SUBSURFACE AND BROADCAST PHOSPHORUS EFFECTS ON YIELD AND COMPOSITION OF ESTABLISHED ALFALFA

By

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ESTABLISHED ALFALFA

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CHAPTER I

INTRODUCTION

Alfalfa (*Medicago sativa* L.) producers are striving constantly for increased yields, and many factors have contributed to progress made over the past two decades. Increased use of fertilizer is one of the factors of particular interest. Fertilizer can account for between 40 and 50 percent of any increased yield and yet requires less than 20 percent of the total production cost (Turner, 1977). However, this should not imply that fertilizer cost is trivial. Adequate, balanced fertility is vital for top yields and long-lived stands of high quality alfalfa (Griffith, 1977; Wang et al., 1953).

Alfalfa's rapid depletion of soil nutrients combined with its perennial growth habit poses a problem of supplemental application of those elements. The fertilizer source of P and its method of application is an area of crop management with tremendous potential for helping to achieve maximum yields with minimum costs while maintaining soil productive capacity to its fullest extent.

CHAPTER II

ABSTRACT

Replicated field experiments were designed to investigate the effects of liquid ammonium polyphosphate (APP), granular triple superphosphate (TSP), and granular diammonium phosphate (DAP) applied in late winter on forage yield, N, P, and K content, and N, P, and K uptake of established alfalfa (Medicago sativa L.) at 0, 20, 30, or 40 kg $P \cdot ha^{-1}$ using conventional broadcast or subsurface bands 30 cm apart and 8 to 12 cm deep. Experiments were conducted in southwest Oklahoma in 1981 at three locations differing in soil P levels and at two locations in 1982. Bray P-1 analysis in 1981 indicated 19, 49, and 66 $kg \cdot ha^{-1}$ Bray P-1 P for soil at the locations; 1982 levels were 22 and 33 $kg \cdot ha^{-1}$.

Application implements did not significantly (0.05) affect dry-matter yields, nutrient composition, or nutrient uptake for any location or harvest.

Yield, P content, and P uptake were increased significantly (0.05) by P fertilization in both 1981 and 1982 on a soil with low initial Bray P-1 index (65 percent sufficiency) with a young stand of alfalfa. Banded ammonium polyphosphate (APP) was superior at this location in 1981 to both triple superphosphate (TSP) and diammonium phosphate (DAP) regardless of their method of application. Calculations of relative

application utilization efficiency coefficients (UECs) using the Bray-modified Mitscherlich equation were made for significant parameters. Dry-matter UECs at the low soil P location were higher for banded APP than other sources and methods both in 1981 and 1982. Yields at this location in 1982 were again increased by P fertilization with all sources, but the differences between banded APP and other sources diminished to APP's superiority over only some of the sources and methods instead of all. Percent P and P uptake were again increased by phosphorus fertilization in 1982. Ammonium polyphosphate, particularly banded APP and banded DAP resulted in higher values for both of these parameters.

On a soil with a high (98 percent sufficiency) soil P index and a middle-aged stand of alfalfa, yields for the total of two early season harvests were increased from TSP applied by either broadcast or banded methods and from banded applications of DAP. However, while these yield increases were statistically different, actual yield differences were of the magnitude that the check plots produced approximately 81 percent (364 $kg \cdot ha^{-1}$ less) and 87 percent (589 $kg \cdot ha^{-1}$ less) of the maximum yields obtained for the first and total harvests respectively. Percent P in the forage and P uptake were increased by banded APP over other P sources. Application UECs for yield showed no differences among sources, but those for percent P and P uptake indicated banded APP's were higher than most other sources and methods.

On another soil with a high (94 percent sufficient) soil P index and an old, less dense stand of alfalfa, dry-matter yields for two early season harvests were not significantly increased by P fertilization. Banded APP resulted in the highest percent P and P uptake for

the first harvest, as it did for the associated UECs, but was statistically superior to only some of the other sources and methods for all of these instances.

The final location was a soil with an 80 percent sufficient available soil phosphorus level and another middle-aged, dense, and uniform stand of alfalfa. Dry-matter yields and phosphorus uptake were not affected by P fertilization for any harvest while percent phosphorus in the forage was increased by application of P with no differences between P sources being detected. The UECs for percent P indicated no differences among sources and methods.

For the situation of low Bray P-1 soil phosphorus and young alfalfa, subsurface band application of APP shows some superiority over both TSP and DAP in terms of yield and nutrient composition. In general, the treatment effects became less detectable as available soil P indexes and crop age increased.

CHAPTER III

LITERATURE REVIEW

Methods of applying P fertilizers to crops has been a topic of study for many years, and alfalfa certainly has not been excluded. The purposes of these types of studies were to achieve a combination of improved nutrient uptake and minimized production costs.

Broadcast application and thorough mixing of phosphate fertilizer in the seedbed before planting generally is the preferred practice under most situations to effect rapid soil P buildup and improve stand persistance. Heavy initial broadcast P applications have produced higher first-year forage yields than those from smaller initial broadcast rates or top-dressed applications (Terman et al., 1960).

Placement of P fertilizers in localized bands has become widely practiced for many crops. Two major benefits possible from band application are that less fertilizer may be required to produce equivalent or possibly higher yields than from broadcast applications, and fertilizer utilization efficiency may be improved under some particular soil conditions (Richards, 1976).

Maintenance applications of P to established forage stands is most practically achieved by broadcast top-dressing even though fertilizer utilization efficiency is generally low (Tisdale and Nelson, 1975). Alfalfa is an exception to the inefficiency of surface applications of P, as are most forages, partly due to zones of root activity near the soil surface (Jackobs et al., 1970; Lipps et al., 1957).

Banding of P in alfalfa for maintenance purposes may theoretically be done in one of two ways, either by deep localized placement before planting or at shallower depths in subsequent years. Deep placement before planting has shown improved yields in later years of stand life when combined with surface applications, whether they be broadcast of banded (Drake and Stewart, 1950). Two studies on the procedure of sub-surface placement of P after the seeding year have shown reductions in yield for at least the first season (Schultz, 1975) and in one case for three consecutive seasons following application (Leyshon, 1982). Reductions in yield for both studies were attributed to plant root damage resulting from the soil disturbance required to place the fertilizer. Conversely, another study showed improved crop response from sub-layered P but only through the first season (Woodhouse, 1956).

Enhancement of fertilizer P uptake by the inclusion of NH_4^+-N in the P band have shown that for alfalfa, N in the P band is not vital either in increasing seedling vigor (Sheard, 1980) or promoting post-emergence growth (Sheard, 1974).

The specific objective of this study was to determine the effect of P rate, source, and method of application on forage yield, nutrient composition, and nutrient uptake of established alfalfa.

CHAPTER IV

MATERIALS AND METHODS

Field experiments were conducted on established alfalfa stands in southwestern Oklahoma near Mangum at three locations in 1981 and at two locations in 1982. Because of differences in initial soil P index levels, the various locations will be treated as separate experiments. Specific soil descriptive data and approximate crop age for these locations is given in Table I. Alfalfa stands at all locations were planted in narrow (20 cm) rows.

Experimental treatments at all locations in both years consisted of application of liquid ammonium polyphosphate (APP), granular triple superphosphate (TSP), or granular diammonium phosphate (DAP) as P sources. These materials have guaranteed percentage elemental analyses of 10-15-0, 0-20-0, and 18-20-0 respectively. Experimental treatments further consisted of P application rates of 20, 30, or 40 $kg \cdot ha^{-1}$ either by conventional surface broadcast techniques or by a subsurface placement of these materials in localized bands approximately 30 cm apart and 8 to 12 cm deep. Levels of nitrogen application were balanced among fertilizer sources by supplemental N top-dressed on the TSP and APP treated plots to equal the N supplied for DAP treated plots.

The experimental design used for all locations was a randomized complete block with a 3 x 2 x 3 source, method, rate factorial

TABLE I

Summary of Experimental Locations
and Corresponding Descriptive Data

Location	Year	Soil Type	Crop Age	Soil Test Data†			
				pH	NO_3-N	K	Bray P-1
			-years-		kg•ha^{-1}		
McGuffin	1981	Altus fsl Pachic Argiustoll	2	6.7	10	354	66(98)§
Nesmith	1981	Meno fsl Arenic Haplustalf	<1	6.9	10	239	19(65)
Wade	1981	Lawton loam Udic Argiustoll	6	6.4	22	622	49(94)
Nesmith	1982	Meno fsl Arenic Haplustalf	1	6.8	‡	175	22(66)
Nesmith North	1982	Meno fsl Arenic Haplustalf	4	6.2	3	534	33(80)

†Soil samples 0 to 15 cm in depth

§Values in parenthesis are P percent sufficiency levels for alfalfa production according to current OSU soil test calibrations.

‡NO_3-N level not determined

arrangement plus control plots for application implements at zero fertilizer application rates. Table II lists a summary of the experimental treatments.

Subsurface placement was performed parallel with crop rows as much as possible. Liquid fertilizer subsurface applications were applied with a tractor-drawn toolbar fitted with rolling coulters and anhydrous ammonia-type knives through which the fertilizer was delivered. The granular fertilizer subsurface applications were applied using a "drop-type" spreader fitted with drop-tube assemblies and narrow (approximately 2.5 cm thick) shanks, through the back of which fertilizer was delivered.

