

Beyond Beauty

The Opportunities and Challenges of Cosmetically Imperfect Produce

Report No. 3: Fresh-cut Processing and Foodservice Distribution



Photos courtesy of Russ Davis Wholesale.

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EXECUTIVE SUMMARY

- **Few imperfections in national supply chains:** Imperfect product is generally not being offered to participating produce distributors and fresh-cut processors by their national suppliers with the exception of items like misshapen “chopper” peppers, small apples and #2 potatoes.
- **Not part of the conversation:** Other than a handful of items, participating distributors and fresh-cut processors and their local farm partners rarely discuss imperfect products.
- **Supply limitations:** The supply of locally grown imperfects is hard to predict and may be modest in scale for some crops. Supply challenges will likely be a limiting factor for imperfects, at least on a regional basis.
- **It’s not the machines:** Cutting equipment, itself, doesn’t appear to be a significant barrier to using more over- or under-sized fruits and vegetables.
- **Varied impacts on processing costs:** Over-sized items like large cabbage, squash and melons can be advantageous because they reduce labor costs and enhance yields for the processor. Cutting costs and yields of other crops will depend on the particular imperfections involved, with the possibility of higher processing costs for some.



Mis-colored peppers. Photo by Flickr user Bill McChesney.

- **Overlap with locally available imperfects:** In our earlier Beyond Beauty research, we worked with area growers to identify particular imperfect products that growers viewed as priorities from a production perspective. We then coordinated with participating processors to gauge the prospects for these imperfect products from a processing perspective. Processors proved willing to consider many of the products prioritized by growers, including many items that are either over-sized, misshapen or have superficial scarring. Objections were more common for certain items that were bruised or mis-colored. As with all produce, freshness and food safety considerations remain paramount.
- **Additional handling and marketing costs:** When handling imperfects, distributors and processors may incur added costs for procurement, managing a proliferation of SKUs in their inventory system, and added marketing time and client education. These costs would be reflected in adjustments to handling fees at the processing and distribution segment of the supply chain.

EXECUTIVE SUMMARY, continued

- **Flat overall sales volumes:** Distributors anticipate that foodservice buyers will be motivated by the potential cost savings of imperfects, but will not increase the volume of their purchases as a result. This could lead to imperfects supplanting existing #1 sales, at least for those imperfects that are readily substituted from a processing and culinary perspective.
- **Benefits to local and organic?:** Greater availability of locally grown imperfects could potentially draw some demand away from non-local conventional product for those imperfects that are ready substitutes, particularly if their price is comparable to or somewhat below conventional #1. Similarly, locally grown organic imperfects that may otherwise lack a conventional foodservice market could potentially see new opportunities.
- **Broadening specifications:** Broadening specs for acceptable product – rather than creating separate specs for a distinct line of imperfect product – may help minimize the number of SKUs for distributors and simplify inventory management and ordering.



Field of cucumbers. Photo by Flickr user Media Mike Hazard.

Success factors

- Early and close collaboration between growers and processors/distributors.
- Education for growers about product specifications and how imperfections influence cutting and handling issues for the processor.
- Education for processors and foodservice about the nature and causes of imperfection.
- More dynamic coordination between processors and clients about the availability of imperfects and their implications for how product is cut and menu'ed.
- Agreements between buyers and distributors/processors that properly manage the risk of new product introductions.
- Flexibility among foodservice buyers in product ordering, menuing and food preparation.

ABOUT

In late 2014, the Real Food Challenge and JoAnne Berkenkamp at Tomorrow's Table began a collaboration to explore the possibilities for expanding market opportunities for cosmetically imperfect fruits and vegetables. In particular, we are seeking to understand more about how fruit and vegetable growers view these products and to test the market for these products among collegiate foodservices.

This gave rise to the initiative *Beyond Beauty: Opportunities & Challenges for Cosmetically Imperfect Produce*. Funded by the USDA Specialty Crop Block Grant program, the initiative is focused on growers and collegiate markets in Minnesota. A fuller description of the initiative is provided in Appendix A.

Our research and market development efforts include several components:

1. An electronic survey with Minnesota produce growers (Report No. 1, released in May 2015¹).
2. One-on-one interviews with Minnesota produce growers (Report No. 2, release in October 2015²).
3. Explorations with produce distributors and fresh-cut processors in Minnesota that serve the foodservice market (provided here).
4. Lessons from our partnerships with foodservice management companies at several public universities and private colleges in the state (anticipated Summer 2016).
5. Lessons from members of food recovery community that have utilized cosmetically imperfect produce (anticipated Summer 2016).

This third report from the Beyond Beauty initiative covers insights gained through our one-on-one interviews and exploration of the potential market for imperfects with fresh-cut processors and distributors that supply produce to institutional foodservice in Minnesota.

Six distribution companies participated in the research. They include four regional companies that both cut and distribute fresh produce, one regional distributor, and one national broadliner. One processor/distributor is now several years into a local purchasing program that incorporates numerous cosmetically imperfect products. Another is participating in the Compass Group-USA Imperfectly Delicious Program. Two of the participating companies currently supply produce to the college foodservice management partners that are participating in Beyond Beauty.

The author's dialogue with these companies was designed to:

- Illuminate current policies and practices for fruit and vegetable procurement, including cosmetically imperfect product grown in Minnesota
- Assess the perceived feasibility of imperfect produce in terms of product sourcing, fresh-cut processing, inventory management and marketing
- Explore perceptions about the potential for imperfect product to influence the existing market for #1 product
- Assess distributors' perspectives on the potential market for Minnesota-grown imperfects among foodservice client and related marketing challenges
- Explore potential impacts on fresh-cut processors and distributors if use of imperfects were to expand.

The quotes used in this report were provided by participating companies unless otherwise noted and are unattributed to maintain confidentiality. The Beyond Beauty initiative is focused exclusively on the issue of cosmetic imperfection in fruits and vegetables grown by farmers in Minnesota for the fresh and fresh-cut markets. The initiative addresses foodservice markets, not grocery retail where marketing dynamics would be quite different.

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The Path toward Imperfects

Drivers:

- Potential cost savings for foodservice buyers
- The potential benefit of imperfect produce in advancing buyers' corporate commitments to reducing resource use (such as water and agricultural chemicals), reduce on-farm waste, and curtail release of greenhouse gas emissions in their food supply chains
- Desire by farmers to generate a return for a larger share of their production



Processing winter squash. Courtesy of Russ Davis Wholesale.

Challenges:

- Variability and unpredictability in the supply of locally grown imperfects, as well as supply limitations for some imperfect products
- Potentially higher procurement, processing, inventory and/or marketing costs at the processing and distribution levels
- Communication patterns and ordering practices between distributors and foodservice clients that can inhibit the introduction of new products, particularly if they are not available on a consistent basis
- Large buyers' purchasing and menuing practices that may limit the ability of culinary staff to take advantage of new product opportunities at the local level
- The need for a higher level of culinary skill and openness to change in some foodservice contexts in order to utilize some types of imperfect produce if it is purchased in whole rather than un-cut form.

