

SELECTION COVER SHEET

PLEASE ATTACH THIS SHEET TO EACH AWARD SELECTION PACKAGE.

PLEASE TYPE OR PRINT CLEARLY:

AWARD CATEGORY: TEAM

NAME OF AWARDEE: NEAR-INFRARED TRANSMITTANCE (NIRT) GROUP

(AS IT IS TO APPEAR ON PLAQUE AND IN SOUVENIR BOOKLET)

JOB TITLE: _____

EMPLOYING AGENCY AND ADDRESS (PLEASE DO NOT USE ABBREVIATIONS):

USDA, GRAIN INSPECTION, PACKERS AND STOCKYARDS ADMINISTRATION

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**AWARD SELECTION PACKAGE(S) MUST BE RECEIVED IN
THE FEDERAL EXECUTIVE BOARD OFFICE NO LATER THAN MARCH 17, 2006**

**Greater Kansas City Federal Executive Board
ATTN: Chairperson, Awards Committee
1500 E. Bannister Road, Room 1176
Kansas City, MO 64131
FAX: (816)823-5104
Email: feb.mail@gsa.gov**

NOMINATOR'S STATEMENT
PLEASE ADDRESS THE SPECIFIC SELECTION CRITERIA

TEAM

Award Category

Near-infrared Transmittance (NIRT) Group

USDA, GIPSA

Name

Agency Name

1. CUSTOMER SERVICE

THE GIPSA NIRT GROUP, IN COOPERATION WITH THE INSTRUMENTAL METHODS GROUP, HAS THE RESPONSIBILITY OF PROVIDING STANDARDIZATION, QUALITY ASSURANCE AND QUALITY IMPROVEMENT FOR THE OFFICIAL NIRT (NEAR-INFRARED TRANSMITTANCE) TESTING SYSTEM. THE NIRT TESTING SYSTEM IS AN EFFICIENT, EFFECTIVE, AND ACCURATE PROCESS FOR DETERMINING INTRINSIC QUALITY FACTORS OF VARIOUS GRAINS. IN ADDITION TO OTHER FACTORS, THE NIRT PROCESS IS USED TO DETERMINE PROTEIN IN SPECIFIC GRAINS SUCH AS WHEAT, BARLEY, SOYBEANS AND CORN. PROTEIN IS AN INTRINSIC TRAIT THAT IS OF PRIMARY MARKETING IMPORTANCE FOR DETERMINING BOTH THE VALUE AND SUITABILITY OF GRAIN FOR PRODUCING SPECIFIC END-USE PRODUCTS SUCH AS COOKIES AND BREAD. FOR CUSTOMERS WHO BUY OR SELL GRAIN, ACCURATE, RELIABLE, REPEATABLE AND ECONOMIC PROTEIN TESTING IS IMPERATIVE IN THEIR DECISION-MAKING.

DURING THE PAST YEAR, GIPSA'S NIRT GROUP HAS IMPLEMENTED TWO PROGRAMS WHICH HAVE DIRECTLY BENEFITTED U.S. PRODUCERS AND THE GRAIN INDUSTRY, AND SIGNIFICANTLY IMPROVED THE QUALITY AND EFFICIENCY OF PROGRAM DELIVERY. THESE ARE THE CULMINATION OF SEVERAL YEARS OF DEVELOPMENT AND PILOT TESTING.

FIRST, THE ADOPTION AND IMPLEMENTATION OF A GLOBAL ARTIFICIAL NEURAL NETWORK (ANN) CALIBRATION FOR NIRT WHEAT PROTEIN HAS RESULTED IN: (1) IMPROVED ACCURACY AND REPRODUCIBILITY OF OFFICIAL PROTEIN DETERMINATIONS FOR ALL SIX WHEAT CLASSES, (2) BETTER AGREEMENT BETWEEN THE U.S. SYSTEM AND THE INTERNATIONAL MARKET, AND (3) A SIGNIFICANT REDUCTION IN THE TIME AND EFFORT REQUIRED BY INSPECTION AGENCIES TO STANDARDIZE OFFICIAL TESTING EQUIPMENT.

SECOND, THE IMPLEMENTATION OF A NEW SERVICE FOR OFFICIAL NIRT BARLEY PROTEIN HAS PROVIDED PRODUCERS AND PROCESSORS WITH AN ACCURATE AND REPRODUCIBLE METHOD OF DETERMINING BARLEY PROTEIN, AND PROVIDED MALTSTERS WITH A RAPID, ACCURATE METHOD OF DETERMINING THE SUITABILITY OF BARLEY FOR THE MALTING PROCESS.

THE CAREFUL PLANNING AND STAGING OF THE ANN IMPLEMENTATIONS BY THE NIRT GROUP ENABLED BOTH PROGRAM CHANGES TO BE ADOPTED WITHOUT DISRUPTION OF THE OFFICIAL INSPECTION SYSTEM OR DOMESTIC AND INTERNATIONAL GRAIN MARKETING.

2. COST SAVINGS

THE ADOPTION OF THE GLOBAL ANN WHEAT CALIBRATION HAS RESULTED IN AN 80% REDUCTION IN STANDARD REFERENCE SAMPLE (SRS) MATERIALS AND PROCESSING NECESSARY TO MAINTAIN THE OFFICIAL INSPECTION AGENCIES' ALIGNMENT WITH THE NIRT REFERENCE LABORATORY, RESULTING IN AN ANNUAL COST SAVINGS TO GIPSA OF \$13,000.

