



Ralph C. Martin

Professor, University of Guelph, Ontario

Profesor, Universidad de Guelph, Ontario

Professeur, Université de Guelph, Ontario

Food is Special and Its Waste is More than A Symptom

Public forum on Reducing and Managing Food
and Organic Waste Streams in North America

Ralph C. Martin, Ph.D., P.Ag.

Professor, University of Guelph

Web page: www.plant.uoguelph.ca/rcmartin

Twitter: @ralphmartinOAC

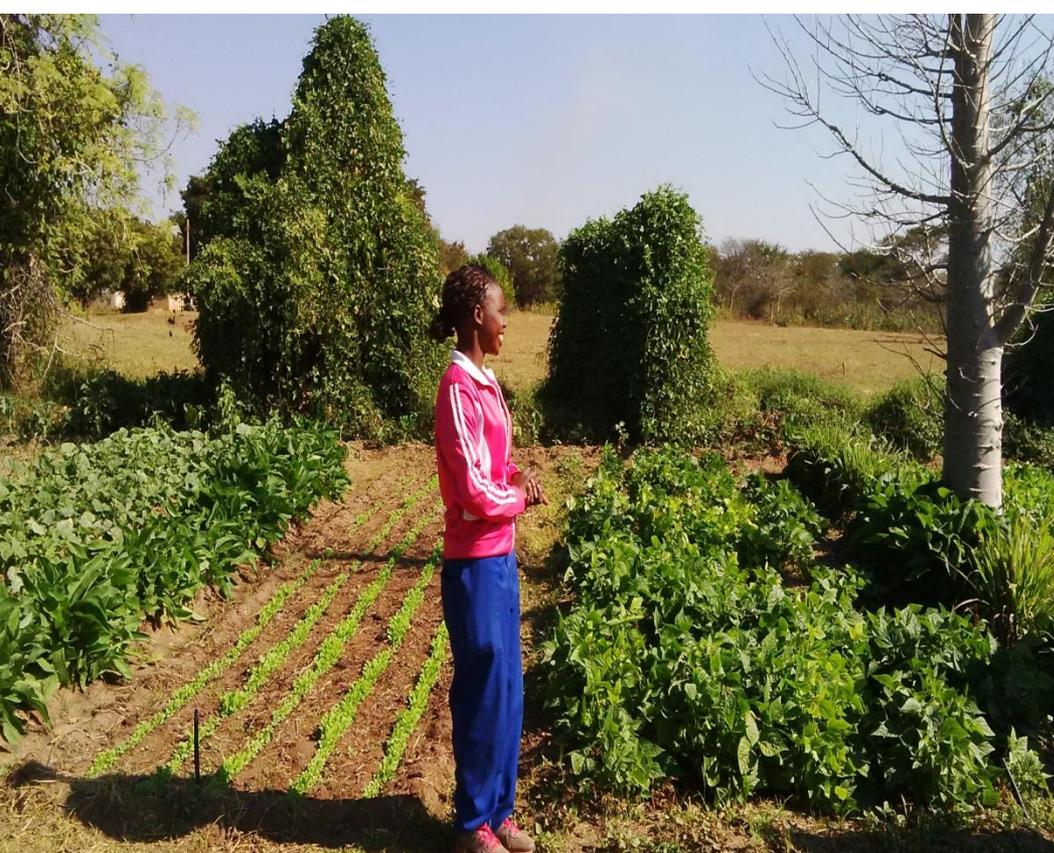


I thank the First Nations people across North America.

I appreciate that they cared for the land in this region of Earth, prior to our arrival.



Production > Food Sales > Consumption
Goal - Sustain Sufficient Production to =
Adequate, Healthy Consumption



Kasisi Ag Training Centre, Zambia, www.katczm.org



Loic Dewarin, QC, open-pollinated corn

Plan A for 2050

- 9 - 10 billion people (30 – 40 % increase)
- In developing countries, average incomes rise, consume more meat and richer foods
- Thus increase food production by 70 – 100%



Plan B for 2050

- More and improved education for girls and women in developing countries with goal of < 9 billion people
- **Reduce** wasted food (now 40% in Canada)
- Eat less meat (higher quality), more pulses and edible insects



<https://meetingplaceorganicfarm.ca>



Spicy cricket fritters

<http://entomofarms.com/>

1 Billion

The number of extra people that could be fed if we globally applied the best **current** methods to reduce food waste.



Kummu et al. 2012. Sci. of the Total Environ. 438: 477-489

\$31 Billion

Value of food waste in Canada, in 2014

Gooch and Felfel. 2014. "\$27 BILLION" REVISITED, THE COST OF CANADA'S ANNUAL FOOD WASTE. Value Chain Mgmt Intern

U of Guelph Food Waste Audit



- Unavoidable (36%)
 - not edible under normal circumstances (e.g. apple cores, melon rinds)
- Avoidable (53%) – thrown away prior to disposal and still edible (e.g. heel of bread, half a roast) + 11% possibly avoidable

Principles of Addressing Wasted Food

1) **REDUCTION**

2) Feed people with co-products rather than wasting this potential (purees?).

