TILLAGE MANAGEMENT FOR MANURED CROPLAND

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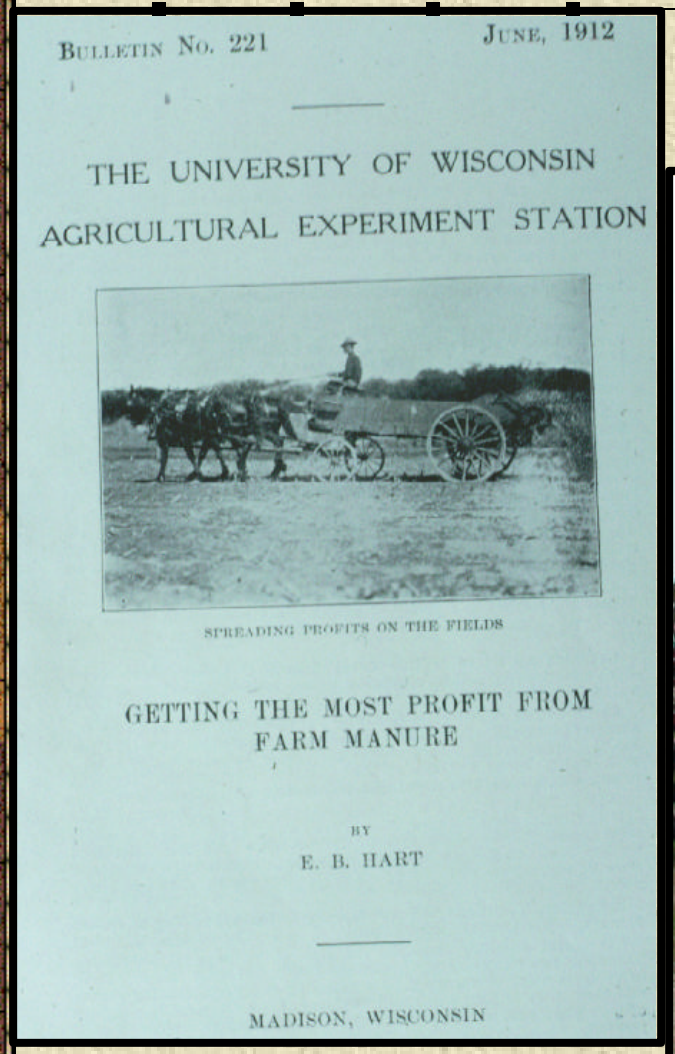
MANURE MANAGEMENT ISSUES HAVE EXISTED FOR A LONG TIME …



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THE UNIVERSITY OF WISCONSIN
AGRICULTURAL EXPERIMENT STATION

SPREADING PROFITS ON THE FIELDS

GETTING THE MOST PROFIT FROM FARM MANURE

BY
E. B. HART

MADISON, WISCONSIN

… BUT TECHNOLOGY HAS CHANGED

ENVIRONMENTAL ISSUES ARE MORE IMPORTANT THAN EVER

MANURE AND WATER DON'T MIX

THE PRACTICAL GOAL OF MANURE MANAGEMENT

- KEY PART OF THE NUTRIENT MGT. PLAN
- DISTRIBUTE MANURE EVENLY ON THE FARM
  - AVOID SOIL P BUILDUP
- UTILIZE PLANT NUTRIENTS
  - N OR P BASED MANAGEMENT
- AVOID APPLICATION IF LOSSES MAY OCCUR
  - STEEPLY SLOPING LAND
  - ADJACENT TO WATER
- BALANCE NUTRIENT USE AND DISPOSAL NEED

THE CONSERVATION PLAN MUST COMES FIRST

- DETERMINES TILLAGE AND ROTATION TO MEET "T"
- CONSERVATION TILLAGE LEAVES RESIDUE TO PROTECT WATER QUALITY AND SOIL PRODUCTIVITY
- MANY ARE OUTDATED OR NOT FOLLOWED
- WHICH IS MORE IMPORTANT: THE CONSERVATION PLAN OR THE NMP