Potassium analysis of the soil at the Nesmith location in 1981 indicated 239 kg $K \cdot ha^{-1}$, a level which would routinely receive a recommendation for approximately 65 kg $K \cdot ha^{-1}$ to be supplied to the soil. No such application was made in 1981, but additional research involving K application to alfalfa on this soil was conducted simultaneously in 1981. Results of that experimentation indicated no significant (0.05) yield response to applied K (R.L. Westerman, unpublished data, Oklahoma State University). Therefore, no K deficiency was suspected for the alfalfa crop during 1981. An application of 115 kg $K \cdot ha^{-1}$ as KCl was made over all plots at the Nesmith location prior to the 1982 crop year after soil tests indicated a further decline in soil K to 157 kg $K \cdot ha^{-1}$.

Experimental treatment plot size was 5.5 x 12.2 meters. Forage harvest dates for each location are summarized in Table III. At all locations, forage from each plot was harvested between early and mid-bloom stages by cutting a 2.13 meter-wide swath through each plot by use of a mower/conditioner, then collecting (and weighing) the center

TABLE II

Summary of Experimental Treatments: Fertilizer Sources, Application Rates, and Application Methods, All locations, 1981 and 1982

Rate N - P - K	Phosphorus Source	Application Method
$kg \cdot ha^{-1}$		
0-0-0	APP/TSP/DAP	Broadcast
0-0-0	APP	Banded
0-0-0	TSP/DAP	Banded
(13+5†)-20-0	APP	Broadcast
(20+7)-30-0	APP	Broadcast
(27+9)-40-0	APP	Broadcast
(0+18)-20-0	TSP	Broadcast
(0+27)-30-0	TSP	Broadcast
(0+36)-40-0	TSP	Broadcast
(18+0)-20-0	DAP	Broadcast
(27+0)-30-0	DAP	Broadcast
(36+0)-40-0	DAP	Broadcast
(13+5)-20-0	APP	Banded
(20+7)-30-0	APP	Banded
(27+9)-40-0	APP	Banded
(0+18)-20-0	TSP	Banded
(0+27)-30-0	TSP	Banded
(0+36)-40-0	TSP	Banded
(18+0)-20-0	DAP	Banded
(27+0)-30-0	DAP	Banded
(36+0)-40-0	DAP	Banded
0-0-0	APP/TSP/DAP	Broadcast

†Supplemental N applied as NH_4NO_3 to make fertilizer N equivalent to N levels applied as DAP

TABLE III

Dates of Forage Harvest by Location
and Harvest Number

Location	Harvest Number	Harvest Date
McGuffin	1	4-30-81
McGuffin	2	6-17-81
Nesmith	1	4-30-81
Nesmith	2	6-16-81
Nesmith	3	7-23-81
Nesmith	4	9-04-81
Wade	1	5-12-81
Wade	2	6-17-81
Nesmith	1	5-10-82
Nesmith	2	6-09-82
Nesmith	3	7-19-82
Nesmith	4	8-16-82
Nesmith North	1	4-29-82
Nesmith North	2	6-09-82
Nesmith North	3	7-19-82
Nesmith North	4	8-16-82

3.05 meters of the resulting windrow. A 100 to 200 g dry-weight sample of forage was collected from each plot for a percentage moisture determination and elemental composition analysis. Yields were calculated and are reported on a dry-matter basis.

Laboratory analysis of forage consisted of a semi-micro Kjeldhal determination of total N (Bremner, 1965) and a nitric-perchloric acid digestion proceedure from which total P was determined colorimetrically (Shelton and Harper, 1941) and K content was analyzed by atomic absorption spectrophotometry (Rich, 1965).

Parameters statistically analyzed were as follows: dry-matter forage yield ($Mg \cdot ha^{-1}$); percentage of N, P, and K in forage; and $kg \cdot ha^{-1}$ N, P, and K uptake by the crop as calculated by multiplying dry-matter production times percentage elemental composition. Standard RCB analysis of variance calculations and selected single degree-of-freedom treatment comparisons were made as described by Snedecor and Cochran (1980). Analyses were made for each individual harvest, progressive summations of harvests (for applicable parameters), and season totals.

The Bray Modified Mitscherlich Equation [$\log(A-y)=\log A-c_1b-cx$] (Milstead and Peck, 1977) was used to make calculations or relative P application utilization efficiency coefficients ("c" in the equation). The coefficients were then statistically analyzed.

CHAPTER V

RESULTS AND DISCUSSION

Implements used to apply the subsurface placed treatments in these experiments had no significant (0.05) effect on dry-matter forage production, nutrient content, or nutrient uptake for any harvest, or successive summation of harvests, at any location with only two exceptions. Yields from the zero rate, banded APP treatment for the first harvest in 1982 at the Nesmith location were higher than the other check-plot treatments for that harvest and the zero rate broadcast checks had higher average percent P content than the zero rate banded checks for the fourth harvest in 1982 at the Nesmith North location. One abnormally high plot yield seems to be responsible for the forage yield increase in the first case while no apparent cause was found for the percent P discrepency in the second.

1981 Crop Year

Treatment means for all analyzed parameters for the individual and total harvests at the McGuffin location are listed in Table IV. Dry-matter forage yields were increased by P fertilization for the first and total harvests. Comparing P source and application method combinations averaged over rates, first harvest yields were increased over the check-plot yields by banded applications of all P sources and by broadcast TSP (Figure 1). Banded TSP was also superior to broadcast DAP.

TABLE IV

Effects of P Sources, Rates, and Application Methods on Dry-Matter Yield, Nutrient Composition, and Nutrient Uptake of Alfalfa, McGuffin Location, 1981

Harvest 1							
Treatment	Forage Yield	Composition			Uptake		
Rate:Method†:Source		N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	1.52	3.97	0.34	2.35	60.01	5.19	35.88
0:BD:APP	1.62	3.91	0.33	2.31	63.07	5.27	37.34
0:BD:TSP/DAP	1.67	3.86	0.32	2.35	64.64	5.32	39.19
20:BC:APP	2.00	4.02	0.35	2.51	80.07	7.05	50.06
30:BC:APP	1.77	3.85	0.38	2.51	68.31	6.70	44.65
40:BC:APP	1.69	3.90	0.38	2.69	65.84	6.39	45.90
20:BC:TSP	2.19	3.86	0.35	2.45	85.10	7.59	53.71
30:BC:STP	1.86	3.91	0.35	2.47	72.71	6.43	46.51
40:BC:TSP	1.78	3.70	0.36	2.61	66.17	6.49	46.41
20:BC:DAP	1.68	3.97	0.36	2.53	66.60	5.96	42.37
30:BC:DAP	1.66	3.97	0.37	2.52	66.05	6.15	41.83
40:BC:DAP	1.91	4.10	0.39	2.46	77.90	7.32	46.07
20:BD:APP	1.69	4.12	0.38	2.58	69.83	6.51	43.84
30:BD:APP	2.11	4.16	0.40	2.52	87.81	8.50	53.52
40:BD:APP	2.02	4.00	0.43	2.53	80.72	8.63	51.13
20:BD:TSP	2.20	3.88	0.34	2.44	85.80	7.39	54.83
30:BD:TSP	1.91	4.00	0.35	2.42	76.70	6.68	46.95
40:BD:TSP	1.89	4.05	0.36	2.39	76.82	6.87	45.09
20:BD:DAP	1.81	4.05	0.37	2.54	73.19	6.61	46.11
30:BD:DAP	2.26	3.93	0.37	2.51	88.43	8.45	56.59
40:BD:DAP	1.81	3.98	0.39	2.64	71.88	7.05	47.71
0:BC:Check	1.75	4.25	0.34	2.44	74.13	5.87	43.03
$LSD_{.05}$	0.38	NS‡	0.03	NS	16.80	1.54	12.12

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE IV
(Continued)

Treatment	Harvest 2						
	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.16	3.68	0.33	2.44	79.50	7.04	52.28
0:BD:APP	2.37	3.67	0.33	2.45	86.67	7.79	57.88
0:BD:TSP/DAP	2.17	3.68	0.31	2.35	79.84	6.67	50.95
20:BC:APP	2.39	3.91	0.36	2.41	93.74	8.60	57.90
30:BC:APP	2.48	3.63	0.34	2.35	89.60	8.42	57.30
40:BC:APP	2.37	3.67	0.36	2.58	86.90	8.44	61.02
20:BC:TSP	2.28	3.71	0.35	2.47	84.61	7.90	56.21
30:BC:TSP	2.60	3.63	0.35	2.33	94.20	9.15	60.35
40:BC:TSP	2.56	3.48	0.35	2.44	89.39	8.96	62.40
20:BC:DAP	2.24	3.63	0.35	2.52	80.53	7.70	56.13
30:BC:DAP	2.07	3.60	0.37	2.44	74.52	7.56	50.68
40:BC:DAP	2.37	3.59	0.36	2.59	84.98	8.40	61.64
20:BD:APP	2.29	3.56	0.35	2.52	80.56	7.83	57.14
30:BD:APP	2.47	3.61	0.36	2.50	89.41	8.74	61.64
40:BD:APP	2.47	3.60	0.37	2.40	88.90	9.15	59.40
20:BD:TSP	2.43	3.54	0.31	2.50	85.17	7.30	60.42
30:BD:TSP	2.56	3.56	0.31	2.43	91.20	8.01	61.87
40:BD:TSP	2.48	3.70	0.34	2.29	91.65	8.36	56.53
20:BD:DAP	2.43	3.61	0.32	2.59	87.72	7.91	63.04
30:BD:DAP	2.98	3.42	0.33	2.43	101.47	9.72	72.35
40:BD:DAP	2.34	3.60	0.35	2.44	83.86	8.17	56.77
0:BC:Check	2.56	3.50	0.32	2.38	89.20	8.11	60.32
$LSD_{.05}$	NS‡	NS	0.03	NS	NS	NS	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

