

**Executive
Summary**

- How to add a range of sweet, earthy notes to foods via roasted vegetables and spices.
- Ethnic inspiration—and combining roasted vegetables with spices for deeper impact.
- Practical examples of how roasted vegetables are transforming frozen, refrigerated and shelf-stable foods.

**FOOD PRODUCT
DESIGN**

ROASTED VEGETABLES AND SPICES— Little Effort, Big Flavor

By Barbara Zatto
Contributing Editor

Fall and winter is the perfect time to enjoy the warm, earthy flavors of roasted spices and vegetables. The air turns cooler, and our bodies begin to crave hearty food. While some typically limit their thinking of roasted vegetables to a roasted carrot or cauliflower, you can roast almost every vegetable or whole spice and intensify its flavors. Roasting brings out a natural sweetness and deepens flavors. Just consider garlic. In its raw form, garlic is bitter and pungent. Yet roasted garlic is sweet and mild, and you can spread six cloves of roasted garlic over a slice of bread just like butter.

Roasting for flavor

Oven heat allows sugars in the vegetables to caramelize and their carbohydrates or starches to break down, boosting flavor and providing strong visual appeal. The browning, caramelizing, and crisping of vegetables that happens with roasting tantalizes the senses of sight, taste, smell and even touch.

To get great roasted vegetables, the two main factors to keep in mind are heat and surface area. Working at around 400°F is a good start. Surface area is important because you want to roast vegetables in one even layer. Small cuts of

vegetables will have more roasted surface area in relation to their insides than larger cuts; longer shapes will have more surface area than blocky cuts. Adjust the heat and surface area to fine-tune flavors. Prefer more browning? Turn up the oven temperature. Prefer vegetables that are more cooked than roasted? Cut the vegetables smaller and turn the temperatures down.

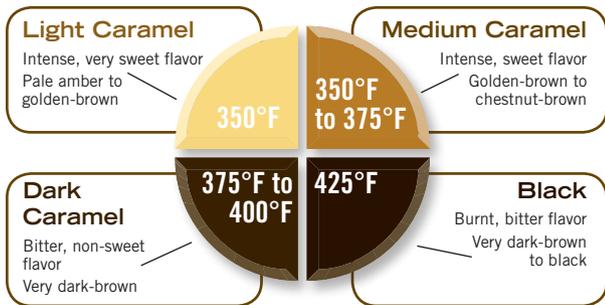
Both broiling and oven roasting can be used. Fire-roasted vegetables have a nice char and a smoky flavor, and the vegetables tend to be firmer because the roasting happens fast. Oven-roasted vegetables tend to brown (versus char) and will be slightly sweeter and softer, because the roasting happens slower and flavors develop more.

Roasting spices it up

Roasting or toasting dry spices releases the aromatic and flavorful oils in the spice. When these oils are released, flavors in spices get fuller, earthier and richer. In some spices, including cinnamon and ginger, roasting brings out sweet notes.

Spices have two main flavoring components that are released during the roasting process. The first is the volatile,

Caramelization by Degrees



or essential, oil which gives the spice its aroma. The second is oleoresins responsible for the spice's flavor.

For spices, dry-roasting them is best by using a heavy pan on low or medium-low heat so the spices don't burn. Shake the pan gently while roasting to ensure even roasting—it only takes a few minutes to roast them. Just rely on the aroma to tell you they're done. When using a combination of spices, it is best to roast each spice individually to preserve the flavor and to avoid scorching one spice before another is suitably roasted; each spice

will have a slightly different ideal roasting time. Industrial versions of roasted spices are available.

Roasted spices already add a depth of flavor to Southwestern American, Thai, Indian, Mexican (particularly in mole sauces) and Moroccan food, and the flavor-boosting technique is gaining broader acceptance in the United States. Roasted spices are an excellent addition to marinades, chutneys, seasoning pastes, sauces, rubs and entrées. For example, roasted cumin, fennel seeds, ginger and cinnamon form a base for almost any of these cuisines. Because ginger and cinnamon get sweeter as they roast, they can balance the heat in some spice blends and barbecue sauces.

Roasting around the world

Roasted vegetables are enjoyed around the world with different ethnic flavors and spices, with spices and seasonings often added to the vegetables before roasting. Italians prefer all types of seasonal vegetables roasted with the savory herbs thyme and rosemary. Moroccan cuisine calls for cumin, paprika, saffron, coriander, chiles

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Roasting from A to Z

In most cases, before roasting, you simply need to toss the cut vegetables in a bowl with salt, pepper and olive oil (do not use extra-virgin olive oil, because its burning point is too low). Giving the vegetables a light coating of oil allows roasting to happen more evenly without burning the veggies or drying them. After they've roasted, a sprinkle of good vinegar provides a nice, bright contrast to the dark, caramelized flavors. Toasted nuts can also add richness, and dried fruit can create a balance of sweet and tart flavors. Herbs that can withstand roasting, such as rosemary, thyme and oregano, can also bring out the flavor in the veggies; otherwise dust spices on vegetables after roasting while they are still warm. After roasting, many of the following vegetables can be used in various entrées or puréed and used as part of a flavoring base for soups, sauces, etc.