CONFLICT BETWEEN NUTRIENT AND CONSERVATION PLANS

- NMP CREDITS ALLOCATE MANURE TO MORE FIELDS – MANY SLOPING
- DIRECTED TOWARD EXISTING CORN
- SLOPING LAND WITH HIGH RESIDUE
- MORE TILLAGE = MORE EROSION AND TOTAL P LOSS
- POSSIBLE PLANTING CONCERNS – MANURE CONTRIBUTES RESIDUE AND AFFECTS SOIL CONDITIONS

CAN A "HAPPY MEDIUM" BETWEEN MANURE AND RESIDUE MGT. EXIST

MANURE INCORPORATION TOOLS:
USDA-DFRC FIELD DAY, AUGUST, 2001

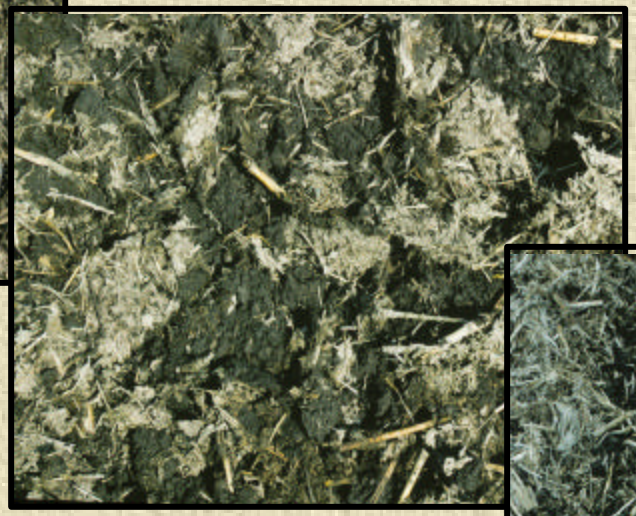
SWEEP INJECTOR

INCORPORATION WITH LIMITED RESIDUE BURIAL: WATCH YOUR STEP!!

