled with top in the field and placed in crates with roots down. Can also have tops trimmed in field and placed in crates for bulk handling
Peppers	Harvest into crates, wash as needed , leave in crates from storage to sales, note...best if crate is full for washing, minimal free movement in crate
Small Pie Pumpkins	Pack into crates at harvest, best if pumpkins can not move freely in crate. Wash as needed use crate from storage to sales
Winter Squash	Pack into crates at harvest, best if winter squash can not move freely in crate. Wash as needed use crate from storage to sales
Onions	Harvest into crates, transport, and for drying if there is adequate air movement. Once dry crates can be used for storage and onions can be displayed in same crate (no wash process)
Zucchini	Harvest into crates, wash as needed , leave in crates from storage to sales, note...best if crate is full for washing, minimal free movement in crate
Broccoli	Harvest into crates, use crates for hydro cooling but not for washing, Crates can be used for cold storage and transportation.
Cauliflower	Harvest into crates, use crates for hydro cooling but not for washing, Crates can be used for cold storage and transportation.
Lettuce, head	Harvest into crates, use crates for hydro cooling but not for washing, wash action is to harsh for fresh greens. Crates can be used for cold storage and transportation.
Garlic	Use crates for storage after bulbs are dried and stems and roots have been trimmed
Tomatoes	*Our trial show that it is best to use a plastic tray for harvesting, transporting and storing tomatoes. One layer is best two possible but some damage is likely. (no wash process)
Cantaloupe	If small melons, the crates can be used for harvesting to display but without the wash process. Due to the relationship of the melon size to the crate this may not be the best use of space however for the small producer this can offer protection to the melons
Sweet Potatoes	Harvest into crates, transport, store, display in same crate (no wash process)
Asparagus	Crates can be used (if the hole configuration is compatible) for harvesting, hydro cooling, storage, transport and display
Watermelons	Crate system is not suggested due to space limitations
Cabbage	Harvest into crates, wash as needed , leave in crates from storage to sales, note...best if crate is full for washing, minimal free movement in crate
Small Gourds	Pack into crates at harvest. Wash as needed use crate from storage to sales. note... some free movement is ok for hard skin gourds

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(C)

This sheet can be used to evaluate the possibilities of using the crates based system

Crop Evaluation Sheet							
crop	with tops	without tops	bulk sales	pre weighed & or bundled	100% wash	< 100% wash	can I utilize crate system
green beans			X	X		X	X
beets	X	X	X	X	X		X
carrots	X	X	X	X	X		X
snap peas			X	X		X	X
radishes		X		X	X		X
cucumbers			X			X	X
squash			X			X	X
dry onions			X				X
green onions	X			X	X		
potatoes			X			X	X
turnips	X	X	X	X	X		X
garlic	X	X	X	X			
tomatoes			X			X	
peppers			X			X	X

Evaluate each crop to determine how it is offered for sale and if it needs field dirt removed before marketing. Evaluate if the crate system could be utilized within your current system and then evaluate if there are enough crops that the system would work with to justify implementation of any or all of the system. Additional crops can be added.
Start with blank boxes for your own evaluation.