



Sally Brown

# Climate Change Connections

## NEW McDONALD

**WOULD VENTURE** to guess that for most people, Old McDonald is a clever way to entertain toddlers that becomes pretty tedious for us adults pretty quickly. Its connection to greenhouse gases would be limited at best. After all, how much methane can a few oink oinks or moo moos produce in the greater scheme of things?

Having gone to graduate school in agronomy (and toddlers all over the country can be thankful that I didn't opt for early childhood education), the connection is much clearer. In ag school, I learned about the old family farm model. And Old McDonald fits into that model. Those baa baas and other noises represent the animals that were kept on the farm. We're talking about a relatively small number of animals here, certainly not one that would qualify as a confined animal feeding operation, or CAFO. The McDonald family was able to grow sufficient feed to keep their animals happy and the manure from those animals went directly back onto the fields, rather than into a pile or a lagoon. This resulted in less methane being released into the atmosphere (23x CO<sub>2</sub>), reduced use of synthetic fertilizer (reduced fossil fuel consumption) and improved soil tilth through the use of manures and organic matter (increased soil carbon storage).

These days, it is much more common to find much larger farms than the McDonald family operated with either no animals at all or thousands of them. This creates build up of manures on some and a dearth of this valuable material on others. In the good old days, farm models had lots of circles; wastes produced on the farm being cycled back to the farm as resources. The current farming model with either an eerie silence or a cacophonous echo of cluck clucks is better characterized by

arrows that lead off the farm or off the engineering model into some poorly defined other area. The growth and increasing specialization of farms has resulted in greater GHG production through reduced on-farm residuals recycling and heavier dependence on external inputs.

There are even well intentioned regulations in some states that prevent farms from operating compost facilities on site in the interest of improving air quality. I would argue that reinventing the McDonald family is critical to both reducing GHGs and promoting the sustainability of modern agriculture.

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In my travels, I have seen a few examples of what I'll call New McDonald. These are a diverse group and offer potential for the increased use of circles rather than arrows. Here are some stories:

Kent Madison in Hermiston, Oregon operates a family farm of over 10,000 acres with a diverse production including cattle, wheat, alfalfa and canola. He accepts municipal biosolids from Portland and other towns in Oregon. He uses these instead of synthetic nitrogen and has for over 15 years. He has seen an increase in yield and soil organic matter. Not even counting the impact of the fertilizer value of these materials, he calculated that the CO<sub>2</sub> spent on trucking biosolids to the farm has brought an eight fold return in

carbon sequestered in the form of soil carbon and plant biomass. He has taken this one step further and is now producing biodiesel from farm grown canola that is being used by City of Portland vehicles.

Ted Durfey in Sunnyside, Washington also manages biosolids and produces canola for biodiesel. In addition, he has a large compost facility on his farm that accepts agricultural wastes including fruit pomace and hop residuals. The compost from his facility is recycled back to the hops fields, where farmers are able to reduce herbicide and water use because of the increased plant vigor, and soil water holding capacity that comes with high rates of compost addition.

I just heard Ken Vandeford from the wastewater treatment division of the City of Eugene, Oregon give a talk. In addition to operating the treatment facility he also runs "Biocycle Farms." He said that the City had coined this name many years ago, but that it was fine by him for the magazine with a similar name to keep on printing! A nice central theme with broad applicability. At Biocycle Farms, wastewater effluent and biosolids are used to fertilize a poplar tree plantation. The poplars will be used for biofuel and for sawdust for the City to produce compost.

In each of these cases, the definition of a family farm has been broadened for the benefit of the soils and the atmosphere. It may not be realistic to try to recreate the Old McDonald of nursery school fame. But it is possible to operate farms that understand the importance of cycling residuals in a sustainable way. ■

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