A GREATER CHALLENGE FOR SEMI-SOLID, DAILY HAUL

NO-TILL

LIGHT DISKING



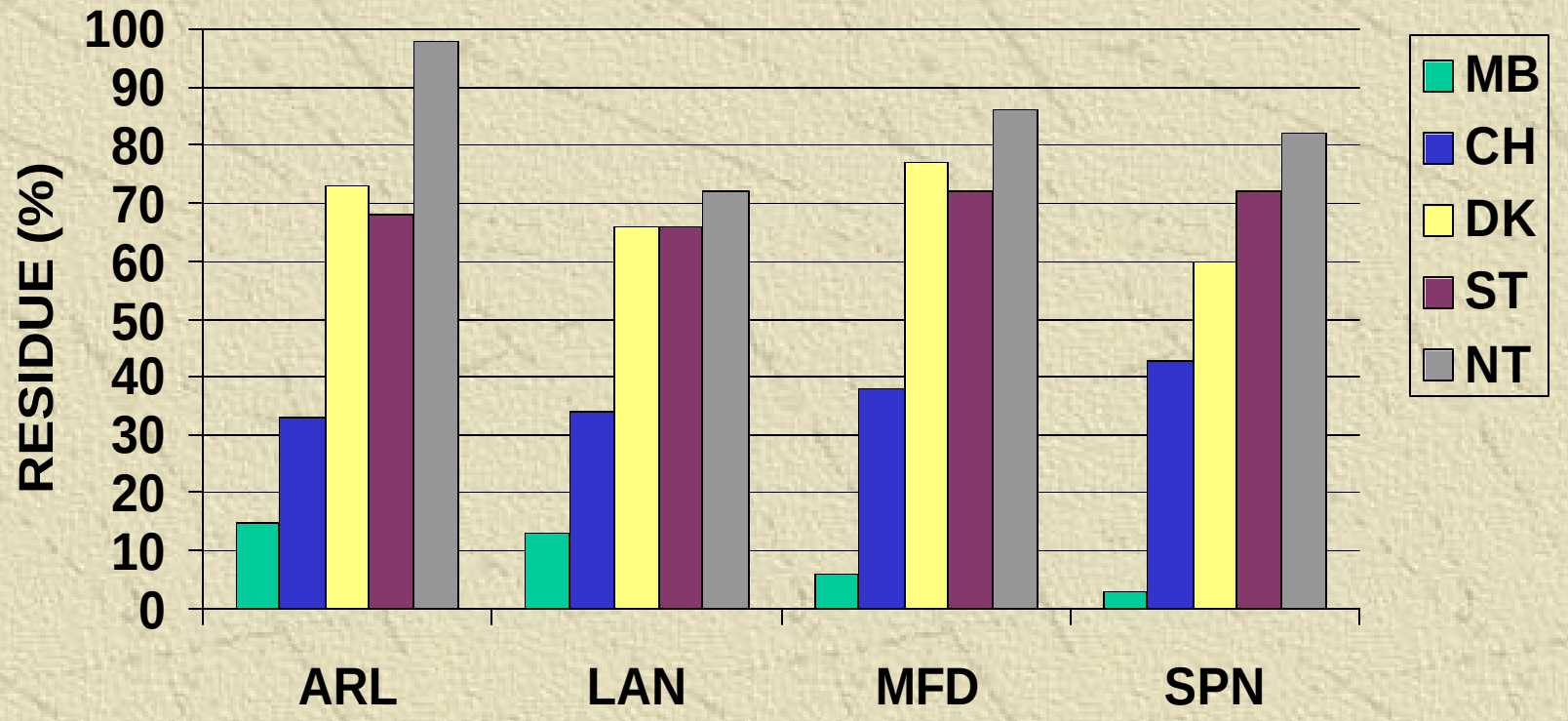
STRIP-TILL

ALTERNATIVES TO FULL-WIDTH TILLAGE

MANURE AND TILLAGE MANAGEMENT STUDY - 2002

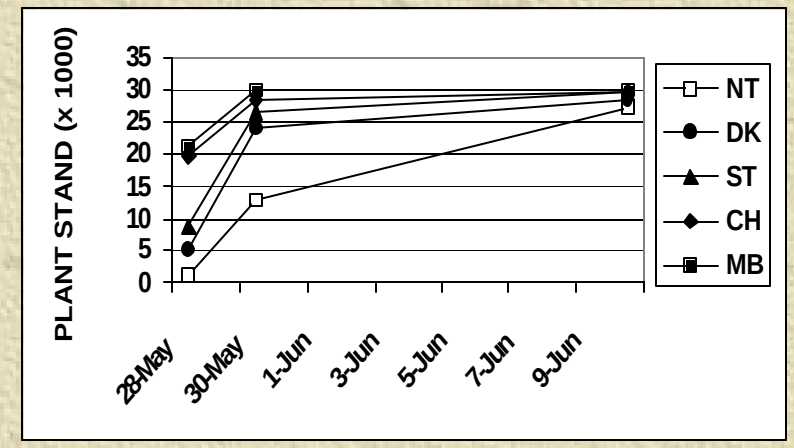
- ARLINGTON, LANCASTER, MARSHFIELD, AND SPOONER
- 0, 15, AND 30 t/a SPRING-APPLIED, STRAW-BEDDED MANURE
- MOLDBOARD, CHISEL, LIGHT DISK, STRIP-TILL, NO-TILL
- N RATES (ARLINGTON ONLY)
- EMERGENCE, STAND, RESIDUE, YIELD
- SUPPORTED BY A MULTI-AGENCY LAND AND WATER EDUCATION GRANT