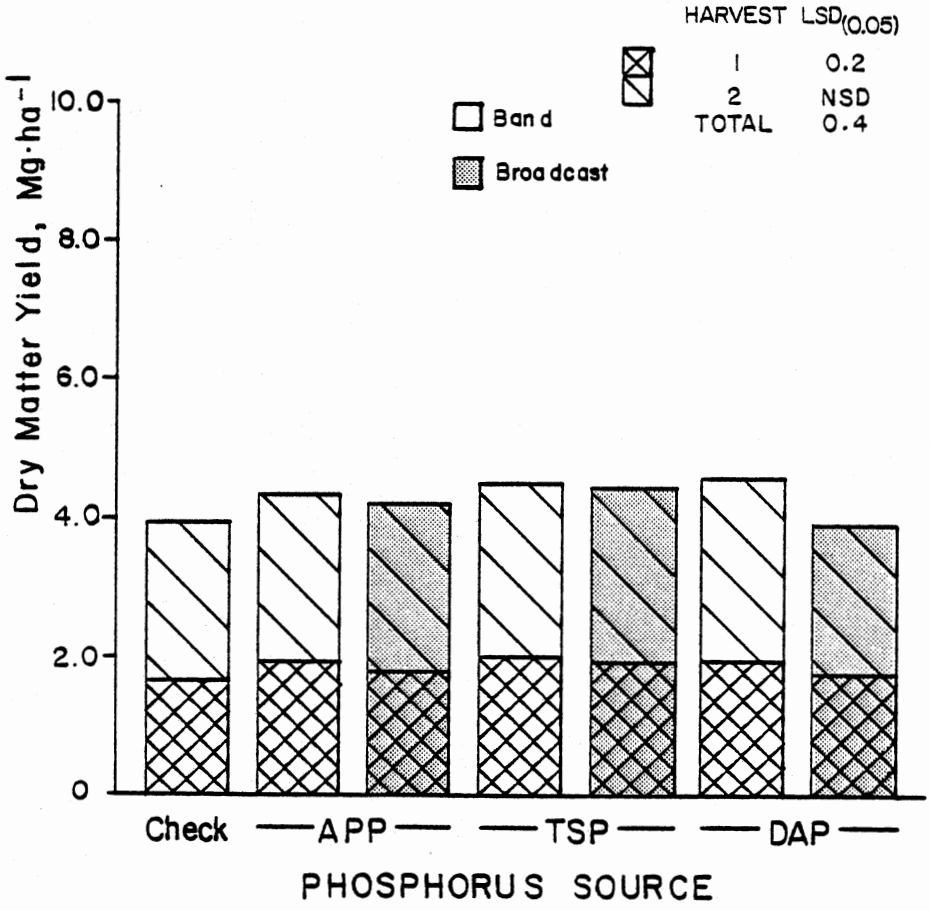
TABLE IV
(Continued)

Total Harvests				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	3.68	139.51	12.22	88.15
0:BD:APP	3.99	149.75	13.06	95.22
0:BD:TSP/DAP	3.84	144.48	11.99	90.14
20:BC:APP	4.38	173.81	15.47	107.97
30:BC:APP	4.25	157.91	15.11	101.95
40:BC:APP	4.06	152.75	14.84	106.92
20:BC:TSP	4.47	169.71	15.49	109.91
30:BC:TSP	4.46	166.91	15.58	106.87
40:BC:TSP	4.35	155.56	15.45	108.80
20:BC:DAP	3.91	147.12	13.66	98.50
30:BC:DAP	3.74	140.57	13.71	92.51
40:BC:DAP	4.27	162.88	15.72	107.71
20:BD:APP	3.98	150.40	14.34	100.99
30:BD:APP	4.58	177.22	17.24	115.16
40:BD:APP	4.49	169.62	17.78	110.53
20:BD:TSP	4.63	170.98	14.69	115.25
30:BD:TSP	4.48	167.90	14.69	108.82
40:BD:TSP	4.37	168.48	15.23	101.62
20:BD:DAP	4.24	160.91	14.52	109.15
30:BD:DAP	5.24	189.90	18.16	128.94
40:BD:DAP	4.15	155.74	15.23	104.48
0:BC:CHECK	4.31	163.33	13.98	103.35
$LSD_{.05}$	0.70	28.58	2.63	18.18

†BD = Banded; BC = Broadcast

FIGURE 1

Alfalfa Dry-Matter Yield Responses Averaged Over Rates from P Sources and Application Methods, McGuffin Location, 1981



Total harvest yields were increased over the check plots by banded and broadcast TSP and banded DAP. Banded DAP was superior to broadcast DAP for the total harvest. However, upon closer inspection, these yield increases were of the magnitude that the mean check-plot yields produced 364 $kg \cdot ha^{-1}$ less and 589 $kg \cdot ha^{-1}$ less (81 percent and 87 percent) than the maximum yields obtained for the first and total harvest respectively.

Application utilization efficiency coefficients (UECs) were calculated for those parameters which showed significant responses to the experimental treatments. Utilization efficiency coefficients and their respective standard errors (standard deviations) for the McGuffin location are reported in Table V.

Because soil test P index levels indicated a 98 percent sufficiency level for alfalfa production at this location, interpretations involving the Bray-modified Mitscherlich growth equation were made cautiously since significant differences between calculated values are harder to determine in the upper ("flatter") portions of the growth response curve. However, some points will be made for the application UECs calculated for the McGuffin location.

Inspection of the UECs for the first harvest yields indicates generally higher values for the lower rates of application except for banded APP. This tends to confirm that the crop was operating in the upper portion of a growth response curve and lower application rates would supposedly be utilized more efficiently than higher rates. Total harvest yield UECs showed no differences upon inspection.

Nitrogen and K contents in the forage were not affected by the experimental treatments for any harvest. Percent P in the forage was

TABLE V

Application Utilization Efficiency Coefficients (UECs) for Significant Parameters at the McGuffin Location, 1981

Treatment	Yield		%P		P Uptake	
Rate:Method†:Source	1	Total	1	2	1	Total
20:BC:APP	.0188	.0088	.0061	.0268	.0154	.0149
30:BC:APP	.0035	.0037	.0097	.0078	.0074	.0081
40:BC:APP	.0010	.0009	.0072	.0130	.0039	.0052
20:BC:TSP	.0499	.0111	.0047	.0175	.0244	.0151
30:BC:TSP	.0063	.0072	.0029	.0126	.0055	.0105
40:BC:TSP	.0029	.0040	.0044	.0095	.0044	.0074
20:BC:DAP	.0014	0	.0065	.0185	.0040	.0038
30:BC:DAP	.0006	0	.0076	.0338	.0038	.0027
40:BC:DAP	.0062	.0031	.0091	.0138	.0098	.0085
20:BD:APP	.0021	.0005	.0168	.0157	.0091	.0073
30:BD:APP	.0206	.0097	.0201	.0199	.0468	.0255
40:BD:APP	.0105	.0059	.0184‡	.0138‡	.0280‡	.0285
20:BD:TSP	.0521	.0161	.0013	0	.0206	.0094
30:BD:TSP	.0086	.0076	.0028	0	.0073	.0063
40:BD:TSP	.0058	.0043	.0043	.0047	.0065	.0065
20:BD:DAP	.0071	.0055	.0095	.0020	.0101	.0084
30:BD:DAP	.0053‡	.0037‡	.0087	.0020	.0417	.0075‡
40:BD:DAP	.0034	.0018	.0106	.0103	.0077	.0065
S.E.	.0155	.0043	.0048	.0091	.0131	.0069

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

increased by P fertilization in both harvests. The comparison of percent P for source-method combinations averaged over rates is illustrated in Figure 2. First harvest data indicated all sources and methods increased percent P over the check plots, banded APP was superior to all other source-method treatments, and both banded or broadcast TSP resulted in lower percent P than either method of APP or of DAP. Interpretation of second harvest results showed that both methods for APP and broadcast rates of TSP and DAP increased percent P over the check plots and likewise over the banded rates of TSP. Banded DAP resulted in lower percent P than banded and broadcast APP and broadcast DAP.

Inspection of UECs for first harvest percent P content showed banded APP to have higher utilization efficiency when compared to other sources and methods while second harvest percent P UECs for banded TSP and banded DAP were lower than other sources and methods.

Nitrogen uptake by the crop was increased by P fertilization only for the first harvest. Banded applications of all P sources increased N uptake in the forage over the check plots, but no other differences were detected.

Potassium uptake was increased in the first harvest over check plots by all source-method combinations and for the total harvest by all but broadcast DAP rates. Banded DAP was also superior to broadcast DAP for the total harvest.

