

The 4R Nutrient Management Casino

J. Heard¹, M. Riekman¹ and D. Flaten²

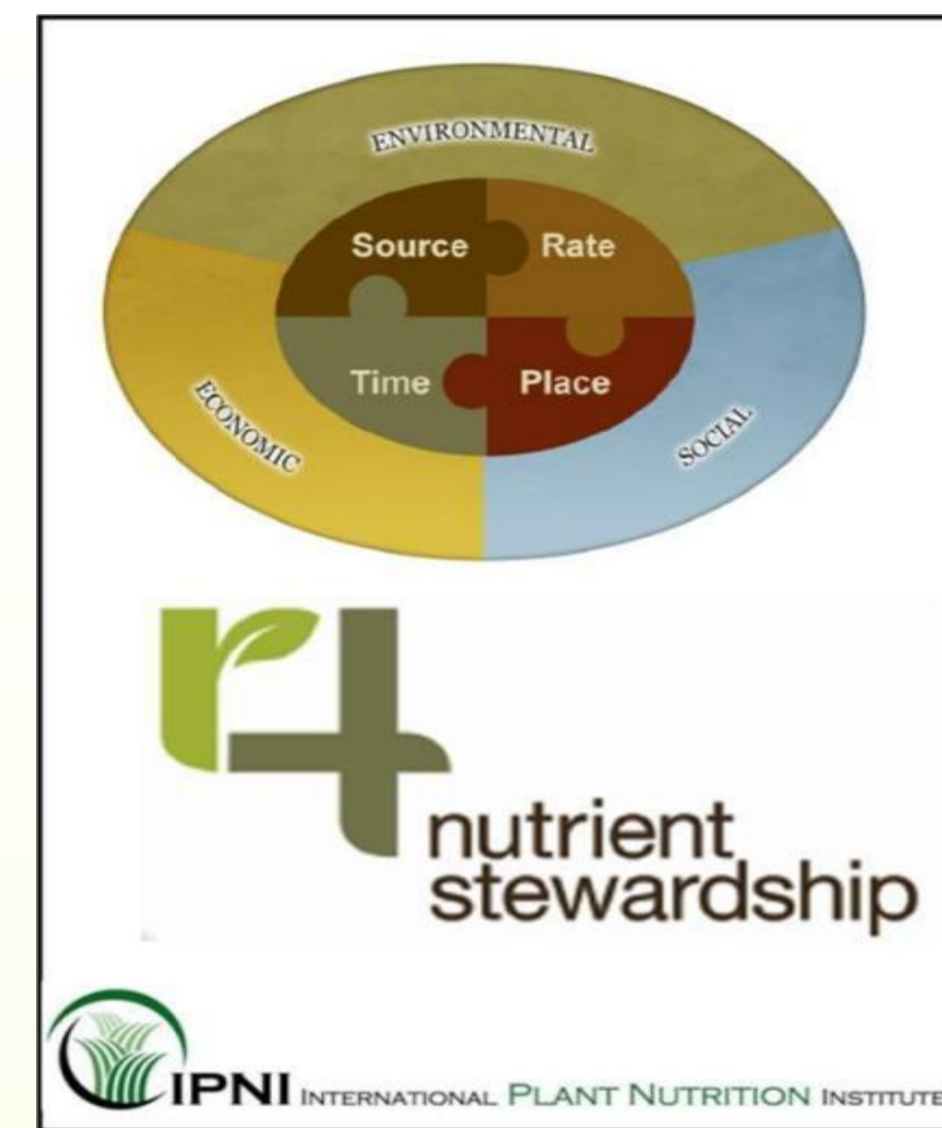
¹ Manitoba Agriculture, Food and Rural Development, ² Soil Science Dept., University of Manitoba



Background

The 4R Nutrient Stewardship approach is used by industry, government and growers to achieve responsible nutrient use through:

Right Source @
Right Rate,
Right Time and
Right Place



“canoLAB” is a major agronomy training event sponsored by the Canola Council of Canada to provide interactive lessons to farmers and agronomists in the winter months.

A “casino” approach was used to demonstrate 4R Nutrient Management Stewardship since Manitoba farmers are gamblers – every year investing some \$600 to 750 Million in fertilizer.