A Word on Terminology

For the purposes of our research, we have defined **cosmetically imperfect ("CI") products** as "fruit and vegetables grown for the fresh market that are fresh, undamaged and suitable for human consumption, but too cosmetically imperfect to meet minimum industry-accepted standards for cosmetic appearance (e.g. too large, too small, misshapen, miscolored, superficial scarring, etc.)". We refer to such products in the report as "imperfects" or "CI". Our research excluded product that isn't fresh, is damaged or is otherwise unsuitable for sale.

We also make reference to **"#1" product**. Commercial sales are often driven by product specifications determined by large national buyers. These may or may not correspond directly to USDA grading standards. In our interviews, growers generally refer to product that meets the standards they encounter with their larger wholesale buyers as "#1" and we use that as the basis for referring to "#1" product throughout the report.

A. SOURCING DYNAMICS

“Everybody in the distribution system is held hostage to the idea that if it’s not cosmetically perfect, it won’t work.”

Produce distributors and fresh-cut processors serving Minnesota and neighboring states are typically supplied by national and international stream of produce, as well as a variety of locally grown produce items in season. Our interviews with participating businesses explored the degree to which cosmetically imperfect produce is currently in use and the dynamics they have experienced or anticipate in the procurement of imperfect fruits and vegetables.

1) Current use of and access to imperfects

We found that participating fresh produce distributors and fresh-cut processors typically don’t source cosmetically imperfect product from their national packer/shippers beyond a few select categories for which there is a well-functioning market. These would include #2 potatoes, misshapen one-color “chopper” peppers, and smaller apples. They report that imperfects for most other crops are not typically offered to them by their national and international suppliers.

That said, when supplies of a given product run short and prices rising sharply, commercial standards may be loosened to some degree on a temporary basis so that orders can be fulfilled. This can occur, for instance, if the national supply of single-color choppers is short, and customers are willing to accept mis-colored diced peppers to avoid a price spike and ensure desired volumes.

Where locally grown product is concerned, participating fresh-cut processors noted that they often use extra-large sizes of hard squash, cabbage, melons, imperfect potatoes and chopper peppers for fresh-cut applications. Some occasionally handle imperfect locally grown tomatoes. In the case of extra-large squash, cabbage and the like, these are typically received as part of shipments of “#1” product from local growers and receive #1 pricing given that

they involve no extra processing costs (and, in fact, often have higher processing yields that are beneficial to the processor). We also noted a few specialty products being used in imperfect form such as not-fully-mature heads of hydroponically grown lettuce and off-size vine-on tomatoes.

However, other than the exceptions noted above, Minnesota farmers have not historically offered imperfect product to area distributors and fresh-cut processors. This largely reflects growers’ perception that there is no market for imperfect product among area distributors. (As noted in earlier Beyond Beauty research, an estimated 75% of Minnesota growers’ imperfect product is either plowed under, composted or used as animal feed. Less than 10% of such product is sold into mainstream commercial channels.³)

2) Supply dynamics

“Lately, when broccoli has been in short supply, imperfect broccoli is in REALLY short supply. There just hasn’t been product (of any kind) available. There’s too much or too little rain, there’s cold weather in the desert. I’ve been in this business for 30 years and I’ve never seen this kind of contraction of supply.”

- **The supplies of #1 product and imperfects** do not necessarily move in a predictable fashion relative to one another. In situations where dramatic weather events occur, entire crops in major growing regions may be affected, resulting in a constrained supply of both #1 and imperfect product. This occurred in the winter of 2015/16 when whole fields of romaine in Arizona were devastated by frost. A similar dynamic happened in the spring of 2012 when much of the U.S. apple industry was affected by freeze event that occurred at a critical juncture early in the growing season.
- By contrast, **adverse but less dramatic condi-**

tions can result in relatively more imperfects per acre, with the supply of imperfects rising while the production of #1 product is reduced. Under these less draconian circumstances, imperfects can (and sometimes currently do) help buffer the price volatility associated with #1 product and stabilize overall supply.



Fresh-cut broccoli. Courtesy of Bix Produce.

- Over the past decade, **increased weather volatility in key growing regions** has made efforts to access a stable supply of #1 product more challenging for many distributors around the country. In some instances, distributors have begun to establish additional, duplicative supply chains domestically and internationally to protect against weather-related production problems.⁴ Although these dynamics increasingly affect quality and price, they are often relatively invisible to large foodservice buyers and other clients.

“It’s going to be tougher and tougher to grow our food. Maybe changes in cosmetic standards now will establish a new platform for what we will need to accept 20 years from now. I definitely see product quality and size being affected already.”

- At the same time, a central concern about imperfects is that the **supply of such product can be “hit or miss”**. A major reason is that imperfections are often driven by weather-related issues⁵, making it challenging to predict availability well in advance. This can pose significant issues for produce distributors and fresh-cut processors whose

business is premised on having product available reliably. As one processor put it, “You can’t count on the supply of imperfects to run through your business in the way you need. You score the deal when the opportunity is there, but the supply may not be sufficient or reliable enough to meet the needs of processors, especially when supplies of #1 are strong and packers prioritize selling their #1”. It is likely that challenges with the predictability and volume of imperfect supply will be among the chief limiters on expanded use, at least on a regional basis.

- In the longer term, however, it is possible that increasing **weather-related production challenges** in the U.S. and in countries that export produce to the U.S. will make it all the more important that systems be developed and standards be adjusted to enable more imperfects to come to market.
- Sourcing of products that fall outside typical commercial grading standards** will put a premium on close coordination and trusting relationships between supplier and buyer. For instance, an aggregator or broker that is selling product from a large number of farms or orchards may not necessarily have an accurate sense of product quality or color if it falls outside usual specifications. Sourcing efforts for imperfects will benefit when there are candid relationships between suppliers and distributors. Where possible, direct relationships between farmers and distributors may be particularly helpful so that quality can be assured.⁶

3) Interactions with local growers

“For the most part, we don’t handle locally grown seconds. But even with our bigger local growers, I honestly don’t know where they go with their seconds!”

All of the regionally based distributors and processors participating in the Beyond Beauty initiative have long-running programs to source produce grown in Minnesota. Our dialogue with them highlighted key

dynamics about interactions with local farms as they relate to cosmetically imperfect fruits and vegetables. Although participating distributors have purchased from some of their local farm partners for decades, imperfects are not generally something they discuss. As a result, distributors are often unaware of how much imperfect product their local farmers have and whether farmers would be interested in selling it.

Where such conversations have begun, distributors may encounter some initial reluctance from growers about selling their imperfects. This is particularly the case if growers are approached during the height of the season when they have little time to spare and can't plan ahead for how imperfects would influence their labor needs, changes to packing lines, use of refrigerators and warehouse space, etc. At harvest growers will understandably focus on fulfilling existing demand for #1 product.

Growers are likely to be more responsive in the winter off-season. Starting a conversation about procurement issues is also important as more imperfects tend to be available early and late in the growing season when growing conditions are less favorable.