Phosphorus uptake was increased by P fertilization for first and total harvests. As shown in Figure 3, first harvest results indicated P uptake over the check plots, banded APP was superior to all other treatments except banded DAP and that banded DAP was superior to broadcast DAP. The total harvest showed that all source-method combinations

FIGURE 2

Effects of P Sources and Application Methods on Percent Phosphorus Content in Alfalfa Forage, Averages Over Rates, McGuffin Location, 1981

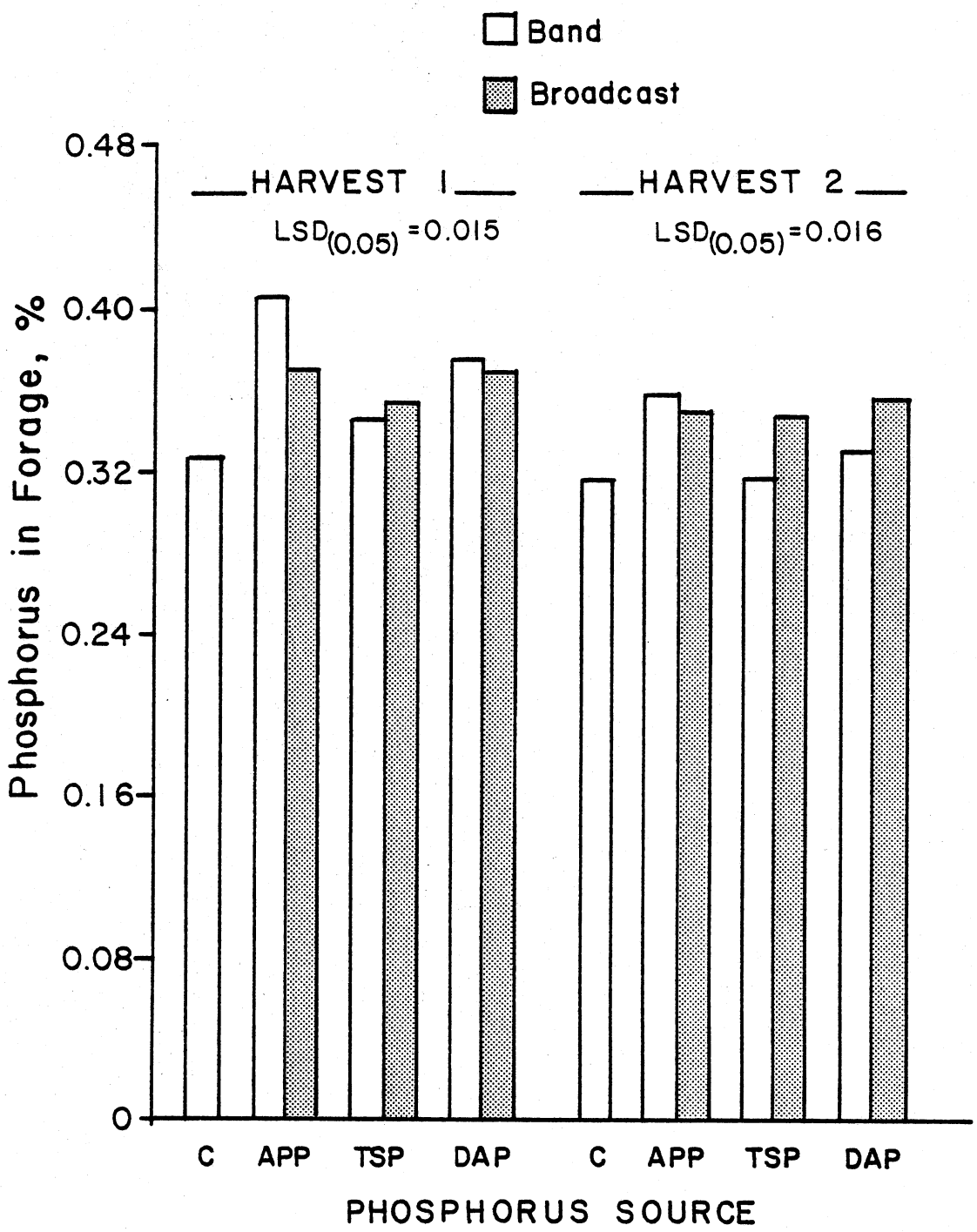
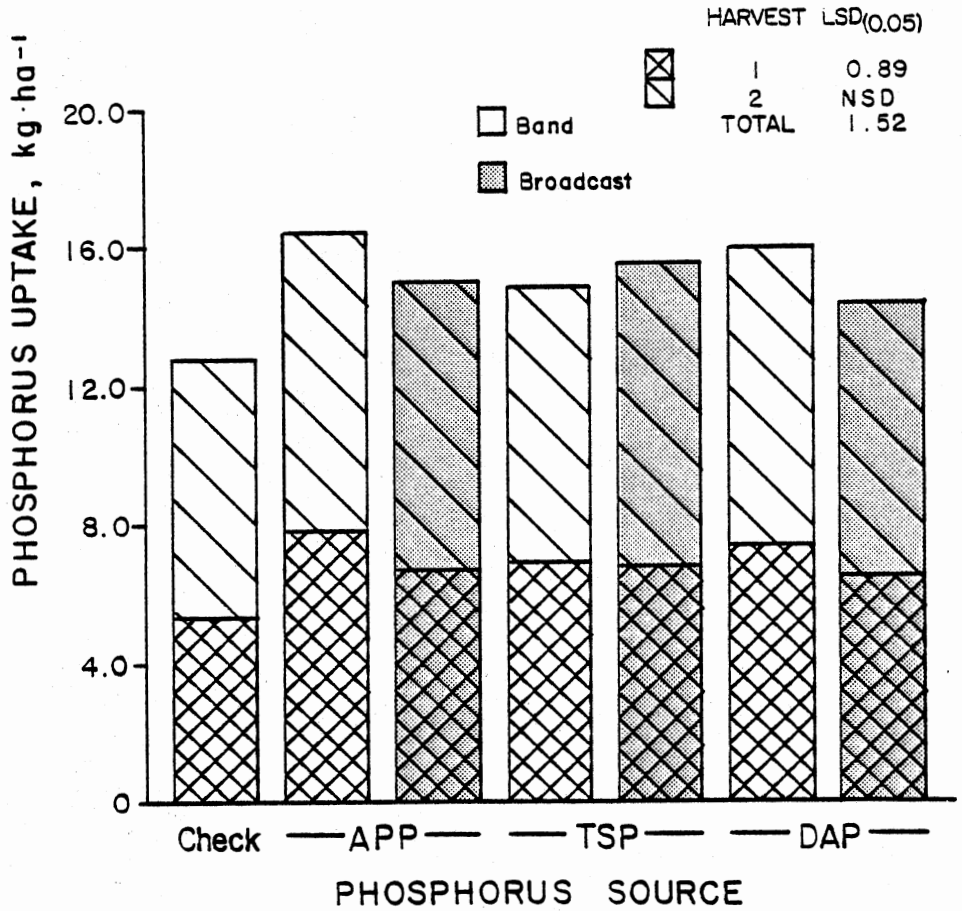


FIGURE 3

Effects of P Sources and Application Methods on Phosphorus Uptake by Alfalfa, Averages Over Rates, McGuffin Location, 1981



increased P uptake over the check plots, banded APP was superior to banded TSP and broadcast DAP, and banded DAP was superior to broadcast DAP.

Phosphorus uptake UECs for the first harvest indicated that banded APP's were higher than any source broadcast while total harvest P uptake UECs for banded APP averaged higher than all other sources and methods.

Treatment means for all analyzed parameters for the individual, successive, and total harvests at the Nesmith location are listed in Table VI.

Dry-matter yields were increased by P fertilization for all individual, successive, and total harvests; and this data is presented graphically in Figure 4. First harvest dry-matter yields showed that banded APP was superior to all other sources and methods and that banded DAP increased yields over broadcast APP. Banded rates of APP were still superior to all other sources and methods for the second harvest.

Analysis of total yields from the first two harvests indicated banded APP was superior to all sources and methods, and banded and broadcast DAP increased yields over broadcasted rates of APP.

Yields for sources and methods averaged over rates at the third harvest showed banded APP still resulting in higher production than all other comparisons while broadcast TSP was producing lower yields than other broadcast sources. For the fourth harvest, banded APP was superior only to banded DAP and broadcast TSP while successive total yields for the first three harvests and for the season total indicated banded APP was superior to all other sources and methods and broadcast TSP had lower yields than either method of DAP.

TABLE VI

Effects of P Sources, Rates, and Application Methods on Dry-Matter Yield, Nutrient Composition, and Nutrient Uptake of Alfalfa, Nesmith Location, 1981

Harvest 1							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	1.00	3.25	0.15	1.69	32.30	1.49	17.05
0:BD:APP	1.66	3.44	0.19	1.90	57.33	3.10	32.16
0:BD:TSP/DAP	1.42	3.03	0.16	1.73	42.32	2.24	23.91
20:BC:APP	2.25	3.15	0.21	1.80	69.59	4.85	39.45
30:BC:APP	1.42	3.15	0.22	1.86	44.39	3.06	26.47
40:BC:APP	2.67	3.49	0.26	2.01	88.62	6.81	55.19
20:BC:TSP	2.13	3.41	0.22	1.79	70.08	4.59	38.19
30:BC:TSP	2.28	3.66	0.25	1.85	84.42	5.95	41.25
40:BC:TSP	2.63	3.48	0.25	1.92	90.69	6.53	49.87
20:BC:DAP	2.47	3.01	0.22	1.85	75.38	5.50	45.36
30:BC:DAP	2.95	3.20	0.22	1.71	93.63	6.44	50.00
40:BC:DAP	2.38	3.65	0.23	1.84	86.25	5.54	44.57
20:BD:APP	3.97	2.98	0.24	1.72	114.61	9.47	68.00
30:BD:APP	3.51	3.63	0.29	1.98	123.04	10.10	69.80
40:BD:APP	3.67	3.55	0.30	1.83	131.07	11.19	68.37
20:BD:TSP	2.34	3.68	0.20	1.79	84.93	4.76	41.69
30:BD:TSP	2.25	3.86	0.23	1.79	86.75	5.19	40.21
40:BD:TSP	3.00	3.71	0.25	1.95	108.42	7.45	58.20
20:BD:DAP	2.63	3.31	0.22	1.97	85.34	5.75	54.25
30:BD:DAP	2.96	3.63	0.24	1.87	106.98	7.02	55.60
40:BD:DAP	2.81	3.49	0.26	1.73	97.32	7.37	49.39
0:BC:Check	1.49	3.25	0.17	1.84	47.49	2.54	27.62
$LSD_{.05}$	1.10	NS‡	0.03	NS	33.23	2.81	25.64

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE VI
(Continued)