MAIN EFFECT OF TILLAGE ON THE SURFACE CROP RESIDUE, 2002

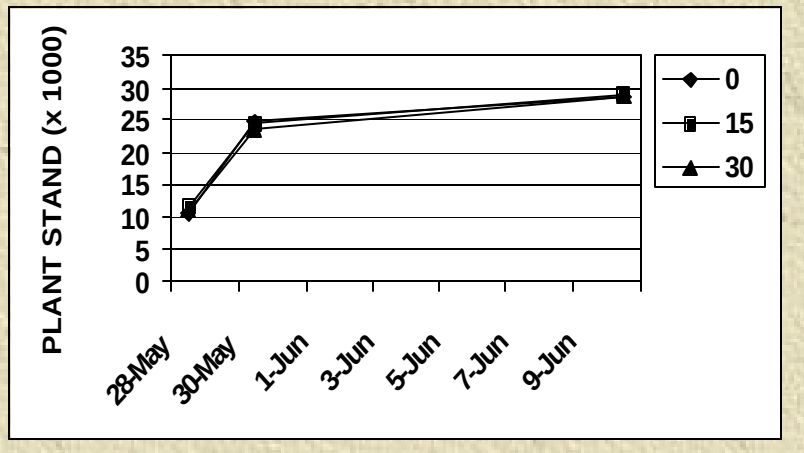


NOTE: MAIN EFFECT OF MANURE AT 30 t/a INCREASED RESIDUE 7-20 % DEPENDING ON LOCATION

EFFECT OF TILLAGE AND MANURE RATE ON CORN EMERGENCE, ARLINGTON, WIS., 2002