- **Asparagus:** peel any tough stem and roast whole; toss with olive oil, lemon, garlic, freshly grated lemon zest and Parmesan cheese;
- **Bell peppers:** remove membrane and seeds and cut into 1-in.-wide strips; toss with balsamic vinegar and capers;
- **Broccoli:** cut into individual, 2-in.-diameter florets, then in half; toss with allspice or Parmesan cheese;
- **Cauliflower:** cut into individual, 2-in.-diameter florets, then in half; sprinkle with a little allspice before roasting, or after roasting top with freshly grated Parmesan cheese;
- **Brussels sprouts:** cut in half; toss with truffle oil;
- **Corn:** roast on the cob; season with chili powder and lime juice for a Mexican flair;
- **Carrots:** cut into coins, half-moons or 1-in. angled pieces; accent with ginger;
- **Eggplant:** cut into 2-in. pieces, or half and score in a diamond pattern; cut and add to ratatouille or purée for baba ghanouj;
- **Fennel:** cut bulb into quarters or eighths; delicious by itself;
- **Garlic:** cut top off heads to expose cloves, roast in covered dish; spread on toast points or purée and use as flavoring component;
- **Green beans:** remove stems and roast whole;
- **Mushrooms:** roast whole if small, or cut into 1-in. pieces;
- **Onions:** cut into 2-in. wedges and break into individual layers;
- **Parsnips:** cut into coins, half-moons or 1-in. angled pieces;
- **Radishes:** roast whole if small, or cut into 1-in. pieces;
- **Squash:** cut into 1½-in. angled pieces;
- **Sweet potatoes:** remove skin and cut into 2-in. pieces;
- **Tomatoes:** for larger tomatoes, roast whole or cut in half lengthwise and roast cut-side down with salt, pepper and oil;
- **Turnips:** cut into 1½-in. pieces;
- **Zucchini:** cut into 1½-in. angled pieces.

(roasted and ground) and ginger on roasted potatoes, pumpkin, zucchini and onions. In the Caribbean, chefs choose a slightly sweeter approach, coating roasted vegetables with cinnamon, cloves, ginger, red wine vinegar and soy sauce. In Mediterranean cuisine, roasted root vegetables such as eggplant, peppers, artichoke and squash are often seasoned with balsamic vinegar after roasting.

In the United States, consumers, chefs and manufacturers seek to push the envelope with exotic spices to meet demands for unusual tastes and complexity. Spices that are becoming more mainstream in America include such earthy spices as cayenne, cardamom, cloves, nutmeg, allspice, grains of paradise, fenugreek and varieties of peppercorns. Exotic spice mixes, such as Ethiopian *berbere* (which can include dried spicy chiles, garlic, ginger, *ajwain* or thyme, basil, *korarima* or cardamom, rue berries, black peppercorns, white peppercorns, and/or fenugreek, among other ingredients) are also gaining ground. It's becoming common for manufacturers to pair the earthy notes with new types of heat so that a little spice gives a big punch. On the flip side, heat pairs nicely with a floral note, like rose or hibiscus.

Roasted now a mainstay

As consumers' tastes progress and trend toward richer and fuller flavors in their foods, manufacturers and restaurants have responded

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by adding fire- and oven-roasted vegetable blends to their products. On the foodservice front, more restaurants are putting vegetables in the center of the plate—the spot usually reserved for proteins. Vegetables, especially sweet potatoes and other potatoes, eggplant, and mushrooms, can serve as inexpensive comfort food, and cultivate more interest when roasted. Current manufactured products featuring roasted vegetables include:

- Frozen pizzas with roasted garlic, onions, eggplants, peppers, zucchini and more;
- Frozen entrées, including sandwiches and pasta dishes, with roasted peppers, tomatoes and onions, among others;
- Roasted vegetable purées in pasta sauces and salsas;
- Vegetable pot pies, and vegetables wrapped in pastry;
- Roasted vegetables added to creamy, spreadable cheeses in the dairy case;
- Soup bases with roasted pepper and squash purées;
- Spreads and dips with included roasted vegetables;

- Snack chips coated with roasted vegetable, spice and/or vinegar powder blends.

The possibilities of including roasted vegetables in main dishes and side dishes are almost endless. Next time you eat a pasta sauce or soup, select one with a roasted vegetables base and see if you can discern the caramel, roasted flavor coming through. 

Barbara Zatto is director of culinary and sales manager, West, for Mizkan Americas' food ingredients division. She is a graduate of the Culinary Institute of America and is a member of the Research Chefs Association. For more information, visit mizkan.com.



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