Treatment	Harvest 2						
	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	1.17	2.80	0.15	1.90	32.16	1.69	22.27
0:BD:APP	1.89	2.59	0.15	1.90	47.28	2.85	35.92
0:BD:TSP/DAP	1.42	2.77	0.14	1.95	40.23	2.07	27.61
20:BC:APP	2.93	2.83	0.18	1.86	82.86	5.41	53.90
30:BC:APP	3.08	2.90	0.19	1.95	89.26	5.91	59.80
40:BC:APP	3.38	2.92	0.20	1.96	98.35	6.69	66.23
20:BC:TSP	2.98	2.95	0.18	1.84	88.42	5.27	54.69
30:BC:TSP	3.12	2.79	0.19	1.87	87.02	5.84	58.10
40:BC:TSP	3.34	2.85	0.19	1.95	95.18	6.37	64.84
20:BC:DAP	3.26	2.61	0.17	1.92	85.57	5.67	62.47
30:BC:DAP	3.54	2.87	0.20	1.86	100.97	7.17	65.79
40:BC:DAP	3.48	3.03	0.22	1.90	104.17	7.41	66.19
20:BD:APP	3.88	3.06	0.22	1.86	117.09	8.37	71.96
30:BD:APP	4.40	2.96	0.23	1.78	129.81	9.90	78.16
40:BD:APP	4.35	3.03	0.25	1.74	131.32	10.61	76.21
20:BD:TSP	2.59	2.87	0.19	1.86	75.16	4.99	47.14
30:BD:TSP	3.10	2.79	0.18	1.76	86.32	5.60	54.55
40:BD:TSP	3.97	2.89	0.19	1.86	115.60	7.77	73.80
20:BD:DAP	2.87	2.89	0.18	1.90	81.76	5.11	54.78
30:BD:DAP	3.74	3.00	0.20	1.79	113.30	7.62	66.85
40:BD:DAP	3.69	2.89	0.22	1.81	106.95	8.01	66.47
0:BC:Check	1.64	2.72	0.17	1.95	45.97	2.78	32.28
$LSD_{.05}$	0.57	NS‡	0.03	NS	17.46	1.57	11.14

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE VI
(Continued)

Harvest 1+2				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	2.18	64.46	3.18	39.31
0:BD:APP	3.54	104.61	5.95	68.08
0:BD:TSP/DAP	2.85	82.54	4.31	51.52
20:BC:APP	5.18	152.44	10.26	93.35
30:BC:APP	4.49	133.65	8.97	86.27
40:BC:APP	6.05	186.97	13.50	121.42
20:BC:TSP	5.11	158.49	9.85	92.88
30:BC:TSP	5.39	171.44	11.79	99.36
40:BC:TSP	5.97	185.86	12.90	114.71
20:BC:DAP	5.73	160.95	11.17	107.83
30:BC:DAP	6.49	194.60	13.61	115.80
40:BC:DAP	5.87	190.42	12.95	110.76
20:BD:APP	7.85	231.70	17.84	139.96
30:BD:APP	7.92	252.85	20.00	147.96
40:BD:APP	8.02	262.39	21.80	144.59
20:BD:TSP	4.93	160.09	9.75	88.83
30:BD:TSP	5.35	173.07	10.79	94.76
40:BD:TSP	6.97	224.02	15.22	132.00
20:BD:DAP	5.51	167.09	10.86	109.03
30:BD:DAP	6.70	220.27	14.64	122.45
40:BD:DAP	6.50	204.27	15.38	115.86
0:BC:Check	3.13	93.46	5.32	59.90
$LSD_{.05}$	1.33	39.13	3.26	31.52

†BD = Banded; BC = Broadcast

TABLE VI
(Continued)

Harvest 3							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	0.46	3.07	0.14	1.88	14.16	0.64	8.66
0:BD:APP	0.75	2.89	0.13	1.91	21.19	0.99	14.23
0:BD:TSP/DAP	0.72	2.96	0.14	1.91	21.33	0.98	13.76
20:BC:APP	1.18	2.91	0.15	1.81	33.99	1.73	21.14
30:BC:APP	1.28	2.95	0.15	1.91	37.61	1.97	24.38
40:BC:APP	1.38	2.89	0.15	1.96	39.93	2.13	26.96
20:BC:TSP	0.97	2.87	0.14	1.86	26.85	1.34	17.60
30:BC:TSP	0.94	2.81	0.15	1.89	26.38	1.40	17.69
40:BC:TSP	1.02	2.86	0.15	1.93	28.95	1.61	19.86
20:BC:DAP	1.29	2.85	0.14	1.94	37.46	1.82	25.41
30:BC:DAP	1.38	2.68	0.15	1.86	37.01	2.04	25.89
40:BC:DAP	1.27	2.94	0.17	1.70	37.17	2.14	21.58
20:BD:APP	1.46	2.94	0.16	1.87	42.11	2.38	27.17
30:BD:APP	1.82	2.88	0.19	1.75	52.17	3.37	31.59
40:BD:APP	1.91	3.00	0.20	1.71	57.43	3.73	32.73
20:BD:TSP	0.85	3.05	0.14	1.83	25.52	1.19	15.50
30:BD:TSP	1.17	2.76	0.14	1.71	32.47	1.58	19.90
40:BD:TSP	1.46	2.89	0.16	1.88	42.24	2.29	27.03
20:BD:DAP	0.94	2.87	0.15	1.95	26.31	1.35	18.46
30:BD:DAP	1.32	2.92	0.15	1.85	38.72	1.97	24.40
40:BD:DAP	1.36	3.16	0.16	1.69	42.76	2.23	22.92
0:BC:Check	0.51	3.10	0.13	1.91	15.75	0.65	9.74
$LSD_{.05}$	0.41	NS‡	0.02	NS	11.91	0.69	7.79

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE VI
(Continued)

Treatment	Harvest 1+2+3			
	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	2.65	78.62	3.82	47.98
0:BD:APP	4.29	125.80	6.93	82.31
0:BD:TSP/DAP	3.57	103.87	5.28	65.28
20:BC:APP	6.36	186.43	12.00	114.49
30:BC:APP	5.78	171.26	10.94	110.65
40:BC:APP	7.42	226.89	15.63	148.38
20:BC:TSP	6.08	185.34	11.19	110.48
30:BC:TSP	6.34	197.82	13.19	117.05
40:BC:TSP	6.99	214.82	14.51	134.57
20:BC:DAP	7.02	198.42	12.99	133.24
30:BC:DAP	7.87	231.61	15.66	141.69
40:BC:DAP	7.14	227.59	15.09	132.34
20:BD:APP	9.31	273.81	20.21	167.12
30:BD:APP	9.73	305.03	23.37	179.55
40:BD:APP	9.93	319.82	25.52	177.32
20:BD:TSP	5.77	185.62	10.94	104.34
30:BD:TSP	6.52	205.54	12.38	114.66
40:BD:TSP	8.43	266.26	17.51	159.03
20:BD:DAP	6.45	193.40	12.21	127.49
30:BD:DAP	8.02	258.99	16.61	146.86
40:BD:DAP	7.86	247.04	17.61	138.78
0:BC:Check	3.64	109.21	5.97	69.63
$LSD_{.05}$	1.53	45.77	3.55	35.55

†BD = Banded; BC = Broadcast

TABLE VI
(Continued)

Harvest 4							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	0.29	2.93	0.12	2.00	8.55	0.36	5.85
0:BD:APP	0.36	3.14	0.13	2.01	11.06	0.46	7.23
0:BD:TSP/DAP	0.49	3.06	0.13	2.08	14.95	0.64	10.38
20:BC:APP	0.93	3.29	0.14	2.09	30.85	1.27	19.24
30:BC:APP	0.86	3.07	0.14	2.08	27.45	1.23	18.34
40:BC:APP	1.09	3.22	0.15	2.20	35.02	1.62	23.80
20:BC:TSP	0.60	3.12	0.13	1.98	19.49	0.86	11.78
30:BC:TSP	0.78	3.26	0.14	1.98	25.73	1.11	15.30
40:BC:TSP	0.75	3.12	0.13	2.12	23.73	1.04	16.26
20:BC:DAP	0.85	3.12	0.13	2.08	27.03	1.20	19.08
30:BC:DAP	0.98	3.04	0.15	2.05	29.89	1.42	20.05
40:BC:DAP	1.04	3.10	0.15	2.03	32.24	1.56	21.32
20:BD:APP	1.01	3.03	0.15	2.03	30.73	1.49	20.05
30:BD:APP	1.26	3.00	0.16	2.12	37.57	2.05	27.00
40:BD:APP	1.26	3.24	0.18	1.90	40.79	2.27	24.05
20:BD:TSP	0.86	3.14	0.14	2.10	27.13	1.22	18.34
30:BD:TSP	0.83	2.96	0.15	2.02	23.81	1.31	16.17
40:BD:TSP	1.22	3.08	0.16	2.21	37.43	2.02	27.07
20:BD:DAP	0.56	3.13	0.14	2.18	17.50	0.77	12.47
30:BD:DAP	0.95	3.12	0.14	2.08	29.43	1.38	20.01
40:BD:DAP	1.06	3.04	0.15	2.00	32.04	1.57	21.08
0:BC:Check	0.31	3.19	0.13	2.12	9.78	0.42	6.88
$LSD_{.05}$	0.45	NS‡	0.02	NS	14.30	0.80	10.30

