BEST MANAGEMENT PRACTICES FOR POTATO PRODUCTION

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Growers are often reluctant to adopt research based recommendations because of a perception that plot research is not applicable to whole farm situations due to scale and micromanagement of the plots. They also often feel that research-based recommendations are not practical, economical, or feasible for large scale production. In some cases, these concerns have validity and are compounded by conflicting recommendations from one researcher to another. These issues, both real and imagined, often result in many growers ignoring the potentially valuable information being generated by researchers. However, other growers carefully adopt many of these practices successfully.

Growers that have successfully adopted research based recommendations can serve as a source of confidence for those who are more skeptical. The objectives of this project were to: 1) establish field demonstrations highlighting "model" potato growers that exemplify best management practices (BMPs); 2) establish plots within each field to compare BMPs with a high input, maximum yield management (MYM) approach; and 3) enhance grower confidence regarding BMPs.

Eleven field trials were conducted in the Pacific Northwest over three years. Model growers were selected that best exemplified those who are both successful and whose management coincides with BMPs that have resulted from research-based recommendations. Five replicates of two treatments (BMP and MYM) were established in a randomized complete block experimental design (RCBD) in each field.

BMPs are documented in various Pacific Northwest publications and, essentially, entail applying inputs based on soil and plant sampling/scouting with a maximum economic yield approach. The MYM treatment resulted in 5-25% more fertilizer and pesticide application in each field based on a near zero tolerance for pest and nutrient problems. The MYM treatments resulted in significant yield increases in three fields and decrease in two fields, with an overall average increase of 0.6 tons per acre in marketable yield and a decrease of 0.1 ton per acre in cull yield (Fig. 1). However, when factoring in cost of production, MYM treatment resulted in net return increases in four fields with just one field being statistically significant. Seven sites showed a decrease in net return with four being significant. Based on five year average grower contracts, the gross crop value increase was $56 per acre (Fig. 2), but the cost of production increase in order to achieve this increase was $125 per acre, resulting in an average decrease in net return of $76 per acre when the MYM was compared with the BMP approach (Fig. 3).

The bottom line is that more money was spent to grow a slightly better crop with a significant net loss in income. This project shows that, on the average, growers whose practices mostly coincide with research based recommendations focused on maximum economic yield, rather than maximum yield, are more likely to generate profits from potato production. Funding for the first year of this project was provided by the Idaho Potato Commission, with funding for subsequent years provided by the USDA Western Sustainable Ag Research and Education (WSARE) program, with a fourth year to come.

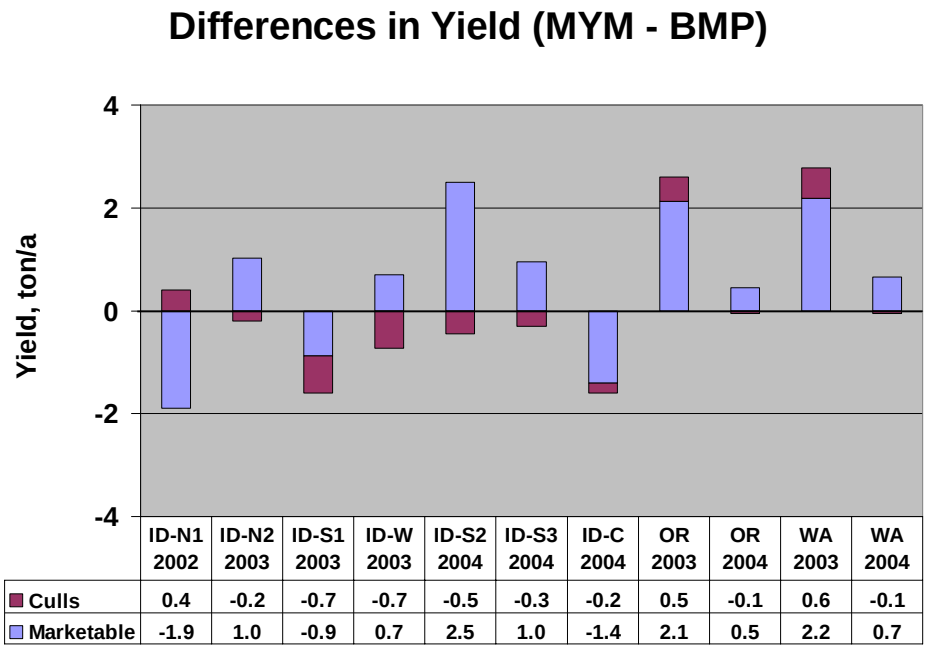

Fig. 1. Differences in potato yield at eleven Pacific Northwest locations over three years when comparing a Maximum Yield Management (MYM) cropping approach with Best Management Practices (BMPs). Values represent MYM minus BMP.