*Fields of Hmong American Farmers Association farm.
Photo by Flickr user Media Mike Hazard.*

Distributors and farmers have much to learn from one another when it comes to imperfects and active communication is a big asset. As one processor/distributor with experience purchasing locally grown imperfects expressed it, "Our local farmers are now familiar with our processing operation and they know our processing manager. Farmers will tell us what imperfect product they have and what we'll think of the quality. That's great because we can talk up front about what imperfections will and won't work. It's

important to get out in front of the issue."

Distributors can benefit from farmers' insights about the types of imperfections they experience, causes of those imperfections and the volumes of imperfect product they typically have in "good" and "bad" growing seasons. It is also important to understand how individual growers' harvesting practices, packing operations and product mix influence their interest in selling imperfects. Earlier Beyond Beauty research found that these dynamics can be very farm-specific. Beware the generalization.

Conversely, processor/distributors need to convey to growers which imperfect attributes are workable, and that freshness and food safety remain paramount. Clear specifications are essential. Accompanying photographs can be particularly useful to growers.

Growers can also benefit from tours of fresh-cut processing facilities so that processors can share practical examples of what allowances can be made for different types of imperfections (e.g. how off-size or misshapen an item can be before it can no longer be used for a finished product of a given shape or cut size.)

Growers may occasionally be interested in selling imperfects on a one-off basis (e.g. if they have hail damage). However, farmer and processor may both be better served if they reach an agreement ahead of the season on particular specs and intended volumes, and then purchase accordingly. This also positions the processor to identify imperfects for which local supplies are most predictable and line up demand from their customers accordingly.

In earlier Beyond Beauty research with Minnesota farmers, some growers expressed concern that rising acceptance of imperfect product in the foodservice sector could potentially supplant or "cannibalize" farm sales of #1 produce⁷ (thus replacing more advantageous sales of higher value #1 with a somewhat discounted imperfect). Participating distributors and processors can envision circumstances where imperfect product could replace #1's and generally viewed growers' concern about potential cannibalization in foodservice markets as valid.

Lessons from the K-12 sector

The Minneapolis Public Schools (MPS)⁸ has an extensive Farm to School (F2S) program to purchase locally grown fruits, vegetables and other foods. A core component of their F2S effort is procurement of cosmetically imperfect local produce in collaboration with their main produce fresh-cut processor/distributor. Strategies that MPS uses to make imperfects work well for local farmers, the district's processor/distributor and the district include the following:⁹

- MPS holds an **annual farmer gathering** in the winter to solicit farmers' input and communicate the district's anticipated purchasing volume for Farm to School products (including imperfects) during the upcoming harvest season.
- The district's fresh-cut processor holds an annual **tour of their processing and distribution facility** so that farmers can meet processing staff, see cutting equipment in action, and explore how product sizing and blemish issues affect sorting, processing and the final product.
- The district conducts an annual **tour of their central culinary facility** and school kitchens to show farmers how fruit and vegetables are prepared and menu'ed.
- MPS and their processor jointly developed product **specifications** for their local growers. The specs essentially broaden the range of acceptable product to include certain imperfections, rather than creating a separate category specifically for imperfect product. This provides clarity for growers and keeps ordering simple.
- The district uses a **bidding process** for Farm to School produce, allowing farmers to indicate what pricing is acceptable to them. The processor/distributor then adds their mark-up for cutting and handling the product, along with a delivery fee.
- MPS is also in conversation with their local farmers about other strategies for making the supply chain **more efficient and reducing costs**. This has included reducing packaging requirements through greater use of bulk packs (such as totes or large bags) for locally sourced produce, whether #1 or imperfect.
- The district has **adapted its menus** to enable greater use of imperfects such as using more diced, shredded and chunked items rather than sticks, coins and other cuts that require whole product of specific sizes and proportions. During the local harvest season, MPS menus F2S items daily.
- The district has found it difficult to compare **pricing** of their imperfect local produce with alternative product. Because MPS' Farm to School product specs span a range of #1 and imperfect products, it isn't feasible to directly contrast the cost of local imperfects with other products.
- However, the district feels that incorporating imperfects into their specs helps keep Farm to School product costs manageable while embodying the district's commitment to supporting **local farm viability**.
- At the farm level, the main benefits to growers are the **ability to sell** imperfect products that otherwise lack a market and to plan for those sales well ahead of the season through the collaboration with MPS.
- With regard to "**opportunity buys**", MPS staff note that, "we don't do much with 'opportunity buys' for imperfects due to the rigidity of our menus and because it's also stressful and unreliable for farmers. We might buy if someone has hail damage and can't sell otherwise, but it's not efficient to dip in and do opportunity buys as a general practice. We've found that it's better to agree upfront on product specs with specific growers for specific crops and then buy that as planned."

4) Pricing from farm into distributors

We also explored processors' views about the pricing of imperfect products that they do (or could) purchase from local growers. As noted above, items like over-sized cabbage and hard squash are often preferred by processors because they require less handling and, in fact, typically offer higher processing yields. Such items are sometimes included in shipments of locally sourced, standard-sized product and receive a "#1" price.

With other types of imperfects, the distributors we spoke with were generally inclined to start the process by asking their farmers to propose what price they would be willing to sell for. That is sometimes followed by a negotiation to reach a price that the distributor believes will work for their buyers.

For crops that are commonly sold as imperfects (such as B potatoes or chopper peppers), prices are typically lower than the price of #1 product and reflect a difference in how the product performs. (For instance, misshapen peppers cannot be cut into perfect rings).

In situations where product performance is unaffected by the particular imperfection (as with large cabbage for cutting), prices comparable to #1 pricing may be merited. As more types of imperfects are introduced to the market, it is likely that there will be a period in which prices for such product establish equilibrium as supply and demand dynamics play themselves out.

"It's very hard to generalize. If I've learned anything, it's that every conversation is specific not just to the type of product, but to a specific farm's growing, harvesting and sorting practices and to our uses for that product in our kitchens."

-Andrea Northup
Minneapolis Public School district



Sorting tomatoes. Courtesy of Russ Davis Wholesale.

B. FRESH-CUT PROCESSING AND HANDLING

“Our machines can handle anything. If something is too big, we can pre-cut it by hand into the size that will fit the machine. The issue isn’t the machinery.”

We also talked with participating fresh-cut processors about how greater use of imperfect produce could play out on the processing floor. Insights ranged from issues related to processing equipment itself to the pros and cons of different types of imperfects, inventory management, production yields and the need for additional staff training.



Processing squash. Courtesy of Russ Davis Wholesale.

1) Cutting equipment

Participating processors generally purchase local product in whole form by the case (and occasionally in large bins for hard squash, melons and the like). Some products are then sold by the case, while others are processed and sold in cut form. While items like cantaloupe may be cut by hand, the vast majority are cut using industrial-scale cutting equipment. Although there were exceptions, the fresh-cut processors who participated in our research reported that

their cutting equipment was not generally a significant constraint in handling off-size fruits and vegetables.