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

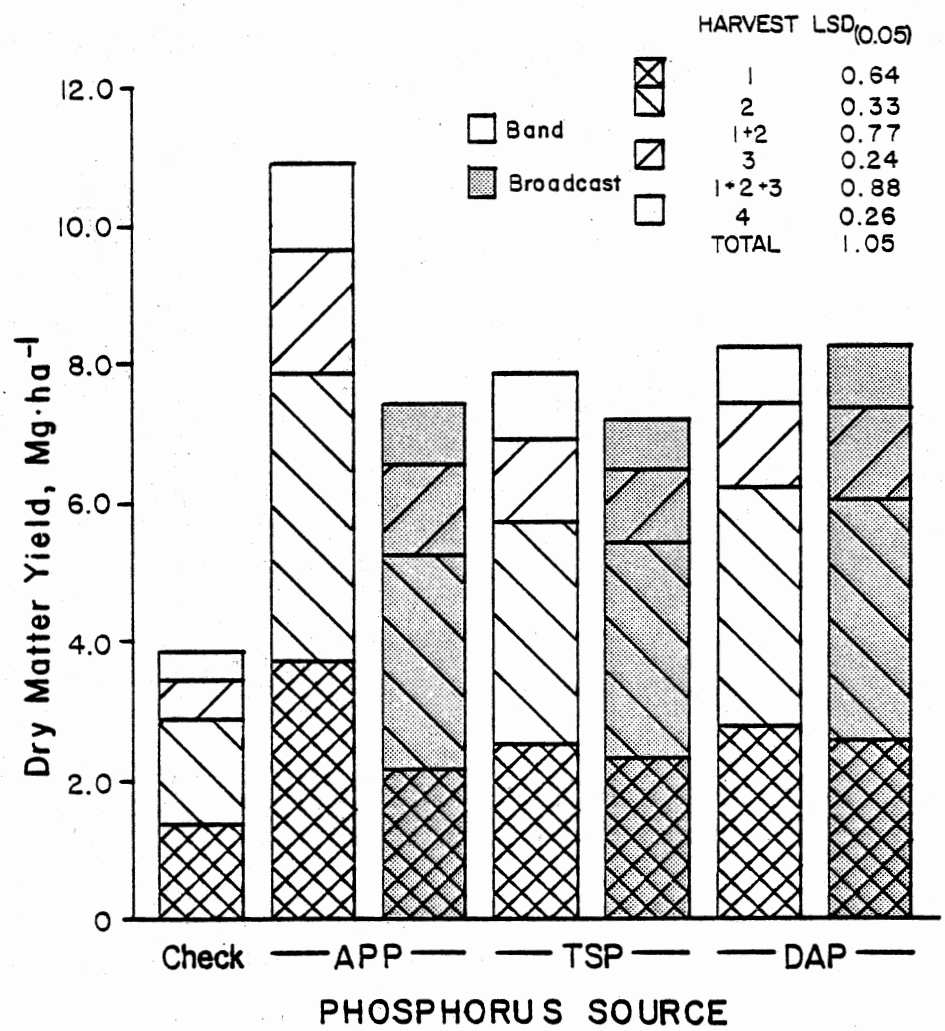
TABLE VI
(Continued)

Total Harvests				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	2.94	87.17	4.18	53.82
0:BD:APP	4.65	136.85	7.39	89.53
0:BD:TSP/DAP	4.05	118.82	5.92	75.67
20:BC:APP	7.29	217.28	13.26	133.73
30:BC:APP	6.64	198.71	12.17	128.99
40:BC:APP	8.52	261.91	17.25	172.18
20:BC:TSP	6.68	204.83	12.05	122.26
30:BC:TSP	7.12	223.55	14.30	132.35
40:BC:TSP	7.74	238.55	15.55	150.83
20:BC:DAP	7.87	225.44	14.19	152.32
30:BC:DAP	8.86	261.51	17.08	161.74
40:BC:DAP	8.18	259.83	16.66	153.66
20:BD:APP	10.32	304.54	21.71	187.18
30:BD:APP	10.99	342.60	25.42	206.55
40:BD:APP	11.19	360.61	27.79	201.37
20:BD:TSP	6.63	212.75	12.16	122.68
30:BD:TSP	7.35	229.35	13.69	130.83
40:BD:TSP	9.65	303.69	19.52	186.10
20:BD:DAP	7.01	210.91	12.98	139.96
30:BD:DAP	8.97	288.43	17.99	166.87
40:BD:DAP	8.91	279.07	19.19	159.85
0:BC:Check	3.95	119.00	6.39	76.51
$LSD_{.05}$	1.81	54.84	3.98	42.37

†BD = Banded; BC = Broadcast

FIGURE 4

Alfalfa Dry-Matter Yield Responses Averaged Over Rates from P Sources and Application Methods, Nesmith Location, 1981



Significant UECs at the Nesmith location are listed in Table VII. Application UECs for yield averaged higher for banded rates of APP over all other sources and methods for all individual, successive, and total harvests. Total yield UECs averaged over rates for P sources and methods are illustrated in Figure 5. For the first harvest banded applications of DAP had a higher average UEC than broadcast APP. No other source-method yield UEC differences appeared for any harvest. Neither N nor K content was affected for any harvest at the Nesmith location by P fertilization.

Percent P in the forage for all four harvests at this location is shown in Figure 6. Percent P composition was increased for all harvests by all sources and methods, and banded APP resulted in higher percent P composition than other sources and methods for all harvests. Application UECs for percent P are displayed graphically in Figure 7, and interpretation indicated banded APP had higher average coefficients than other sources and methods for harvests one through four, and in harvest four coefficients for banded TSP were also higher than both broadcast APP and TSP.

Nitrogen uptake was increased above levels of the check plots by P fertilization for all harvests (Figure 8). Banded APP increased N uptake over other sources and methods for all individual, successive, and total harvests except for the fourth individual harvest where it was only superior to banded DAP and broadcast TSP. First harvest values also showed broadcast APP caused lower N uptake than any banded source. Banded DAP was superior to broadcast APP and broadcast TSP for both the second individual harvest and the total of the first two harvests. Harvest one plus harvest two data also indicated that broadcast APP N

TABLE VII

Application Utilization Efficiency Coefficients (UECs) for Significant Parameters at the Nesmith Location, 1981

Treatment	Yield						
Rate:Method†:Source	1	2	1+2	3	1+2+3	4	Total
20:BC:APP	.0088	.0145	.0127	.0125	.0126	.0217	.0136
30:BC:APP	.0001	.0112	.0053	.0106	.0063	.0117	.0068
40:BC:APP	.0074	.0112	.0103	.0097	.0102	.0184	.0109
20:BC:TSP	.0073	.0152	.0122	.0070	.0110	.0068	.0104
30:BC:TSP	.0061	.0116	.0096	.0043	.0083	.0091	.0084
40:BC:TSP	.0071	.0107	.0099	.0042	.0084	.0062	.0081
20:BC:DAP	.0117	.0199	.0173	.0162	.0171	.0169	.0171
30:BC:DAP	.0134	.0174	.0174	.0131	.0164	.0171	.0165
40:BC:DAP	.0053	.0124	.0093	.0077	.0090	.0154	.0096
20:BD:APP	.0242‡	.0370	.0738	.0229	.0506	.0281	.0462
30:BD:APP	.0250	.0403‡	.0557	.0387	.0503	.0851	.0520
40:BD:APP	.0234	.0436	.0648‡	.0308‡	.0505‡	.0566‡	.0491‡
20:BD:TSP	.0099	.0100	.0108	.0044	.0094	.0174	.0102
30:BD:TSP	.0059	.0114	.0094	.0081	.0091	.0105	.0093
40:BD:TSP	.0105	.0206	.0171	.0115	.0157	.0336	.0168
20:BD:DAP	.0142	.0137	.0153	.0064	.0132	.0055	.0121
30:BD:DAP	.0135	.0213	.0195	.0115	.0175	.0152	.0172
40:BD:DAP	.0087	.0151	.0131	.0093	.0122	.0161	.0126
S.E.	.0069	.0106	.0206	.0093	.0152	.0199	.0146

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

TABLE VII
(Continued)

Treatment	%P			
Rate:Method†:Source	1	2	3	4
20:BC:APP	.0081	.0091	.0053	.0034
30:BC:APP	.0072	.0079	.0038	.0020
40:BC:APP	.0115	.0076	.0042	.0045
20:BC:TSP	.0102	.0065	.0013	.0086
30:BC:TSP	.0140	.0069	.0034	.0038
40:BC:TSP	.0093	.0058	.0045	.0014
20:BC:DAP	.0106	.0056	.0015	.0024
30:BC:DAP	.0069	.0118	.0031	.0055
40:BC:DAP	.0069	.0126	.0086	.0056
20:BD:APP	.0176	.0254	.0145	.0097
30:BD:APP	.0339	.0223	.0267	.0134
40:BD:APP	.0258‡	.0239‡	.0206‡	.0116‡
20:BD:TSP	.0065	.0114	.0023	.0047
30:BD:TSP	.0094	.0053	.0006	.0070
40:BD:TSP	.0093	.0066	.0050	.0097
20:BD:DAP	.0105	.0079	.0049	.0034
30:BD:DAP	.0113	.0110	.0044	.0050
40:BD:DAP	.0130	.0128	.0074	.0049
S.E.	.0071	.0064	.0070	.0034

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

TABLE VII
(Continued)