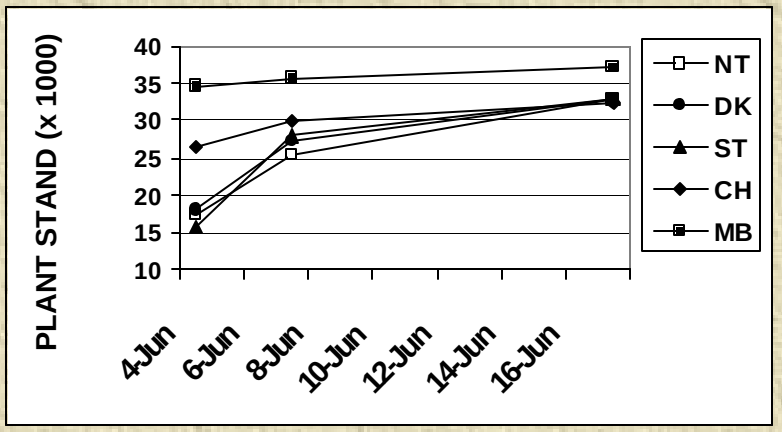


TILLAGE EFFECT

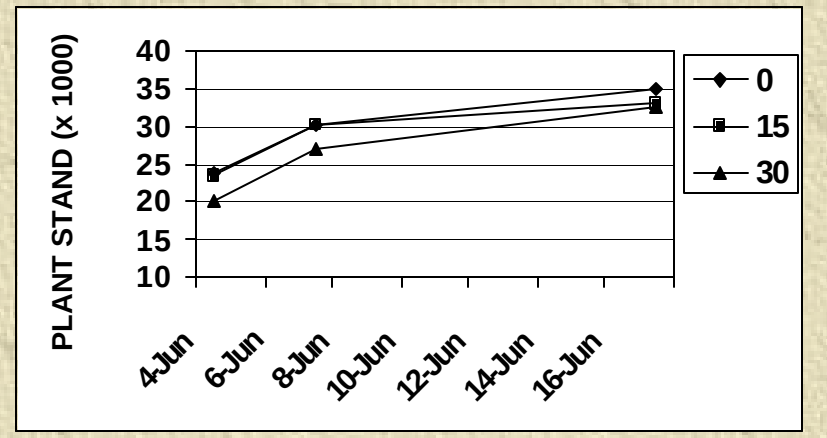


MANURE EFFECT

EFFECT OF TILLAGE AND MANURE RATE ON CORN EMERGENCE, MARSHFIELD, WIS., 2002

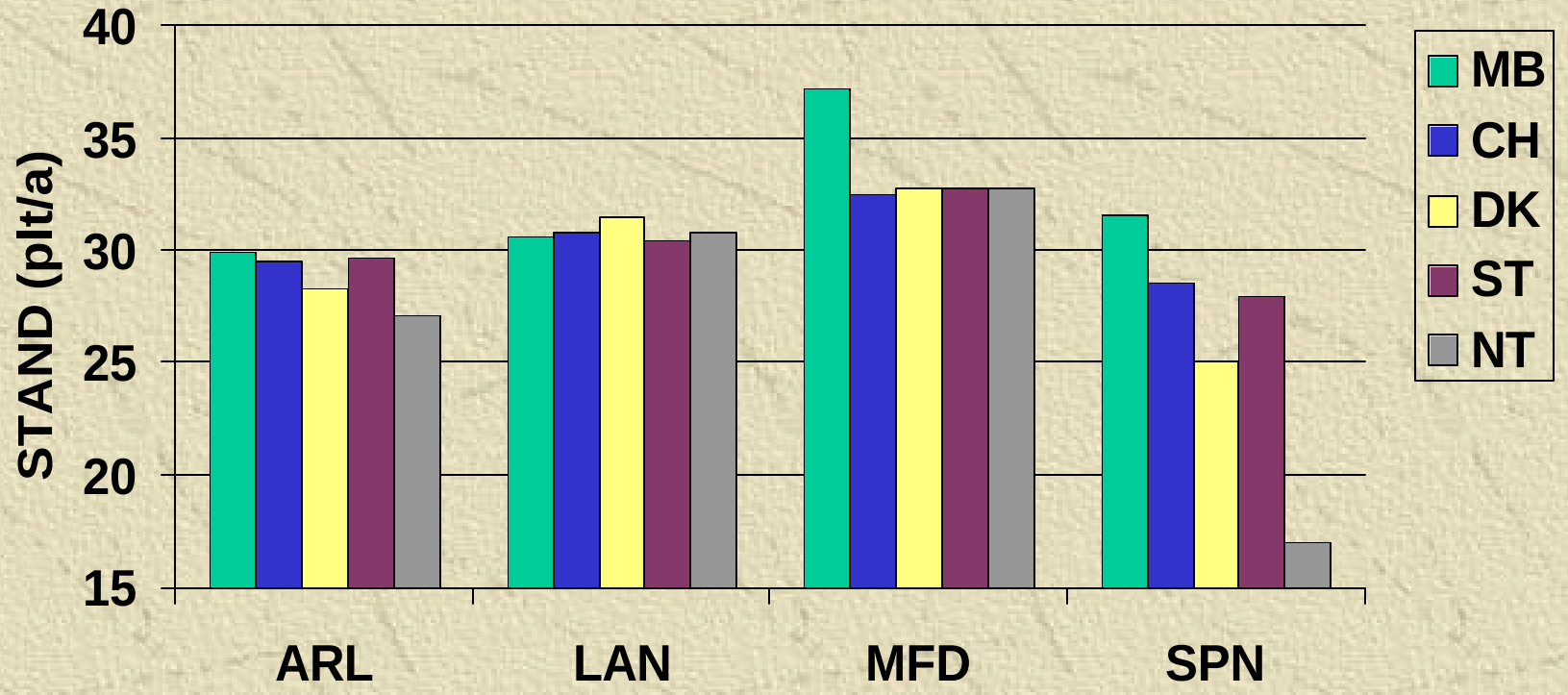


TILLAGE EFFECT