IN ADDITION, ADOPTION OF THE GLOBAL ANN WHEAT CALIBRATION ALLOWED A REDUCTION IN THE QUALITY ASSURANCE EFFORTS OF THE AGENCY, WITH AN ESTIMATED COST SAVINGS TO GIPSA OF UP TO \$45,000 PER YEAR.

FINALLY, GIPSA FIELD OFFICES, OFFICIAL INSPECTION AGENCIES, AND GRAIN COMPANIES/MERCHANDIZERS REALIZE A COST BENEFIT THROUGH REDUCTION OF TIME SPENT STANDARDIZING NIRT EQUIPMENT AND REDUCTION IN ERRORS DUE TO USING THE WRONG CALIBRATION FOR A SPECIFIC WHEAT CLASS, AS THE ANN CALIBRATION IS INDEPENDENT OF CLASS. THE PREVIOUS PROGRAM REQUIRED INDIVIDUAL INSTRUMENT CALIBRATIONS AND STANDARDIZATION FOR EACH OF THE SIX WHEAT CLASSES. THIS SAVINGS IS ESTIMATED AT OVER \$500,000 ANNUALLY.

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3. SPECIAL ACCOMPLISHMENTS

THE NIRT GROUP'S TEAMWORK ENSURES THAT ALL OFFICIAL INSPECTION SYSTEM LOCATIONS PROVIDE UNIFORM AND ACCURATE TEST RESULTS. THEY SUPPORT ABOUT 500,000 OFFICIAL DETERMINATIONS PER YEAR AT 136 FEDERAL, STATE AND PRIVATE TESTING LOCATIONS. IN ACCOMPLISHING THE IMPLEMENTATION OF THE NIRT WHEAT AND BARLEY PROGRAMS, THE NIRT GROUP WORKED IN THE FOLLOWING PROGRAM AREAS.

STANDARDIZATION OF OFFICIAL TESTING LOCATIONS. PRIOR TO IMPLEMENTING THE NEW WHEAT AND BARLEY PROTEIN CALIBRATIONS, NIRT STAFF CONSTRUCTED AND STANDARDIZED APPROPRIATE STANDARD REFERENCE SAMPLE (SRS) SETS IN SUFFICIENT QUANTITY TO SUPPLY ALL TESTING LOCATIONS FOR SEVERAL YEARS. ALL SRS SETS AND BASELINES WERE DISTRIBUTED TO TESTING LOCATIONS WITH SUFFICIENT TIME FOR SETUP AND TESTING. STANDARD OPERATING PROCEDURES AND APPROPRIATE FORMS FOR SRS USE WERE CREATED OR REVISED. NIRT STAFF WORKED CLOSELY WITH THE OFFICIAL INSPECTION AGENCIES TO ENSURE THAT NEW REQUIREMENTS FOR EQUIPMENT AND SUPPLIES WERE MET.

QUALITY ASSURANCE OF OFFICIAL APPLICATIONS. THE NIRT GROUP IS RESPONSIBLE FOR MEASURING THE PERFORMANCE OF THE OFFICIAL CALIBRATIONS RELATIVE TO LABORATORY REFERENCE METHODS. APPROXIMATELY 10% OF WHEAT AND BARLEY PROTEIN MONITORING SAMPLES ARE SELECTED FOR ANALYSIS BY THE PROTEIN REFERENCE METHOD, COMBUSTION NITROGEN ANALYSIS (CNA). FOR SEVERAL MONTHS FOLLOWING THE IMPLEMENTATION OF THE ANN WHEAT AND BARLEY PROTEIN APPLICATIONS, SAMPLES WERE SELECTED AND PROCESSED AT AN ACCELERATED RATE IN ORDER TO EVALUATE THE APPLICATION'S PERFORMANCE. NIRT STAFF WERE ABLE TO ABSORB THIS INCREASED WORKLOAD WITH NO IMPACT TO OTHER ONGOING PROGRAMS.

4. ADDITIONAL COMMENTS

THE IMPLEMENTATION OF THESE NEW APPLICATIONS WAS AN ENORMOUS UNDERTAKING. THE PREPARATORY WORK WAS PERFORMED ON A VERY TIGHT TIMELINE DURING NOVEMBER 2004 THROUGH MID-APRIL 2005. IN PREPARING SRS, THOUSANDS OF POUNDS OF WHEAT AND BARLEY WERE PROCESSED, AND HUNDREDS OF SAMPLES WERE ANALYZED ON MULTIPLE NIRT INSTRUMENTS. NIRT STAFF ENSURED THAT ALL OFFICIAL TESTING LOCATIONS HAD THE APPROPRIATE EQUIPMENT AND SUPPLIES. ACCELERATED MONITORING AND EVALUATION WERE CRITICAL IN THE MONTHS FOLLOWING THE IMPLEMENTATION OF THE NEW CALIBRATIONS.

ALL OF THE NIRT STAFF CONTRIBUTED TO THIS EFFORT, AND SUCCESSFULLY IMPLEMENTED THESE PROGRAMS WITH NO DISRUPTION TO ONGOING PROGRAMS. THE RESULTING WHEAT AND BARLEY PROGRAMS HAVE SAVED SIGNIFICANT RESOURCES FOR GIPSA AND ALL OFFICIAL INSPECTION AGENCIES, WHILE PROVIDING THE INDUSTRY WITH MORE ACCURATE AND REPRODUCIBLE PROTEIN RESULTS.