Treatment	P Uptake						
Rate:Method†:Source	1	2	1+2	3	1+2+3	4	Total
20:BC:APP	.0072	.0101	.0086	.0082	.0085	.0127	.0088
30:BC:APP	.0012	.0082	.0042	.0073	.0046	.0079	.0048
40:BC:APP	.0076	.0081	.0079	.0065	.0077	.0111	.0079
20:BC:TSP	.0064	.0095	.0078	.0043	.0073	.0053	.0071
30:BC:TSP	.0076	.0079	.0078	.0032	.0070	.0064	.0070
40:BC:TSP	.0070	.0072	.0071	.0034	.0065	.0042	.0063
20:BC:DAP	.0096	.0112	.0103	.0091	.0102	.0113	.0103
30:BC:DAP	.0090	.0127	.0107	.0079	.0102	.0109	.0103
40:BC:DAP	.0049	.0103	.0072	.0066	.0071	.0102	.0073
20:BD:APP	.0356	.0284	.0318	.0168	.0288	.0181	.0277
30:BD:APP	.0304‡	.0354‡	.0326‡	.0303‡	.0323‡	.0304‡	.0321‡
40:BD:APP	.0330‡	.0319‡	.0322‡	.0236‡	.0306‡	.0243‡	.0299‡
20:BD:TSP	.0069	.0084	.0076	.0030	.0069	.0117	.0072
30:BD:TSP	.0056	.0073	.0064	.0044	.0061	.0091	.0063
40:BD:TSP	.0094	.0116	.0104	.0077	.0099	.0213	.0105
20:BD:DAP	.0105	.0089	.0097	.0044	.0089	.0040	.0084
30:BD:DAP	.0109	.0147	.0126	.0073	.0117	.0102	.0116
40:BD:DAP	.0091	.0125	.0106	.0072	.0101	.0103	.0101
S.E.	.0101	.0088	.0093	.0073	.0088	.0071	.0085

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

FIGURE 5

Application Utilization Efficiency Coefficients from Total Dry-Matter Yields, Averaged Over Rates, for P Sources and Methods of Application, Nesmith Location, 1981

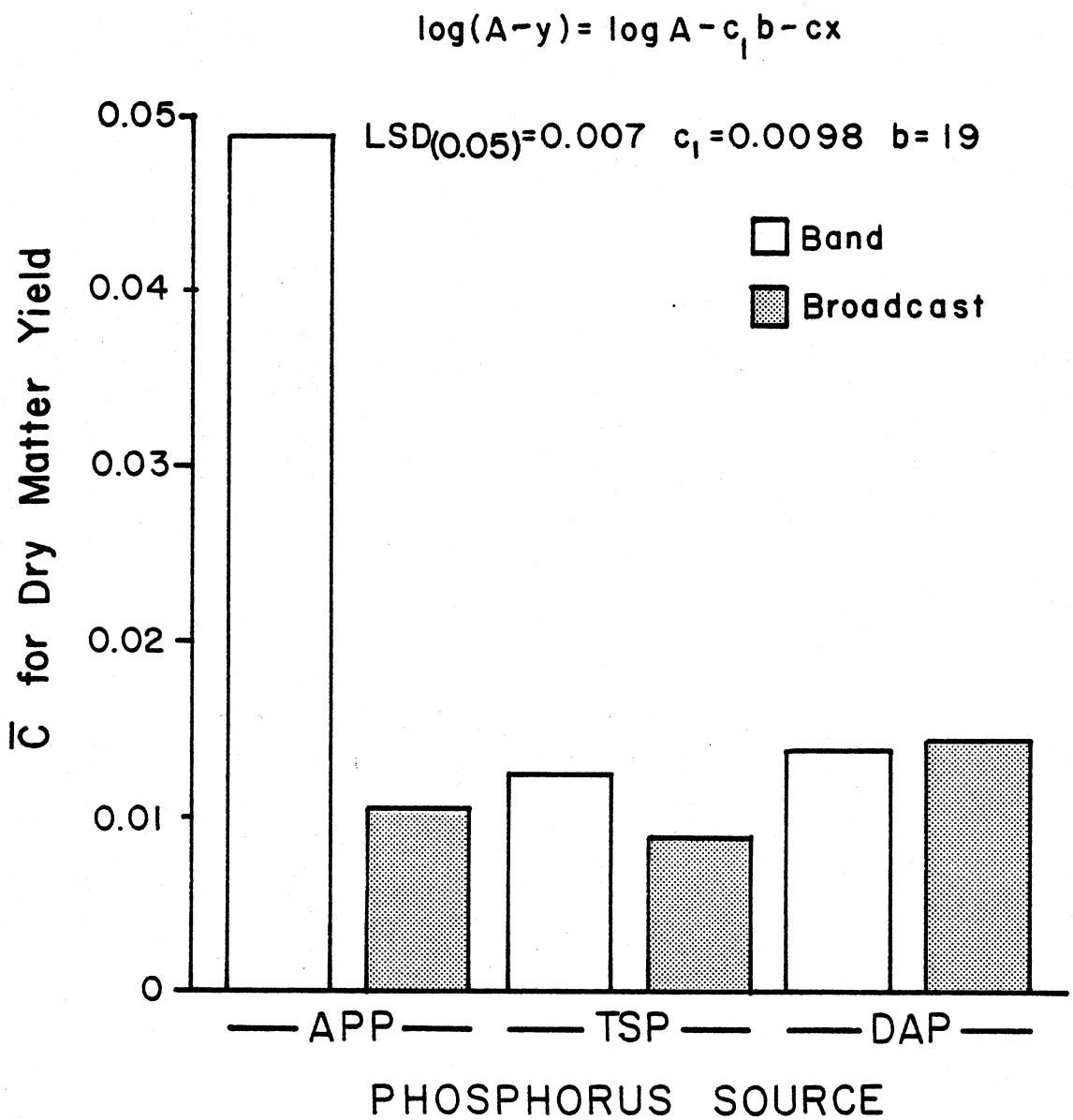


FIGURE 6

Effects of P Sources and Application Methods on Percent Phosphorus Content in Alfalfa Forage, Averages Over Rates, Nesmith Location, 1981

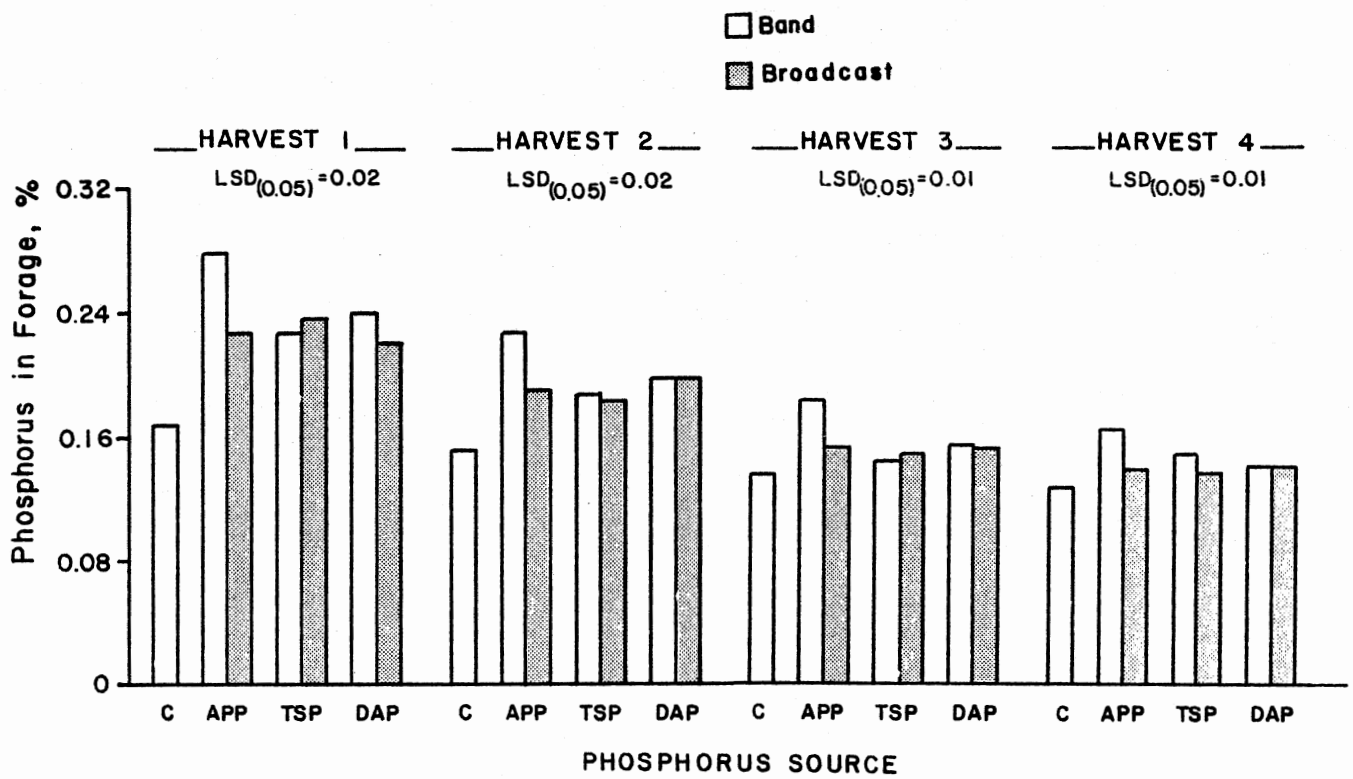


FIGURE 7

Application Utilization Efficiency Coefficients from Percent P In Forage, Averaged Over Rates, for P Sources and Methods of Application, Nesmith Location, 1981