Certain over-sized items that will not fit into cutting equipment may need to be cut in half by hand, for instance, before being placed in the cutting machine (e.g. large zucchini and carrots). While this can add slightly to labor costs, the processors we interviewed did not generally view it as a significant issue.

2) The feasibility of various types of imperfection

In our earlier Beyond Beauty research with Minnesota farmers, growers identified a wide range of imperfect products that commonly occur on their farms. Working from that list, growers weighed considerations such as harvesting practices, post-harvest handling and sorting needs, the scale and predictability of potential supply, perishability, and alternative markets to hone in on those that they viewed as most desirable and feasible for sale from a production perspective¹⁰. These included:

- Mis-colored chopper peppers
- Oversized zucchini, summer squash, cabbage, hard squash, broccoli and cauliflower
- Over- or undersized or misshapen tomatoes, onions, cucumbers, watermelon, cantaloupe and potatoes
- Bent, crooked or mis-colored cucumbers and carrots
- Superficially scarred zucchini, tomatoes, cucumbers, peppers, potatoes, hard squash, watermelon, cantaloupe and apples
- Other items such as mis-colored cauliflower, imperfect sweetcorn and double-hearted onions

We then worked with participating processors to identify the pros and cons of these imperfections and hone in on those that are both priorities for area farmers and that have the strongest prospects from a processing perspective.

The overlap was considerable. Where objections were raised about particular types of imperfections,

they typically pertained to bruising or scarring that might lead to decay (such as for tomatoes or apples), mis-coloration that buyers might view as problematic or under-sized items that might involve increased processing labor or offer lower processing yields. Our crop-by-crop analysis is captured in Appendix B. Additional considerations for processors are discussed throughout the remainder of the report.

Several key patterns emerged about processors' perceptions of various types of produce imperfections:

- Over-sized items of hard squash, cabbage, broccoli, cauliflower, watermelon and cantaloupe are often preferred by fresh-cut processors to standard product. With larger heads, there are few individual items to be handled to yield a given poundage of finished product, reducing labor costs. In addition, items like heads of over-sized broccoli may have a relatively higher volume of florets than smaller broccoli heads that are sized for retail sale, resulting in a higher yield and less waste per head.
- Product specifications are key for items like over-sized cucumbers, summer squash and zucchini to ensure that items don't have too much internal "meat" or seeds and that taste and texture are not affected by their larger size.



Wrapped cabbage. Courtesy of Russ Davis Wholesale.

- Items such as potatoes are typically "peeled" by being placed in a sanding drum where skins are rubbed off. With this type of product, the size of individual items was generally viewed as not significantly affecting yields one way or the other.

"Customers have their own expectations of quality. Potatoes are very inexpensive and the final consumer doesn't see the whole potato, just small pieces, so it doesn't matter. We peel the cantaloupe so scarring doesn't matter. But mis-colored peppers are an obvious problem."

- Items that will be hand- or machine-peeled like cantaloupe can involve added labor if under-sized. This is because more individual items must be handled by staff to generate a given poundage of finished product. Smaller items may also yield fewer appropriately sized pieces (e.g. chunks or rings of a given size).
- The degree to which product can be misshapen or bent often depends on how it will be cut. For instance, bent cucumbers can often be used for dicing, but can be harder to slice by machine.
- Items with blemishes that need to be removed may require hand trimming before cutting (such as blemished peppers) and lead to an increase in labor and lower finished yields relative to the poundage of whole product purchased by the processor.
- Distributors typically expressed concerns about items like bruised or blemished tomatoes and apples, which may hasten decay. Insect damage was often viewed as problematic. Items that are creased or folded to the point that they are difficult to properly clean would also be a concern.
- Moderate superficial scarring was not viewed as a significant concern for items like hard squash, zucchini, summer squash, watermelon, cantaloupe and eggplant that will either be peeled, shredded, or cut and cooked.

- With items such as apples, color can be an indicator of Brix level (sugar content) and thus correlate with product taste. K-12 schools have come to prize small apples, which often correspond better to needed portion sizes than apples that are sized for retail.
- Views about mis-coloration were quite product-specific. For instance, mis-colored chopper peppers (e.g. those that aren't exclusively one color) are virtually unsellable commercially in the area, although the issue of color is almost entirely a matter of client preferences based on appearance (not culinary performance). The same could be said for cauliflower that has yellowed due to sun exposure. Concerns about color are likely to be heightened for items that will be highly visible on salad bars or fine dining plated meals, for instance, but less of an issue when menu'ed as one of many ingredients in a prepared dish.

Please see Appendix B for more detail.

3) Matching cuts with imperfections

"Late in the season, local zucchini can get huge and can't be sold at retail. But giant zucchini are great for buyers that want dice or shred."

Another factor when considering use of imperfects is the impact of product sizing on the types of finished cut sizes that can be achieved. For instance, bent carrots might work for cutting into coins, but not into carrot sticks. As a result, it is important that processors and clients be in conversation about how the nature of the available imperfect product might influence what cuts are feasible.

This need for better communication and flexibility is reflected in the following anecdote from a participating fresh-cut processor that provides locally grown imperfects to an institutional foodservice client: "Our labor cost was the same as usual (for locally sourced imperfect carrots) for cutting, packaging and delivery. The only added labor cost came from added sorting.

That was due to the buyer's requirement to cut specific poundages of sticks and dice. If the client had just said 'dice everything', that would have reduced the cost of sorting out the carrots that could be cut into sticks. We need better communication with the buyer's ordering staff and their culinary people about the implications of different cut sizes. Those choices impact our labor costs and the finished product costs they will pay."



Peppers for processing. Courtesy of Bix Produce.

Buyers will typically find that they can keep the cost of finished product down if they express more flexibility in the cut sizes that they can accommodate. This can enable processors to more fully avail themselves of those imperfect products that are available from local growers.

"We all get so set in our ways and don't like changes to our buying procedures, to see what other product is available and might work. Sometimes there's great value in that though. We're creatures of habit."

4) Minimizing the number of SKUs at the processor/distributor level

Distributors and processors typically seek to minimize the number of products they carry (referred to as "SKUs" or Stock Keeping Units) as additional SKUs complicate use of warehouse space and add a variety of administrative costs. They will have a disincentive

to add a distinct line of imperfect products unless sales volumes are sufficient and reliable enough to justify the added management costs.

Processors will also consider how particular imperfections relate to client demand for particular kinds of finished product.

As one processor put it, “With zucchini, we sell a lot of rounds and half-moons, as well as diced, shredded and other cuts. You can shred or dice an over-sized zucchini, but you can’t turn it into rounds or half-moons with a diameter that is acceptable to our food-service customers. Also, we don’t know in advance if we’ll have orders for shredded or diced that we could use imperfects for because we turn around orders with 24 hours notice. We can use #1 zucchini for all cuts. We won’t want to carry over-sized zucchini if we don’t know in advance that we’ll have orders for shredded or diced”.

