

## ANNUAL REPORT SUMMARY - PPT

1. PROJECT: Development of a Risk Management Guide for Wheat Production  
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3. Included in the objectives of the project is the requirement to develop techniques to set target yield goals before seeding, track the yield potential at critical stages during the growing season and if possible, develop methods which can ensure inputs are at levels to provide optimal yields. Listed below are examples of work conducted on Katepwa HRSW illustrating the RMG Target Yield Estimator, the RMG Yield Tracking Predictor as well as some responses to split N applications. Similar responses have been found for HY320, a high yielding, medium quality semidwarf spring wheat.

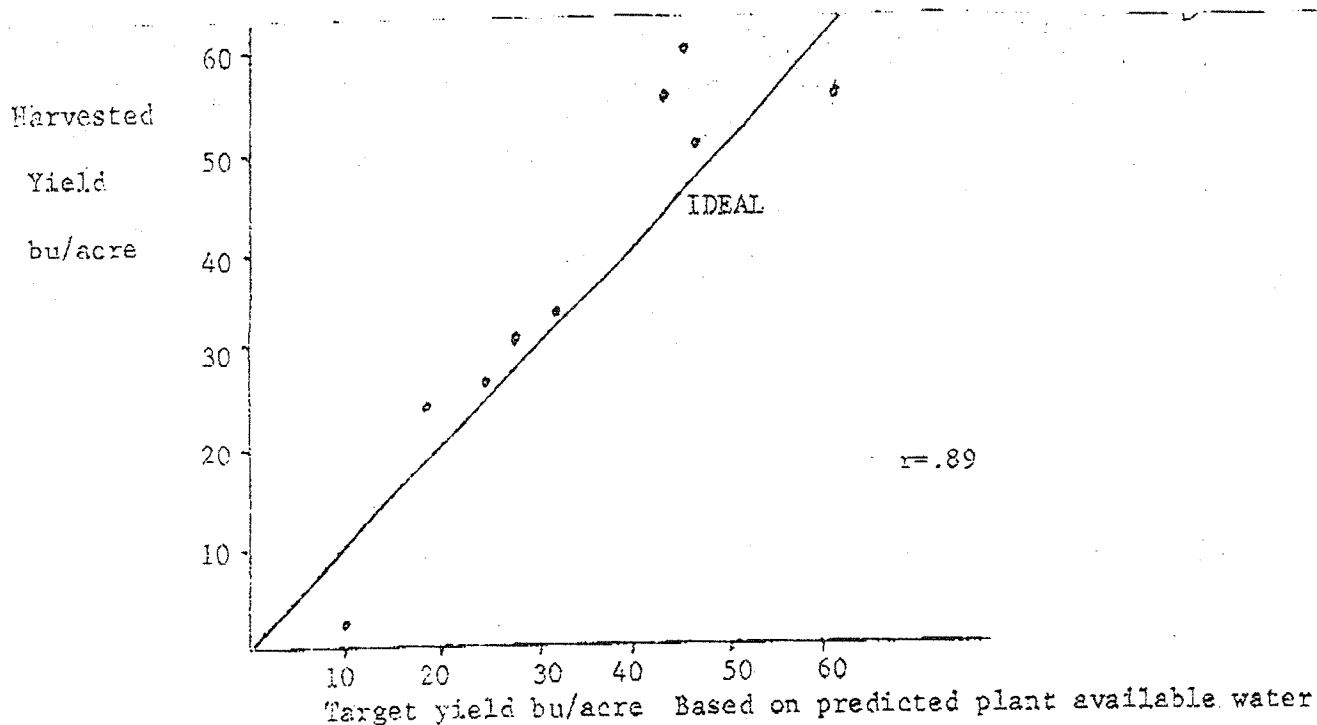


FIGURE 1. CORRELATION OF RMG TARGET YIELD COMPARED TO HARVESTED YIELD  
 KATEPWA WHEAT, MINTO 1988-89

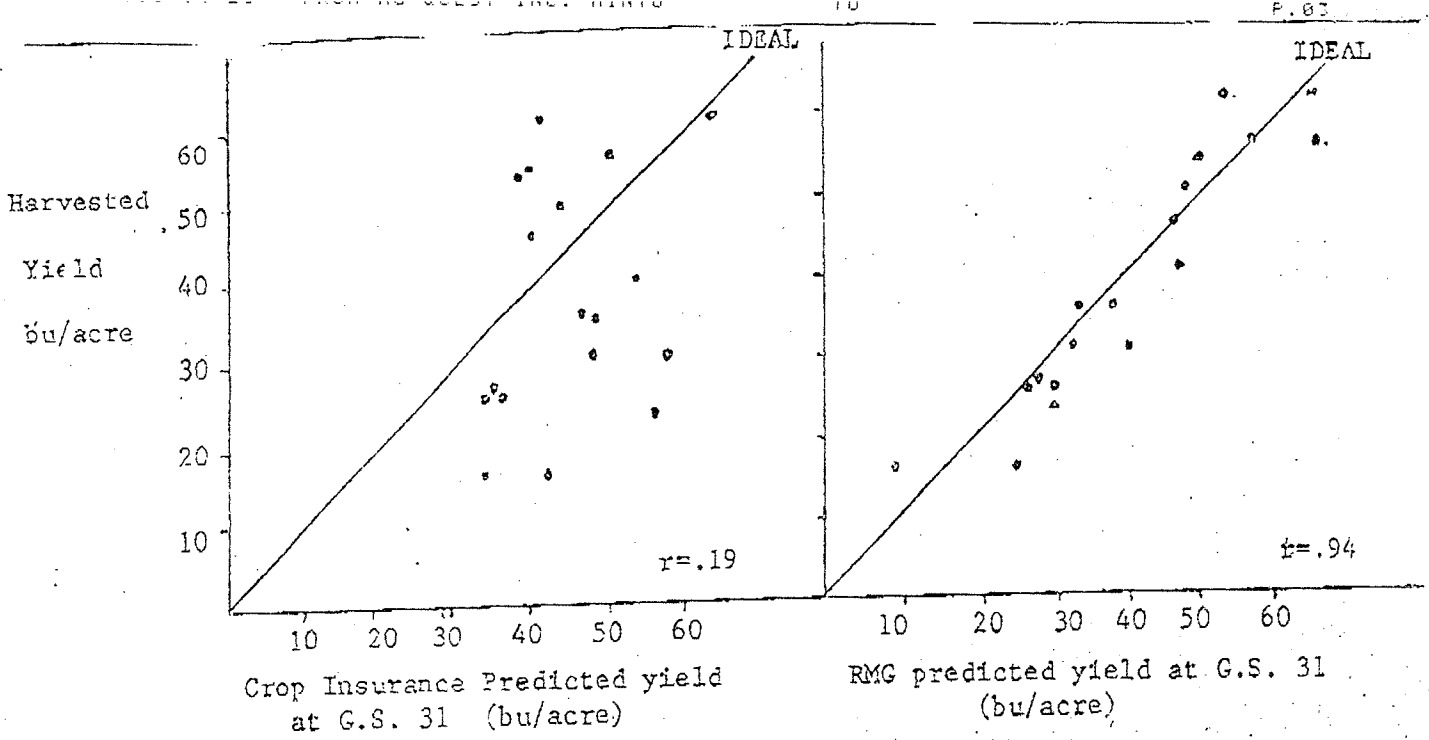


FIGURE 3. CORRELATION OF PREDICTED YIELDS AT G.S. 31 AND HARVESTED YIELDS MINTO 1988 & 1989, KATEPWA WHEAT

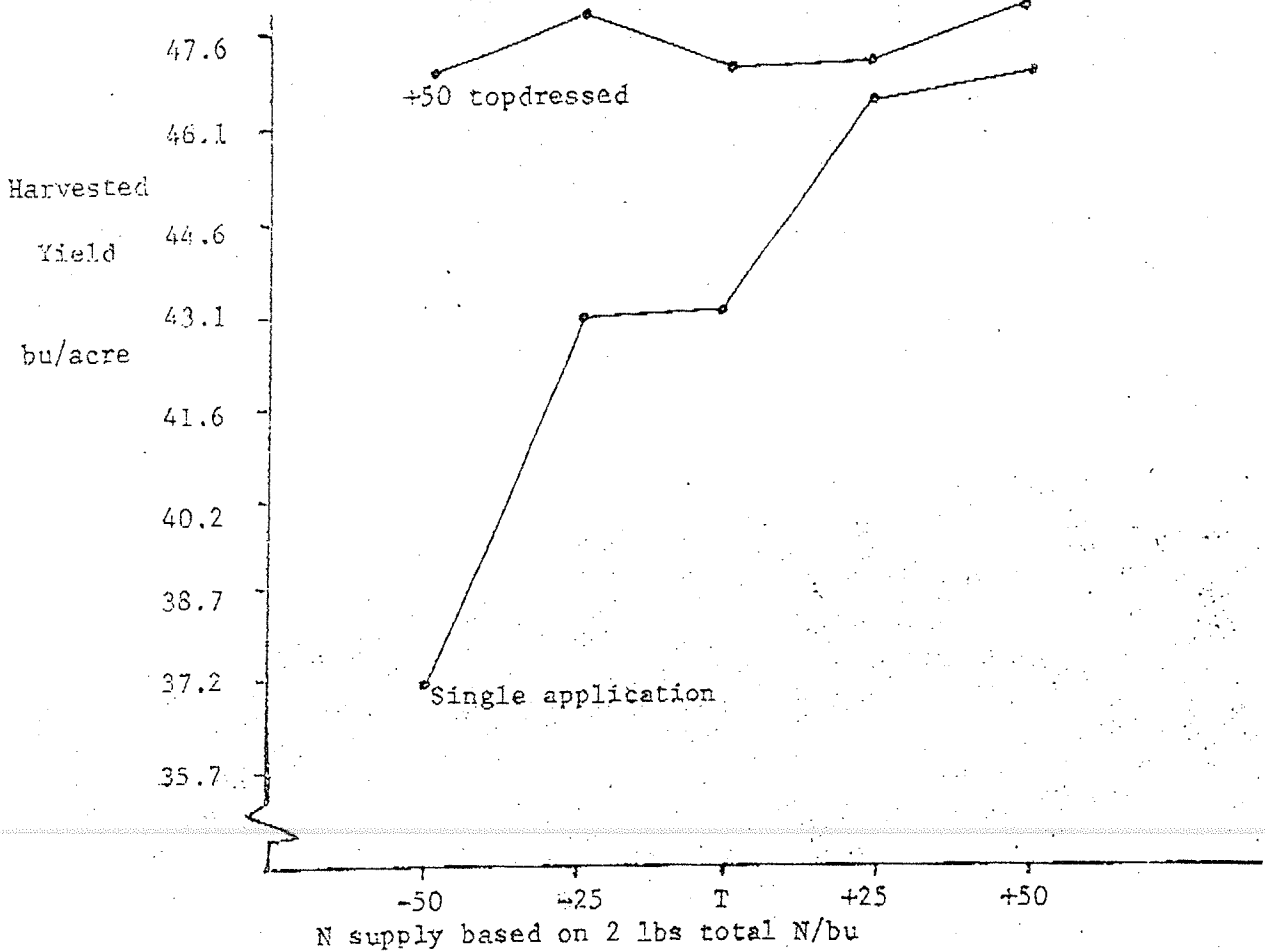


FIGURE 5. RESPONSE OF KATEPWA TO SINGLE AND SPLIT N APPLICATION MINTO 4 STATION YEARS

4. In a complimentary intensive wheat management study involving crop density x fungicides, we have found many interesting interactions.

TABLE 1. EFFECT OF SEED RATES, ROW SPACING AND FUNGICIDES ON YIELD OF HY320 MINTO, 1985

SEED RATE (SEEDS/M2)	YIELD (KG/HA)					
	CHECK			FUNGICIDE		
	ROW SPACINGS(CM)			ROW SPACINGS(CM)		
	11	15	23	11	15	23
300	5924	6028	6088	6566	6337	6306
500	6104	6375	5923	6761	6535	6629
Difference	180	347	-165	195	198	323

TABLE 2. EFFECT OF SEED RATES, ROW SPACING AND FUNGICIDES ON YIELD OF HY320 MINTO, 1987