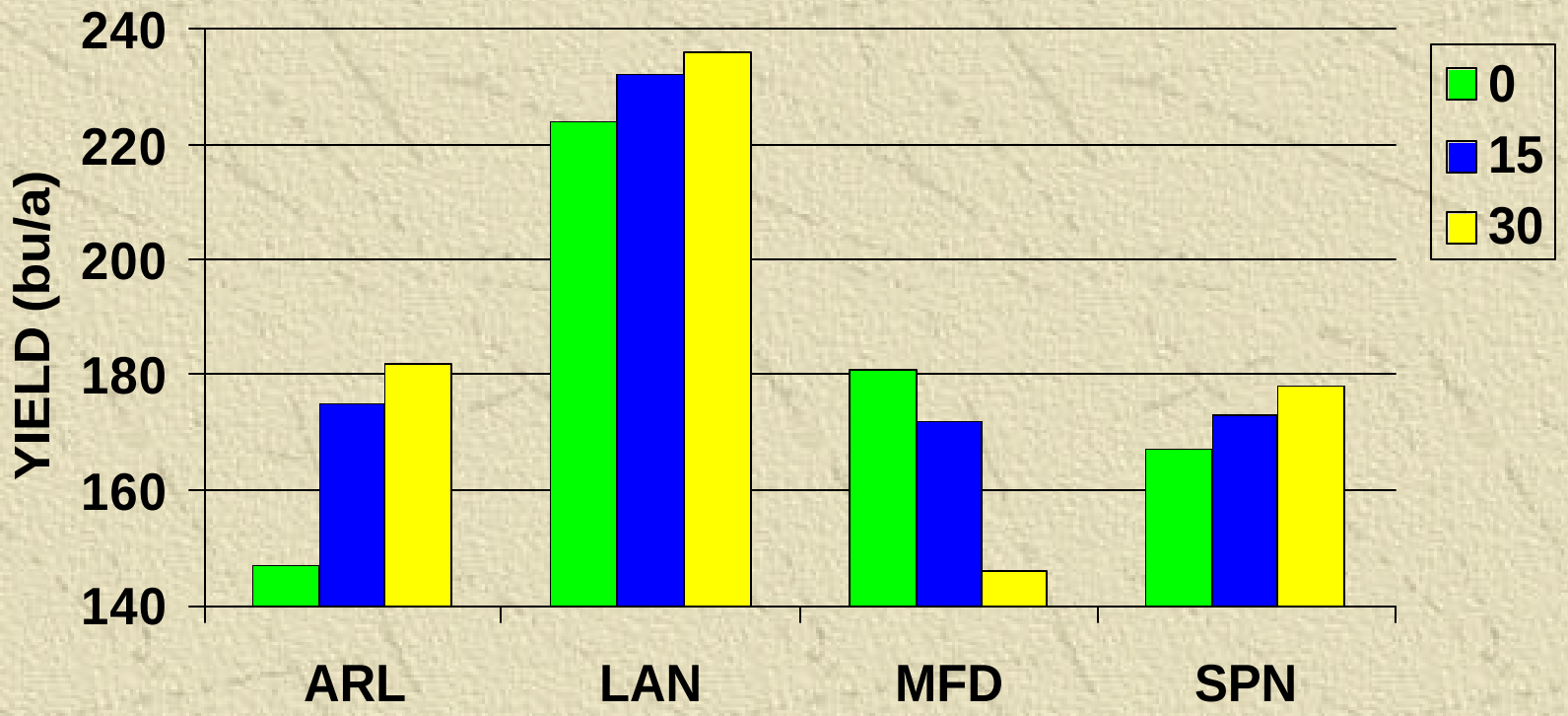
MANURE EFFECT

MAIN EFFECT OF TILLAGE ON THE FINAL CORN STAND, 2002

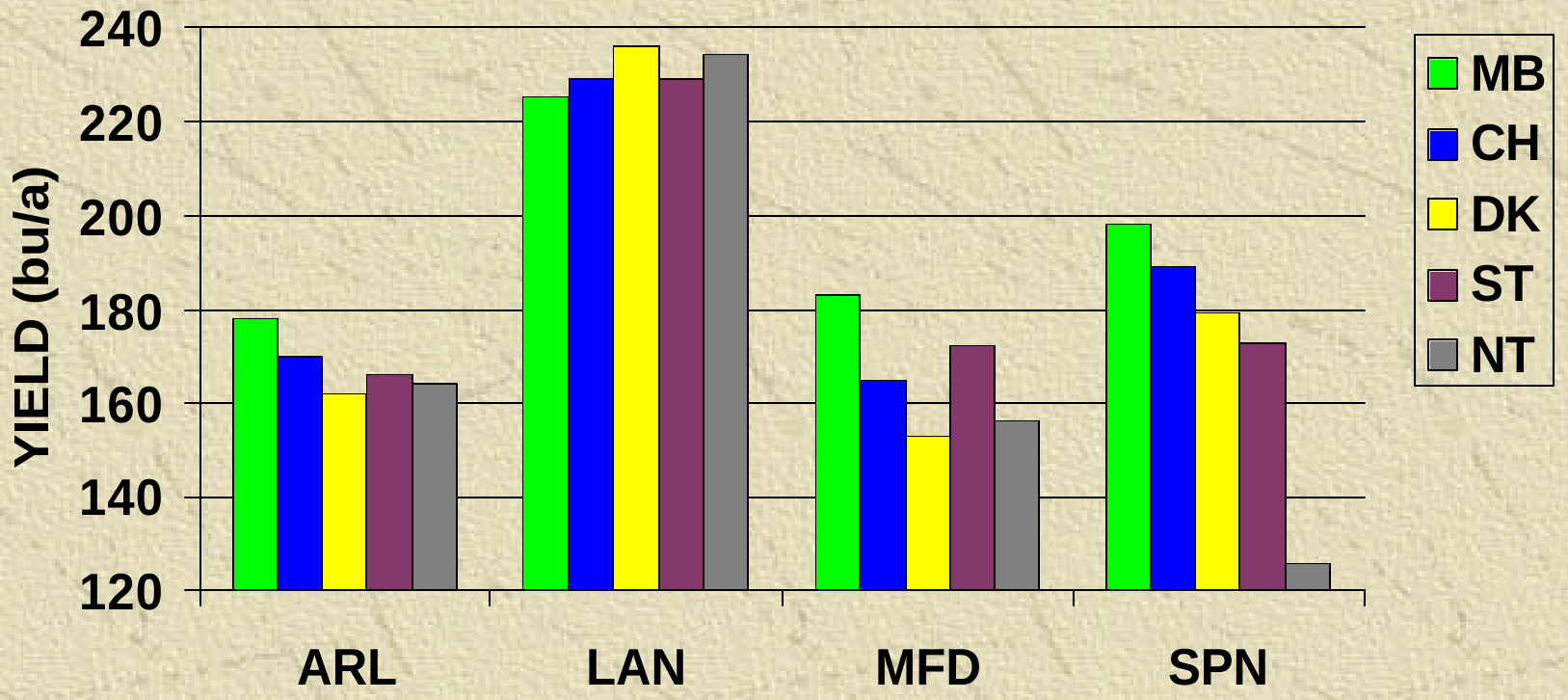


NOTE: MANURE RATE MAIN EFFECT INCREASED STAND AT LAN DECREASED STAND AT MFD AND SPN, WITH NO EFFECT AT ARL