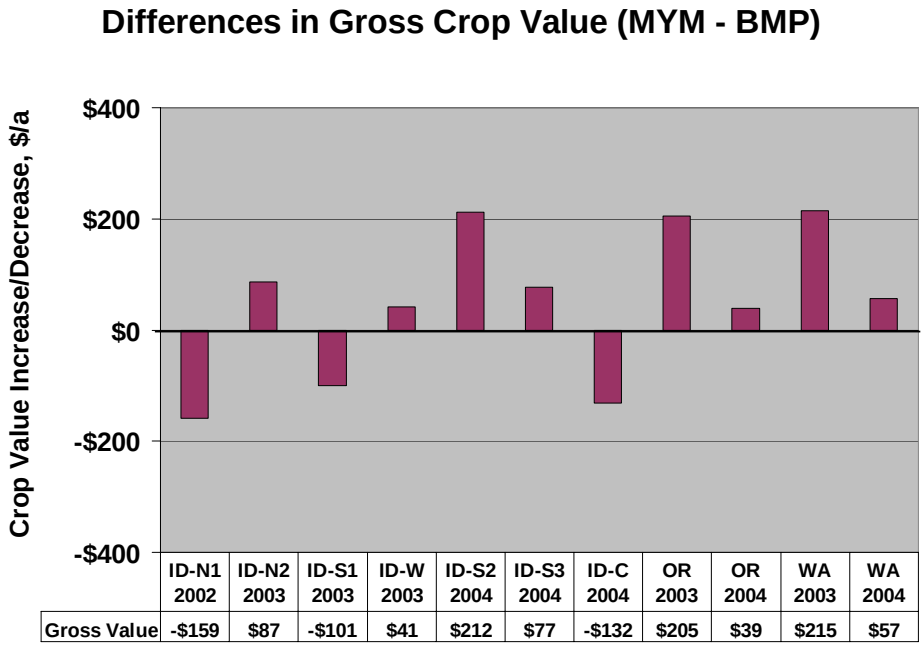

Fig. 2. Differences in gross crop value for potatoes grown at eleven Pacific Northwest locations over three years when comparing a Maximum Yield Management (MYM) cropping approach with Best Management Practices (BMPs). Values represent MYM minus BMP.

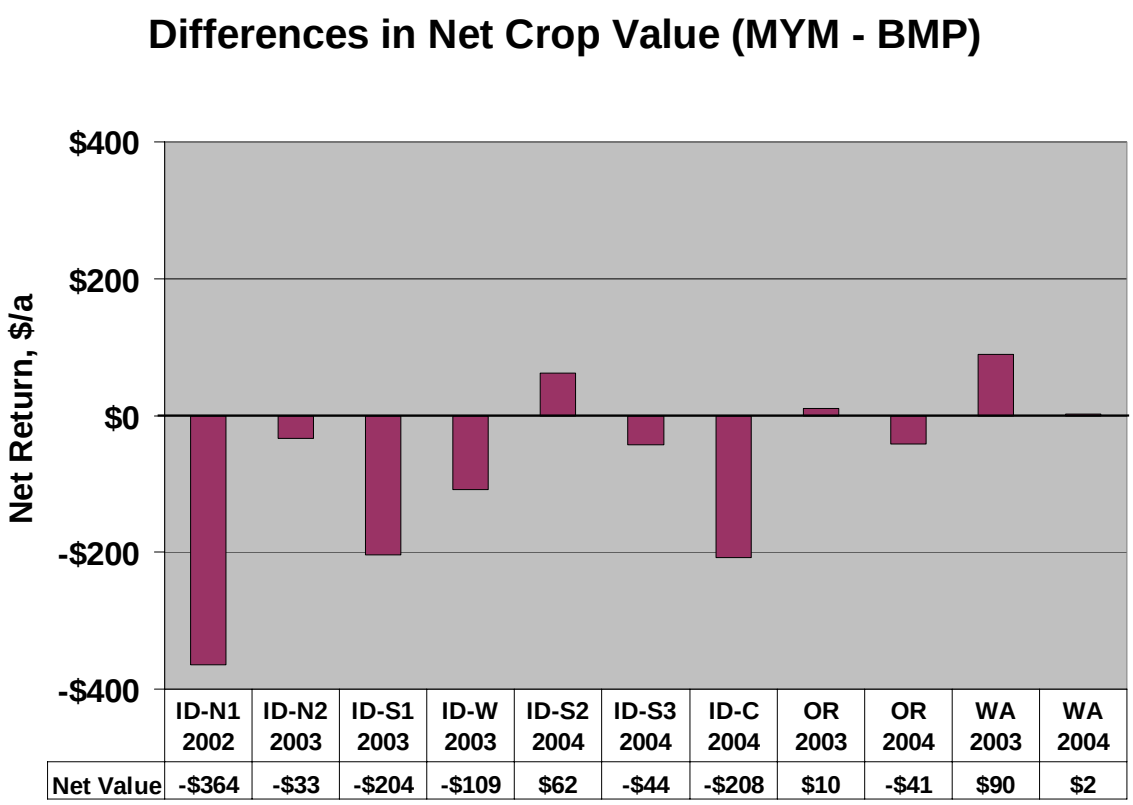

Fig. 3. Differences in net crop value for potatoes grown at eleven Pacific Northwest locations over three years when comparing a Maximum Yield Management (MYM) cropping approach with Best Management Practices (BMPs). Values represent MYM minus BMP.