3) Feed pets, livestock (incl insects)

4) Anaerobic digestion (energy and nutrients)

5) Bio-diesel (energy) or compost (nutrients)

6) Divert from Landfill
(after all else)



Consumers Could Change

- Households in Canada spend \$153/wk on food. Assuming 20% of food is wasted in households, then tossing cost is **\$31/wk**
- Organic shoppers spend **\$27/wk** more than those who buy non-O. **Stop wasting, then buy organic, save \$4/wk**

www.guelphfoodwaste.com



Balancing Production and Consumption

Let us suppose that agriculture had evolved differently, and that we produced high quality food, with yields about 25% lower than they are today.

Can we also imagine wasted food at 15%?

In a society of 15% wasted food, would we aspire to produce 25% more food so that we could waste 40%?



Wasted Food Survey

www.guelphfoodwaste.com

- Most feel guilty about wasting food and if feel more guilty, then waste less food.
- People with more food awareness, waste less food and most say wasted food is a **social issue**, more than an economic or environmental issue



Institutional Wasted Food

- 20% of edible food, wasted in restaurants (Engstrom and Carlsson-Kanyama, 2004)
- Plate waste 11% in restaurant
Fries with Clubhouse (21%) and with Pulled Pork (28%*)
Steamed vegetables, salads (0%)
- > 410 g threshold, waste more (von Massow and McAdams, 2014)
- 514 lbs waste per meal with trays vs 335 “ “ without trays in a university cafeteria (Sarjahani et al. 2009)



The U.S. Federal Trade Commission says the food industry **targets nearly \$2 billion/yr in marketing to children;** 73% of marketing promotes food and beverages high in sugars and fats, yet low in recommended nutrients

<http://foodtank.com/>

Where should we be aiming?



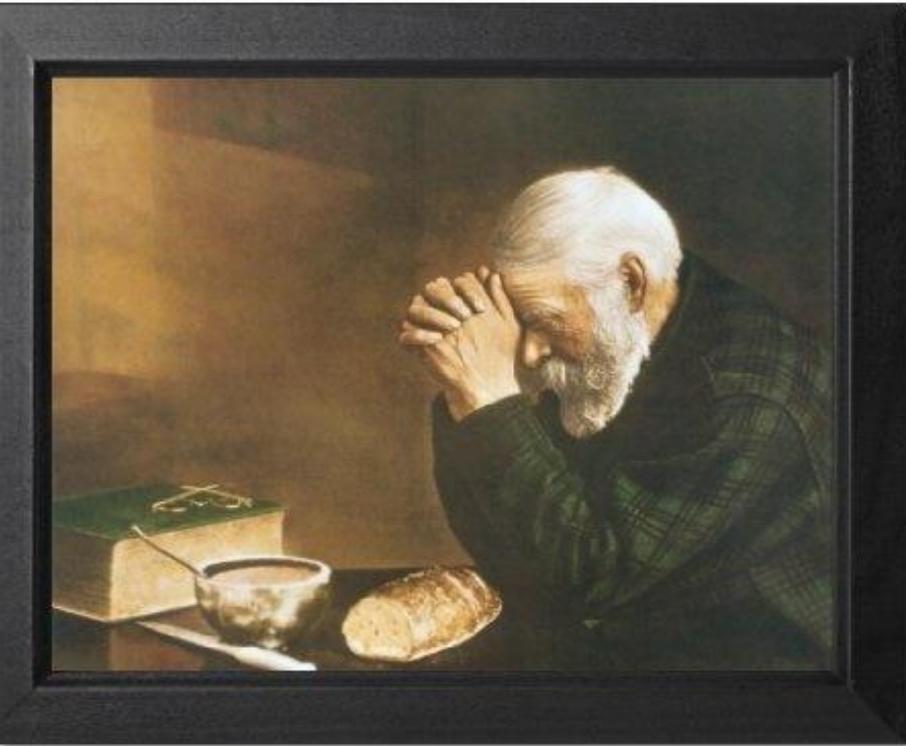
www.theguardian.com/artanddesign/gallery/2016/sep/09/the-world-nomad-games-in-pictures

From Many to Few and Back Again

- 350,000 plant species, 195,000 flowering plants, most have edible parts useful to humans
- < 300 plant species for food; 17 species provide 90% of food
- Grow diverse crop species, spread risk as climate changes, accept seasonal food, improve health and **restore cultural links**



Attitude of Gratitude



Take moments to be thankful, especially for good land and food. Appreciate when we have enough and treasure it.

Web page: www.plant.uoguelph.ca/rcmartin

Twitter: @ralphmartinOAC