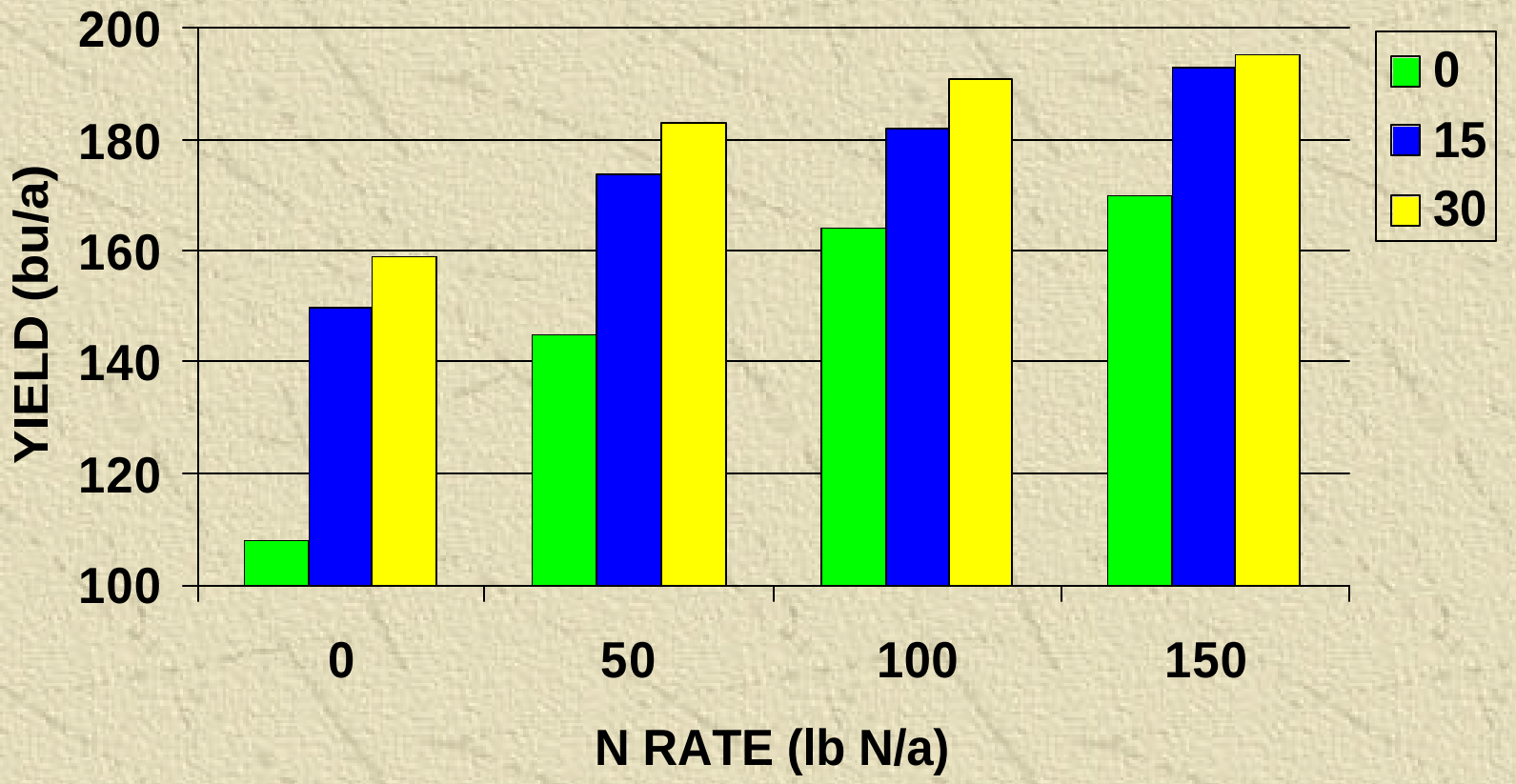
MAIN EFFECT OF MANURE RATE ON CORN YIELD, 2002



MAIN EFFECT OF TILLAGE ON CORN YIELD, 2002



INTERACTION BETWEEN N RATE AND MANURE RATE AT ARLINGTON, WIS., 2002



MANURE MANAGEMENT IN REDUCED TILLAGE SYSTEMS

- DO A GOOD JOB OF APPLICATION
  - APPLY MANURE EVENLY
  - CONTROL COMPACTION
  - AVOID SPREADING NEAR CHANNELS OR WATERWAYS
- TILLAGE METHODS THAT CONSERVE RESIDUE CAN WORK
- ADJUST PLANTER FOR SOIL CONDITIONS AND ADDED RESIDUE
- BENEFITS OF MANURE APPLICATION GO BEYOND NUTRIENT SUPPLY