We divided participants into 5-6 groups of 4, with each group assigned a base scenario “farm situation” with quite similar soil test analyses, yet with unique soil and equipment resources ... displayed as cards on poster panels (below) along with available services or custom equipment and a suite of fertilizer sources including manure.



Services available

1. Participants designed soil fertility program to suit base scenarios and available resources
2. However, base scenarios were changed with “wild cards” dealt by casino staff ... according to the success of each group in dealing with increasingly challenging scenarios



WILD CARDS

Environment

- Wet spring, dry spring, late harvest, wet fall, early winter

Economics and Logistics

- Urea and phosphate price increases, canola price range (\$7 to \$13/bu), on-farm fertilizer storage, delayed supplies of NH₃

Human Resources, Land tenure

- Labour shortages
- Young, expanding farmer vs older farmer, planning retirement
- Owned vs rented land
- Land rent stipulations – conservation tillage, no residue burning, soil P maintenance, rotation

Groups

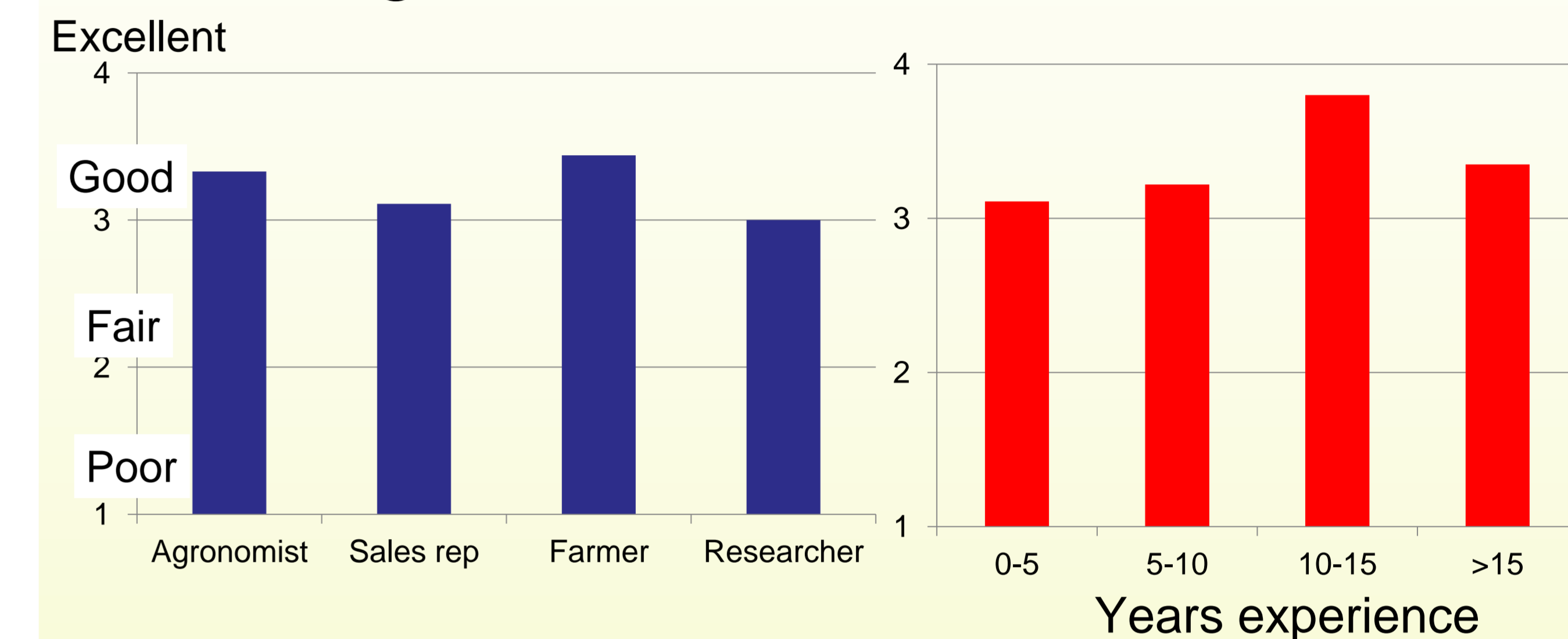
1. Designed the original plan then tested its resilience
2. Modified their nutrient management plan to best accommodate changing circumstances
3. Presented their plan to other participants.