Focusing procurement on products that can be used for multiple cuts (such as the #1 zucchini referenced above) enables the processor to provide maximum flexibility to customers on very short notice. It also means that customers wanting diced or shredded, for instance, may be paying for use of #1 product when the finished product doesn’t necessarily require it.

Reaching agreement in advance about needed cut sizes could position processors to purchase either #1 product or imperfects that are more directly suited to the customer’s demand. As the Minneapolis Public Schools have demonstrated, thinking ahead and adapting menus to accommodate imperfects is a strong success factor.

5) Yield Calculations

Processors typically work from standardized industry calculations that equate a certain case size for incoming (whole) produce with an expected yield of finished cut product. For example:

- A 50 pound case of carrots holds approximately 150 whole, unpeeled carrots. A large carrot is expected to yield 11 three inch sticks or 25 quarter-inch coins. With carrot sticks, the waste rate

is expected to be about 68% of the initial weight of the unpeeled/uncut product, resulting in 16 pounds of finished carrot sticks per 50 pound case of whole carrots. (A portion of the trim may then be re-purposed for use in other, smaller cuts.) By contrast, the waste rate on shredded carrot is only 20%, resulting in 40 pounds of finished product per 50 pound case.

- Cut cantaloupe is expected to have a waste rate of 52% relative to the weight of whole product. Larger cantaloupe that come 18 to a 40-pound case (“18 count”) yield 4-5 cups of bite-sized pieces. A smaller 23-count cantaloupe will yield 16 half-inch slices per melon.

Such calculations allow fresh-cut processor to determine the number of cases of whole product they need to purchase to yield a given volume of sellable pre-cut product. The use of off-size imperfects (or cases that contain more roughly sorted product of differing sizes, for instance) can complicate yield projections for processors.



Courtesy of Russ Davis Wholesale.

6) Rougher sorting

Some participating growers have expressed interest in providing more roughly sorted product (e.g. a wider range of sizes in a given case of product) as a way to reduce farm labor. Specifications could potentially be broadened to reflect the full range of product sizes, shapes and degree of curvature (e.g. for cucumbers or summer squash) that would work for the processor without resulting in increased labor costs on the processing floor.

This has been done, for instance, by the Minneapolis Public Schools in conjunction with their fresh-cut processor. The school district's Farm to School product specifications have been designed to span the full range of #1 and imperfect products that the processor can receive without affecting processing labor. Broadening specs to encompass certain imperfections rather than having separate SKUs for #1 and for imperfects could potentially reduce some on-farm sorting costs while also simplifying ordering and inventory management.

7) Staff re-training

Lastly, modifying standards for products' cosmetic attributes may require some retraining of floor staff, for instance, to communicate that slightly sunburned cauliflower or off-size product is acceptable for a given client. The degree to which staff training is a concern for processors is greatly influenced by the volume and predictability of sales that are at issue. If clients make sufficiently large and predictable purchase commitments, it can be worth it for processors to do the re-training needed to move imperfects through their system.



Processed honeydew melon. Photo Courtesy of Russ Davis Wholesale.

C. SALES AND MARKETING

“Is it possible to change customers’ mindset about imperfection? It is about what customers are willing to accept.”

When it comes to marketing imperfect produce to foodservice clients, a range of themes emerged from the Beyond Beauty research. These varied from distributors’ perceptions about evolutions in the foodservice marketplace to the need for stronger communication with clients, pricing issues, and the interplay with sales of #1 product.

1) Shifting demand for pre-cut produce

- Foodservice management companies were generally viewed as experiencing on-going cost pressure that may heighten interest in the use of imperfects, particularly for fresh-cut applications.
- There is growing demand for pre-cut produce in grocery retail and convenience store settings that didn’t exist even five to ten years ago. That is boosting demand for a wide range of fruits and vegetables in cut form.
- Demand for locally grown produce continues to be strong in some institutional sectors. The limited growing season in Minnesota is an on-going challenge, particularly in the collegiate and K-12 sectors where the school year only partially overlaps with the local produce season.
- Larger foodservice buyers are paying increased attention to imperfects, as highlighted in the adjacent breakout box:



Processed carrots. Courtesy of Bix Produce.

Imperfectly Delicious Produce

Compass Group USA companies (and one of its sectors, Bon Appetit Management Company, which provides foodservice at several colleges participating in the Beyond Beauty research) have launched their own “Imperfectly Delicious Produce” (IDP) program¹¹.

IDP aims to improve the edible yield from produce production by coordinating with growers and distribution partners to purchase, among others, crooked carrots, undersized leeks and “second cuttings” of leafy greens. They also utilize small cuts that are typically discarded at the processing level. Each state and distributor offer different IDP products both from local farmers and national growers.

The Minnesota program included locally grown imperfect green beans when IDP was introduced to Minnesota in 2015. Compass’ produce distribution and fresh-cut processing partners in 20 states now participate. To date they have rescued 750,000 pounds of produce and the program continues to expand as they move into the 2016 season.

2) Communications about imperfect products

Clear, advance communication between processor and foodservice staff is key for imperfect product to be introduced smoothly. For instance:

- **Engaging culinary staff and buyers:** As discussed above, the imperfections in a given product will influence the cut size and shape that is feasible (e.g. short or bent carrots may work well as coins but not work as sticks). This means that the processor and buyer need to have a shared understanding of the types of imperfect product that may be available, what that means for cutting specifications and costs, and implications from a culinary perspective. Similarly, if foodservice buy-

ers purchase imperfects whole-by-the-case, their staff will need to be trained and prepared to handle product that may be somewhat different than the norm. This puts a premium on advance planning that includes culinary staff.

- **Better mechanisms for communications with buyers:** Current communication methods may not be well-suited to introducing imperfects. As one processor put it, “We get orders via email and fax or have standing orders from given clients. That doesn’t give you an opportunity to say to the buyer ‘we’ve got off-sized X today’. It’s easier to send the produce you normally send than calling to talk about a product that may not be available on a regular basis. We also send regular product updates, but I bet that only 5% of clients read them. Most keep ordering the usual products.” More creative communication and openness to new options will be needed to incorporate imperfects into the supply chain more fully.

- **Education about the causes of imperfection:** Most processors we spoke with stressed the need to educate foodservice buyers about the growing conditions that contribute to imperfection. Similarly, buyers should understand the role that imperfect product plays in the business operations of their local farmers, and the pros and cons that growers perceive when considering whether to bring such products to market.
- **Language matters:** Terms like “#2” product may be unfamiliar to buyers and are easily misinterpreted to mean that product is not fresh or has other flaws unrelated to cosmetic appearance. Terms like “cosmetic imperfection” and “imperfects” appear to be more indicative of the true nature of such product and less prone to misinterpretation.
- **A tension around expectations:** As one distributor put it, “We and foodservice management chefs alike are expected to put out a premium product, but now chefs are being asked to turn not-premium product into a stellar product. There can be a tension with client expectations.” Open communication among all parties is critical to ensure that expectations are realistic, explicit and mutually agreed.