SEED RATE (SEEDS/M2)	YIELD (KG/HA)					
	CHECK			FUNGICIDE		
	ROW SPACINGS(CM)			ROW SPACINGS(CM)		
	11	15	23	11	15	23
300	4212	3699	3330	4763	4023	4072
500	4566	3073	3308	4958	3538	3665
Difference	354	-626	-22	195	-485	-407

TABLE 3. EFFECT OF SEED RATES, ROW SPACING WITH FUNGICIDES ON YIELD OF HY320 MINTO, 1989, LOW MOISTURE

SEED RATES (SEEDS/M2)	YIELD (KG/HA)		
	ROW SPACING (CM)		
	11	15	23
200	2186	1888	1626
300	2281	1898	1821
400	2188	2021	1840
Difference	-107	123	19

1985 results indicate fungicide improved yields in every case. Narrow row spacing improved yields more consistently if a fungicide were used and higher seeding rates increased yields except where wide rows were used without fungicides.

1987 results indicate fungicides and narrow row spacings improved yields in every case, however higher seeding rates only enhanced yields when narrow row spacings were used.

1989, a high heat stress year, results indicate narrow row spacing improved yields but the response to seeding rate was variable.

Despite the interactions, the best management of HY320 appears to be to seed in narrow rows at high seeding rates and to use a fungicide to control leaf diseases.

Comparing conventional management, 15 cm rows at 300 seeds/m<sup>2</sup> without a fungicide to 11 cm rows at 500 seeds/m<sup>2</sup> with a fungicide over 1985 and 1987 data results in an average yield difference of 997 kg/ha in favour of the more intensive management package.