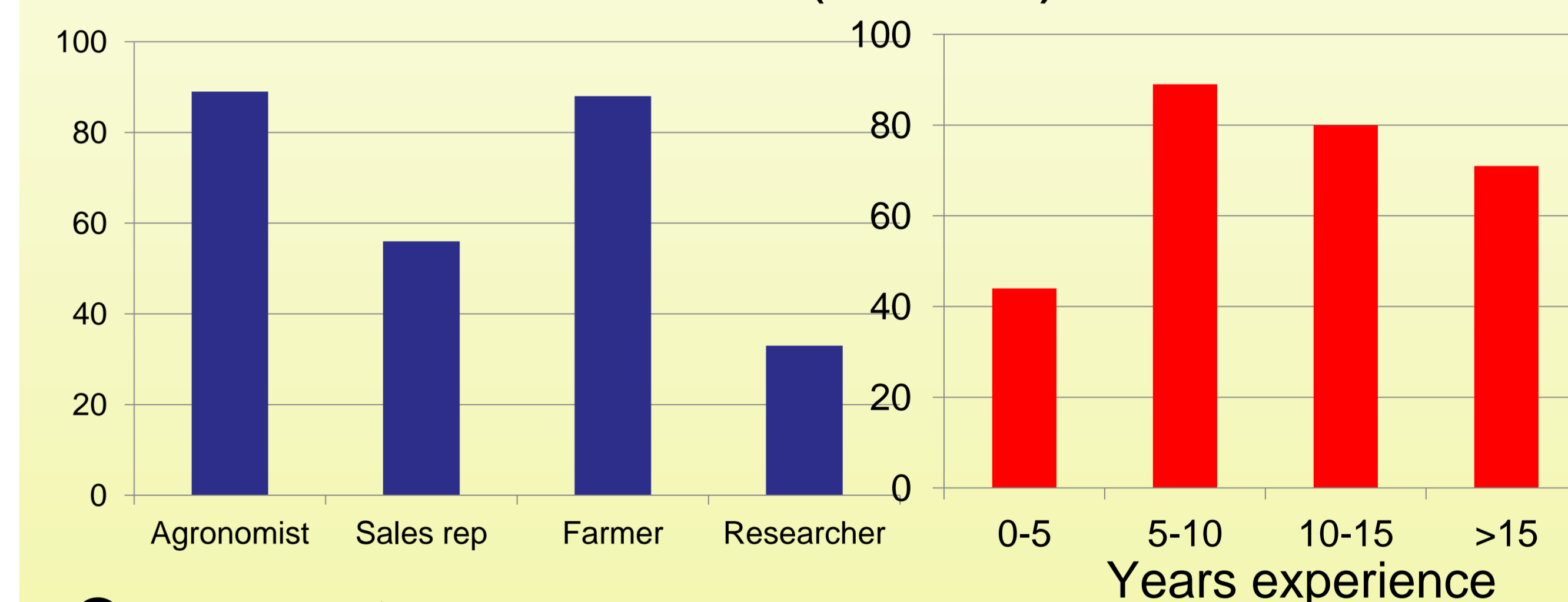
Feedback

1. An online “surveyMonkey” format was used to solicit feedback from the 240 participants, with only 40 responses received.
2. Incentive for completing was the opportunity of free attendance for the 2016 canoLAB
3. Responses were sorted by occupation and years of experience.

Rating of 4R Casino Exercise (n = 40)



% Able to list 4Rs (n = 40)



Comments

Most appreciated this interactive exercise
Seasoned agronomists and farmers appeared best versed in the 4Rs, in contrast to those less experienced or employed in research.
Ag industry staff were knowledgeable and quick to employ enhanced efficiency fertilizers to accommodate changes. Many farmer participants seized the opportunity to use manure in response to rising N prices and to maintain a positive P balance

Summary

To maximize the odds of success, a 4R strategy should be resilient but flexible, accounting for a farm’s unique combinations of soils, equipment, cropping systems, as well as risks beyond the farmer’s control ... there is no single 4R strategy.