3) Pricing to foodservice buyers

It appears likely that increased availability of imperfects could result in meaningful cost savings to foodservice buyers that have the flexibility to use such product from a decision-making and culinary perspective. Our interviews with participating collegiate partners suggest that savings of even 5% would be viewed as significant. Savings on this scale appear feasible for a range of products, depending upon supply availability, specifications, buyer flexibility, volume commitments, risk management strategies with the processor and related issues.

That said, foodservice buyers should also have realistic expectations. As one distributor expressed it, “Buyers think they should be paying half the price for



Courtesy of Russ Davis Wholesale.

imperfects, but it doesn't work that way. Farms don't want to give the product away given that so much of their cost is in the (marginal cost of) packaging and transportation. As a processor, our costs are typically pretty fixed and not related to the cost of the raw product coming in. We will add the margin we need on top and sometimes our costs will be higher than usual depending on the nature of the imperfection and the handling that is required to get the customer what they want."

4) Interplay between imperfects and existing sales of #1 product

"I think that cannibalization could happen. What if there was a lot of imperfects and a surplus of #1 at same time? Would the #1 that would have gone to foodservice go without a home because buyers want the imperfects? That's a very valid point. "

We spoke with participating produce distributors and fresh-cut processors about how increasing acceptance of imperfect produce might influence their existing market for "#1" product. While opinions varied, there was concern that greater availability of imperfects in foodservice contexts could potentially supplant or "cannibalize" existing sales of #1 product.

This could occur where imperfects perform to the same culinary standards as #1 product but are graded as a different, competing line of products. This could potentially also alter the competitive landscape for growers if it became common practice to ship imperfects from across the country or import them from outside the U.S.

On the other hand, there appears to be some potential that large buyers who realize that certain imperfects work well for them begin competing for the available supply of imperfects. This could potentially bid up the price of those imperfects that substitute easily for #1 product, leading to a new equilibrium that reflects the inherent quality of those products.

There was also agreement among participating distributors that if more imperfects were offered in the marketplace, foodservice buyers may benefit from somewhat lower prices but would not buy a greater volume of product in response.

Distributors generally felt that larger offerings of locally grown imperfects could potentially shift some demand toward local product among those buyers that typically purchase conventional, non-local #1 but have a latent interest in locally grown. This could conceivably expand markets for locally grown even if the cost of local imperfect is comparable to conventional #1 and could certainly occur if local imperfects are offered at a lower price.

Demand for certified organic product that is locally grown could similarly be boosted, assuming that the market doesn't become glutted with low-cost non-local imperfects.

As noted in the October 2015 "Beyond Beauty" report on our research with Minnesota produce growers, the potential interplay between imperfects and #1 product merits deeper research.

Success Factors

- Early and close collaboration between farmers and processors/distributor.
- Education for growers about product specs, and how imperfections influence sorting and cutting issues for the processor.
- Education for processors and foodservice about the nature and causes of imperfection.
- More dynamic coordination between processors and clients about the availability of imperfects and joint planning to match supply with demand and synchronize requested cuts with particular product imperfections.
- Flexibility at the foodservice level in product ordering and menuing, and heightened skills and openness among culinary staff.

D. IMPLICATIONS FOR PRODUCE DISTRIBUTORS AND FRESH-CUT PROCESSORS

“(Imperfects) are a necessary thing. We’re not gaining sales and its more work. It’s a shift of sales from #1 to imperfects. But our pricing will reflect added costs, so we don’t view imperfects as a problem.”

When asked if the advent of greater demand for imperfects would be good or bad for the fresh-cut and produce distribution industries overall, most respondents expressed both ambivalence and a certain degree of acceptance that demand for imperfect produce may increase¹². Their perspective is informed by the following potential effects on their businesses:

1) Financial impacts

It is likely that expanded use of imperfects beyond those that are already woven into fresh-cut operations (such as oversize cabbage and double-hearted ones) may either be cost-neutral for processors and distributors, or in some cases, result in certain cost increases. Depending on the circumstances, added costs may include:

- added time for procurement staff to source the product, ensure that their supply is synched with demand, and re-train floor staff.
- additional prep work to cut some imperfect items (e.g. if they are blemished and need hand-trimming or need to be cut down to size to fit into cutting machines)
- the cost of stopping the processing line to shift between runs of different product types
- the cost of added SKUs and more complex inventory management to accommodate a larger array of products, particularly if volumes of imperfects are small and demand is erratic.
- the potential for more waste if distributors began carrying a wide array of imperfects. This would in turn put more pressure on marketing staff to keep that product moving. As one distributor noted, “More SKUs generally means more waste. You’d really have to turn that product like clock-work.”

In general, processors expected that the handling fees they charge would be adjusted to reflect these dynamics, leaving their net returns relatively unaffected. The greater perceived risk lies in the possibility that buyers who “get a taste” of imperfects could potentially pressure suppliers to reduce prices for all products (whether imperfect or not).

“(Imperfects are) not good for distributors because the demand for them is small and it’s hard to line up supply. Demand is inconsistent, so we need almost guaranteed sales if we are going to buy the product for certain clients.”



Processed canteloupe. Courtesy of Russ Davis Wholesale.

2) Risk management for new product introductions

As foodservice buyers explore the possibility of using more imperfects, a key question will be how the economic risk of new product introductions is borne. For instance, in situations where a distributor is asked to make certain new products available, purchases the product and then the buyer decides they don't want it, all of the risk is borne by the distributor. (We noted a similar dynamic when institutional foodservice buyers first became interested in local foods but then were reluctant to actually buy it.)

This arrangement creates a disincentive for distributors and raises the cost of making imperfects available. More explicit advance understandings between buyers and suppliers can help reduce and share these risks in a more balanced way.

Also, because the supply of locally grown imperfects will vary with the weather and other factors at the farm level, product availability will likely be hard to predict. Processors may not be able to assure availability or pricing, especially to buyers that need significant quantities. As a result, sales agreements need to reflect this reality, noting that standard product will be supplied if imperfects are unavailable.



Spinach. Courtesy of Bix Produce.

3) Reputation concerns

Several participating companies expressed concern about offering imperfect product as they have historically prided themselves on offering top quality product and top notch service. As we heard from farmers earlier in the Beyond Beauty initiative, suppliers who have spent decades cultivating a reputation for quality are concerned that their reputation could be negatively affected if they became known for making imperfects available. Buyers need to be cognizant of this hesitation.

4) Change would need to be demand-driven

Participating companies also noted that produce markets are constantly evolving and buyer demand is always a moving target. That said, many distributors have already incorporated those imperfects into their supply stream that offer improved cutting yields or other advantages. For that reason, the impetus to further expand the availability of imperfects will likely need to be driven by greater market demand rather than pushed from the farm-side or from the processing and distribution segments of the supply chain.