5. Soil moisture precipitation and extreme summer temperatures were the most limiting factors in the 1989 growing season. This was actually fortuitous as it allowed for greater yield difference between our target yield trials and gave us a better range of yield on which to establish our target yield and yield tracking curves. Only one type of growing has not been experienced during the last two years. This would be the situation where initial soil moisture is low, but growing season precipitation is above normal with below normal temperature. We shall try to mimick this situation in 1990.

6. The project should be continued as originally planned as the project is succeeding in providing the information originally sought. The only worrisome item to date is that some of our correlations appear to be higher than expected on our site, but the correlations of data from off station cooperators is lower than expected. We will be developing a more concentrated effort in 1990 to attempt to improve the correlations with cooperator data.

8. The development of a Risk Management Guide for Wheat Production is extremely important at this time from two view points. First, developing methodology to ensure farmers have better guidelines for determining the need for cropping inputs will eventually help to improve the cost/benefit ratio on the farm and consequently help improve profit levels. Secondly, the rationalization of cropping inputs is a necessary step from a political point of view. Environmentalists and the general public must be convinced that inputs are only being used when needed and that overuse is being minimized. For example, developing a flexible nitrogen management strategy based on target yields and yield tracking should help to ensure over fertilization is avoided and that nitrate leaching into ground water can be minimized.