5) Shared benefits

Growing acceptance of cosmetically imperfect product has the potential for numerous benefits: generating a higher edible yield per acre from the water, labor and agricultural chemicals that are used in agricultural production, reducing food waste in produce supply chains (mainly on the farm), and bringing market demand into better alignment with what nature produces. More work is needed, however, to assess what constitutes a fair price for growers and to gauge the pros and cons for the growers' bottom line. If the best potential of imperfects is to be realized, it will require new ways of thinking about product quality, more dynamic interaction across the supply chain, and continued experimentation to find the "sweet spot" where farmers, buyers and intermediary businesses can all benefit.

Endnotes

¹Beyond Beauty: The Opportunities and Challenges of Cosmetically Imperfect Produce. Report No. 1: Survey Results from Minnesota Produce Growers. JoAnne Berkenkamp, Tomorrow's Table LLC and Terry Nennich, University of Minnesota Extension. http://ngfn.org/resources/ngfn-database/Beyond_Beauty_Grower_Survey_Results_052615.pdf

²Beyond Beauty: The Opportunities and Challenges of Cosmetically Imperfect Produce. Report No. 2: Interview findings with Minnesota Produce Growers. JoAnne Berkenkamp and Terry Nennich, October 2015. <http://ngfn.org/resources/ngfn-database/knowledge/Beyond%20Beauty%20farm%20interview%20report%20J%20Berkenkamp%2010-21-15.pdf>

³See Beyond Beauty, Report No. 2, page 11.

⁴"When weather becomes the biggest factor", J. Berkenkamp, Institute for Agriculture and Trade Policy, April 29, 2013. <http://www.iatp.org/blog/201304/when-weather-becomes-the-single-biggest-factor>

⁵For more on the causes of cosmetic imperfection, see Beyond Beauty, Report No. 2.

⁶Personal communications, Cricket James, Russ Davis Wholesale, January 29, 2016.

⁷For further discussion of the "cannibalization" issue, see Beyond Beauty Report No. 2, page 17-19.

⁸Andrea Northup, Farm to School Coordinator, Minneapolis Public Schools. Various dates, 2015 and 2016.

⁹For more information about the Minneapolis Public Schools' Farm to School program and bidding process for locally grown produce, see <http://nutritionservices.mpls.k12.mn.us/farms>

¹⁰See Beyond Beauty, Report No. 2, Appendix C.

¹¹<http://www.bamco.com/press-releases/bon-appetit-management-co-compass-group-usa-launch-imperfectly-delicious-produce-program-fight-food-waste-help-farmers/>

¹²For additional insight on distributors' views about imperfect produce, see pages 44-47 of "Eating Our Peas & Carrots: Strategies for Expanding K-12 Access to Fruits and Vegetables through Supply Chain Innovation and Investment." JoAnne Berkenkamp for School Food FOCUS, 2014. http://www.schoolfoodfocus.org/wp-content/uploads/2014/01/Eating-Our-Peas-and-Carrots_FINAL2.pdf

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APPENDIX A: INITIATIVE DESCRIPTION

Beyond Beauty: Opportunities & Challenges for Cosmetically Imperfect Produce

In the U.S., a stunning 50% of all the fruits and vegetables go to waste. Many of these losses occur on the farm in the form of produce that is rejected by buyers or is never harvested.

A leading contributor to these losses is the product specifications that drive the produce industry. Large industry players set an extremely high bar for cosmetic attributes, leading to the huge strawberries, glossy apples and zucchini of identical length that grace today's grocery shelves. Produce that is entirely wholesome but is too large, small or misshapen to meet these standards is generally rejected, never making it into the stream of commerce and resulting in significant market inefficiencies.

What's more, enormous amounts of water, agriculture chemicals and labor are used to grow produce that is never eaten. Growing water scarcity in major growing regions and shifting weather patterns will make it unlikely that, as a society, we will be able to sustain this level of waste in the decades ahead. If landfilled, fruits and vegetables also release potent greenhouse gases, adding to climate change concerns.

Farmers typically bear the financial burden of produce that can't be sold because it is cosmetically imperfect (CI). At the same time, foodservice buyers typically pay for "#1" product even though they are likely to cut it before serving it and do not need whole produce that looks beautiful on the grocery store shelf.

Wrapped within that irony is an opportunity – the prospect of increasing financial returns to farmers while also containing costs for foodservice buyers through market development for wholesome, cosmetically imperfect produce. Led by Tomorrow's Table and the Real Food Challenge, the "Beyond Beauty" initiative is researching and testing this concept. Key components include:

- Conducting research with produce growers in Minnesota to clarify the nature and scale of CI product supply in the state, explore economic considerations in bringing this product to market, identify grower concerns, and determine the most feasible crops given farming conditions in the region.
- Engaging selected distributors and fresh-cut- processors on issues such as market potential for imperfect product, equipment and facility issues, product specifications and marketing.
- Collaborating with Real Food Challenge college and university partners and their foodservice management companies to test this concept and identify success factors and challenges with imperfect produce in college foodservice contexts.
- Garnering lessons learned from organizations in Minnesota's food recovery system about their use of imperfect produce.

Timeframe: December 2014 – June 2016.

APPENDIX B: PERCEPTIONS OF IMPERFECTS FROM A FRESH-CUT PROCESSOR PERSPECTIVE

In earlier Beyond Beauty research, we coordinated with participating Minnesota fruit and vegetable growers to identify types of cosmetic imperfection that they commonly experience. Growers then honed in on the subset of imperfect products that they perceive to be most desirable and feasible for sale from a production perspective.

When identifying priorities, they weighed considerations such as harvesting practices, post-harvest handling and sorting needs, the scale and predictability of potential supply, perishability, and alternative markets. Their priorities included:

- Mis-colored chopper peppers
- Oversized zucchini, summer squash, cabbage, hard squash, broccoli and cauliflower
- Over- or undersized or misshapen tomatoes, onions, cucumbers, watermelon, cantaloupe and potatoes
- Bent, crooked or mis-colored cucumbers and carrots
- Superficially scarred zucchini, tomatoes, cucumbers, peppers, potatoes, hard squash, watermelon, cantaloupe and apples
- Other items such as mis-colored cauliflower, imperfect sweetcorn and double-hearted onions

Specific imperfections identified by growers are shown in the first row of the chart below (labeled “Grower Priorities”).

In this current phase of the research, we gathered feedback about those imperfect products from participating fresh-cut processors with the goal of identifying the “sweet spots” -- imperfect products that growers view as priorities and that were also viewed as feasible for fresh-cut processors.

The lower rows in the chart below reflect processors’ perspectives about how these various imperfections would work in terms of actual cutting and handling. These are grouped under the general categories of “May be workable” and “Problematic”, acknowledging that particular processors’ operating environment and clientele will influence their sense of what could work in their unique situation. It is also important to note that, in practice, processors will also consider other factors (such as marketability and SKU optimization) when assessing the merits of specific products. Many of those other considerations are discussed in Chapters B, C and D of the report.

	Apples	Broccoli	Brussels Sprouts	Cabbage	Cantaloupe	Carrots
Grower Priority	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Undersized -Scarred -Poor color -Slight bruising or hail damage 	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Oversized -Misshapen -Off-color -Extra-large varieties grown for processing 	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Poor color -Soft sprouts -Mixed sizes 	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Oversized -Misshapen 	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Undersized -Oversized -Misshapen -Scarred 	<p><u>Specifically:</u></p> <ul style="list-style-type: none"> -Bent -Discolored -Slightly cracked
May be workable	<ul style="list-style-type: none"> -Undersized and minor scarring could work for cutting -Undersized are valued in whole form in K-12 market where smaller portion sizes are desired. Possible in other markets? 	<ul style="list-style-type: none"> -Oversized and extra-large varieties attractive due to higher processing yields -Misshapen can work 	<ul style="list-style-type: none"> -Off-size can work for shredded and some cuts 	<ul style="list-style-type: none"> -Both okay. Over-sized offers higher processing yields -Misshapen not a problem for cutting 	<ul style="list-style-type: none"> -Oversized, misshapen and scarred can all work for cut product 	<ul style="list-style-type: none"> -Bent can work for shred, dice, and chunks -Slight cracking okay if item can be cleaned effectively
Problematic	<ul style="list-style-type: none"> -Concerns that bruising or hail damage will accelerate decay -Same for any apples that hit the ground -Poor color may be sign of lower Brix/sugar content and affect taste 	<ul style="list-style-type: none"> -Off-color unlikely to be acceptable to customer -May indicate quality issue or being overly mature 	<ul style="list-style-type: none"> -Size needs to be reasonably consistent for whole brussels with end trimmed, and halved -Poor color not okay -Softness may indicate problem with quality/freshness 		<ul style="list-style-type: none"> -Undersized may have lower processing yield and may not work for rings of the required size. May involve more manual labor given more individual items to be handled to yield a given poundage of cut product. 	<ul style="list-style-type: none"> -Discoloring may indicate quality concern. May need consistency in color to meet customer expectations

	Cauliflower	Cucumbers	Eggplant	Green Beans	Onions	Peppers
Priority Grower	<p>Specifically:</p> <ul style="list-style-type: none"> -Mis-colored: slight yellowing due to sun exposure -Oversized (e.g. larger than 9-count) 	<p>Specifically:</p> <ul style="list-style-type: none"> -Bent/crooked -Scarred -Undersized -Oversized -Poor color 	<p>Specifically:</p> <ul style="list-style-type: none"> -Undersized -Oversized -Poor color -Misshapen -Scarred 	<p>Specifically:</p> <ul style="list-style-type: none"> -Misshapen -Undersized -Oversized -Poor color 	<p>Specifically:</p> <ul style="list-style-type: none"> -Undersized -Oversized -Double centers 	<p>Specifically:</p> <ul style="list-style-type: none"> -Mis-colored chopper peppers -Mis-colored with slight blemishes -Misshapen
May be workable	<ul style="list-style-type: none"> -Oversized okay and may offer slight reduction in labor cost 	<ul style="list-style-type: none"> -Bent/crooked and under/oversized can work for dicing -Could slice over/undersized if customer accepts it 	<ul style="list-style-type: none"> -All okay for cutting. If sold whole, it is a matter of customer acceptance 	<ul style="list-style-type: none"> -Misshapen and over/undersized can work if acceptable to the customer 	<ul style="list-style-type: none"> -Double hearted already in use for cutting -Off-size okay if no internal defects for chopping/dicing -Off-size okay for sale in whole form if customer accepts it 	<ul style="list-style-type: none"> -Mis-colored okay if customer accepts it -Misshapen okay for chopping -Already standard practice to cut slight blemishes off peppers to be chopped
Problematic	<ul style="list-style-type: none"> -Mis-coloration not an issue for processor if it works for the customer 	<ul style="list-style-type: none"> -Bent may be harder to slice -Over/undersized may not result in consistently size slice or half-moon if customer specs are narrow -Poor color may not be acceptable or indicate quality issue 	<ul style="list-style-type: none"> -Limited market for cut eggplant 	<ul style="list-style-type: none"> -Customer may not accept poor color -Some processors buy non-local beans with ends already clipped off. Limited demand for un-clipped beans among processors? 	<ul style="list-style-type: none"> -Some processors purchased onions pre-peeled for cutting, which reduces market for locally-grown, direct from the farm 	<ul style="list-style-type: none"> -Customer may not accept mis-colored

	Potatoes	Sweet Corn	Tomatoes	Watermelon	Winter Squash, Pie Pumpkins	Zucchini, Summer Squash
Grower Priority	<p>Specifically:</p> <ul style="list-style-type: none"> -Undersized -Oversized -Misshapen 	<p>Specifically:</p> <ul style="list-style-type: none"> -Worms -Bird damage -Slightly over-mature -Poor tip fill 	<p>Specifically:</p> <ul style="list-style-type: none"> -Undersized -Oversized -Scarred -Wind damaged 	<p>Specifically:</p> <ul style="list-style-type: none"> -Oversized -Undersized -Misshapen -Scarred 	<p>Specifically:</p> <ul style="list-style-type: none"> -Oversized -Misshapen -Scarring/bird-pecked 	<p>Specifically:</p> <ul style="list-style-type: none"> -Oversized -Scarred
May be Workable	<ul style="list-style-type: none"> -Mis-sized and misshapen can work for most processing applications -May be okay in whole form if acceptable to customer -Over-sized reds and under-sized russets can be attractive for cutting 	<ul style="list-style-type: none"> -Poor tip fill could be okay if cut into cobbettes or cut into loose kernels (limited market) 	<ul style="list-style-type: none"> -Over/under-sized can work in whole form if the customer will take them. Roma tomatoes mainly used for dicing. Sliced tomatoes are sized, so would need buyer acceptance to use over/under-sized. 	<ul style="list-style-type: none"> -Oversized and misshapen okay for processing -Oversized may offer higher processing yields -Scarred okay unless decayed -Customer may be open to smaller sizes for certain uses 	<ul style="list-style-type: none"> -Oversized and misshapen work and are already in use -Overwisid may offer higher processing yields and are preferred by processors -Scarred okay unless decayed 	<ul style="list-style-type: none"> -Oversized and modest scarring can work for shred, dice and many other cuts
Problematic		<ul style="list-style-type: none"> -Worms definitely not acceptable -Overly mature is problematic due to potential impact on flavor profile and limited shelf-life -Bird damage problematic 	<ul style="list-style-type: none"> -Scarred and wind-damaged can lead to decay 	<ul style="list-style-type: none"> -Undersized may require more labor for processor and have lower processing yields -Mis-sizing may throw off buyers' yield projections when solid in whole form -Important to communicate with customer about sizing issues if sold whole 	<ul style="list-style-type: none"> -If bird-pecked, may have decay 	<ul style="list-style-type: none"> -Oversized won't work for 1.5-2 inch rounds and half moons -Can be problematic if too much internal seeds and fibrous material in oversized items