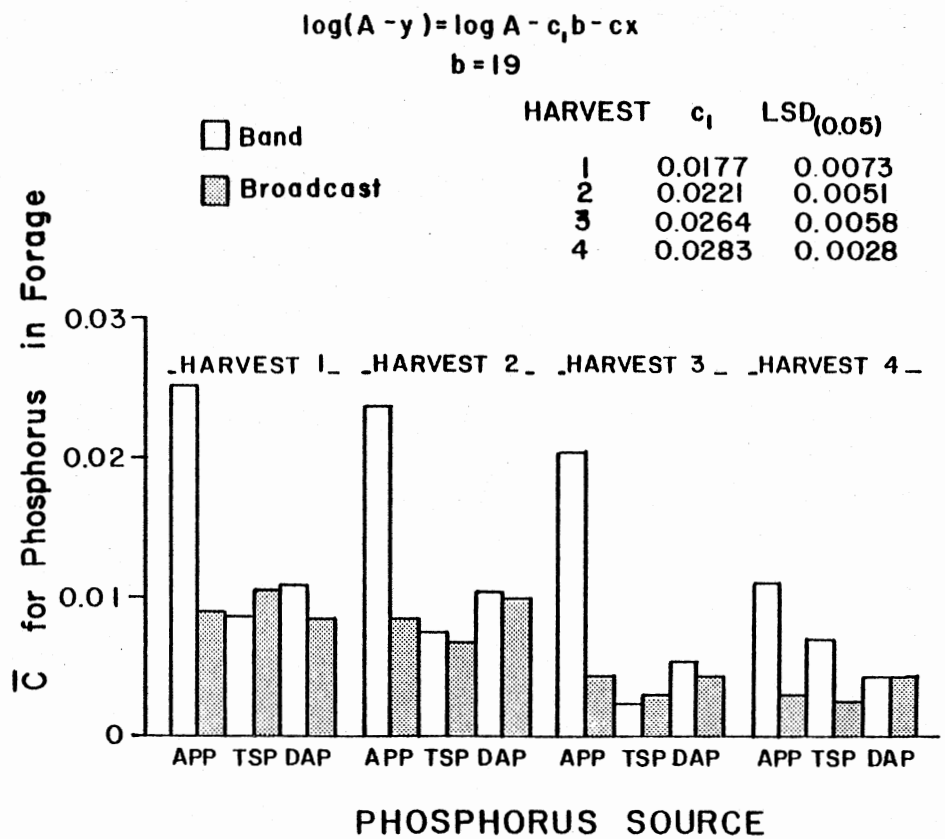
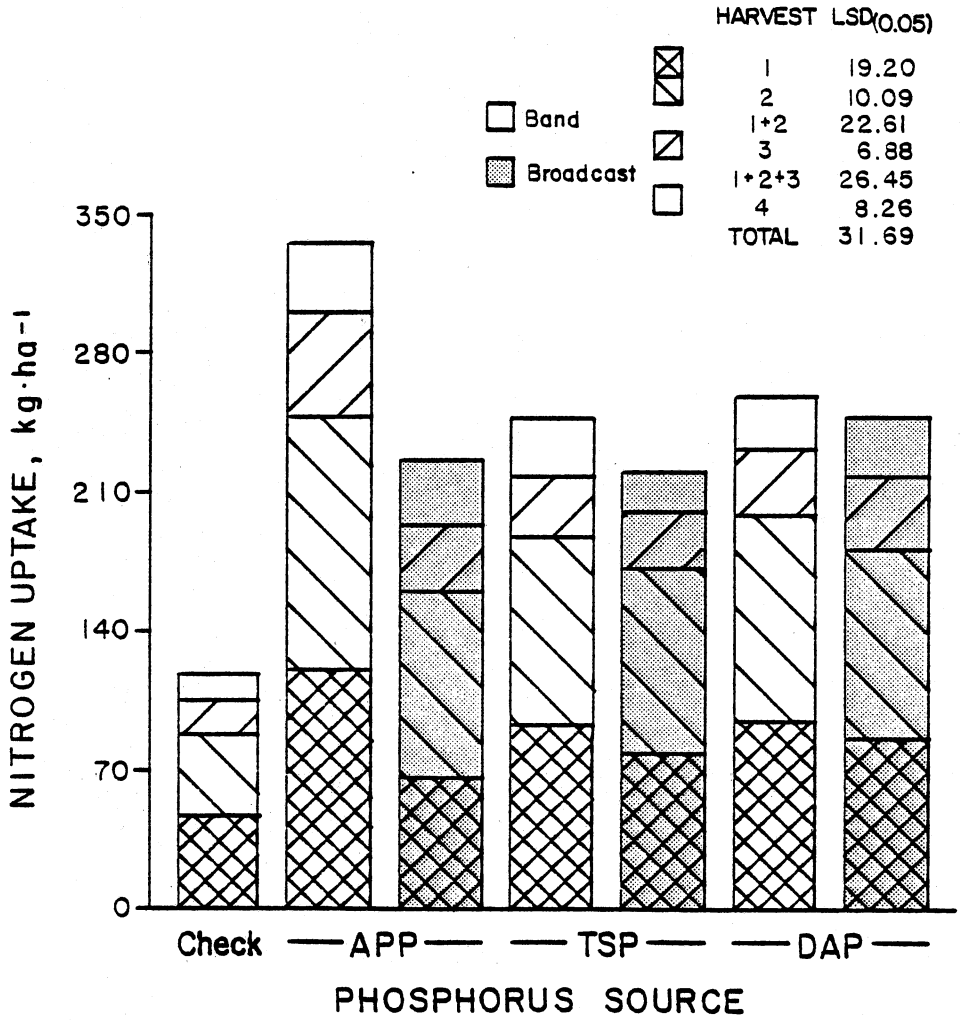


FIGURE 8

Effects of P Sources and Application Methods on Nitrogen Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1981



uptake was lower than for all other comparisons except broadcast TSP. For the third harvest, all sources and methods except banded TSP were superior to broadcast TSP, while the successive total of harvests one through three showed banded DAP superior to broadcast APP and broadcast TSP. For the season's total N uptake by the crop, in addition to the previous statement that banded APP was superior to all other sources and methods, banded DAP's increase over broadcast APP and broadcast TSP is the only other comparison which was significant.

Potassium uptake at this location was also increased by P fertilization for all individual, successive total, and season total harvests (Figure 9). For all individual and successive harvests except the third and fourth individual, banded APP's superiority over all other sources and methods in increasing K uptake was the only significant difference detected. Third harvest results indicated that in addition to banded APP's superiority, broadcast TSP produced lower K uptake than other broadcast sources, while fourth harvest data showed banded APP only better than broadcast TSP.

Phosphorus uptake for the crop at this location is illustrated in Figure 10. Uptake of P was increased by P fertilization for all harvests and rates of banded APP were superior to all other sources and methods for all harvests except the fourth. First harvest uptake data also showed banded DAP to be higher than with broadcast APP. For the second harvest, P uptake from banded DAP was superior to both broadcast APP and broadcast TSP. Broadcast TSP resulted in lower P uptake than all sources and methods except banded TSP, while banded DAP resulted in more P uptake than both APP and TSP broadcast for the successive total of harvests one through three. For the fourth harvest, P uptake from

FIGURE 9

Effects of P Sources and Application Methods on Potassium Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1981

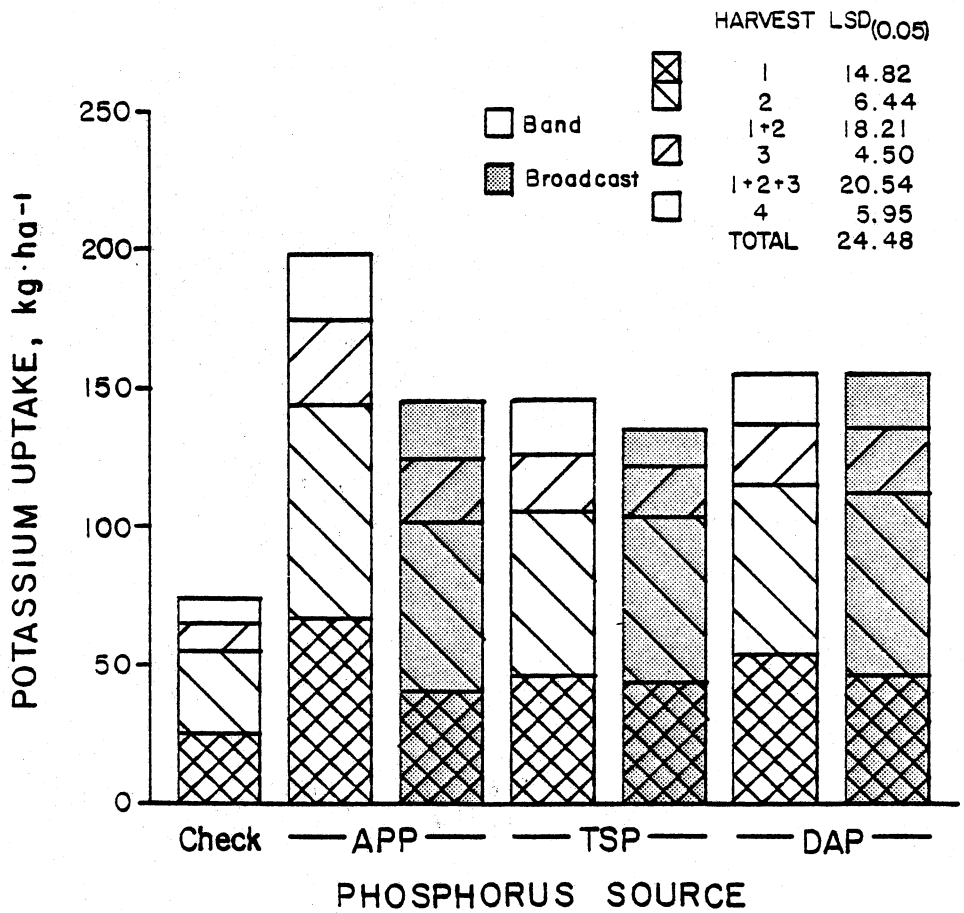
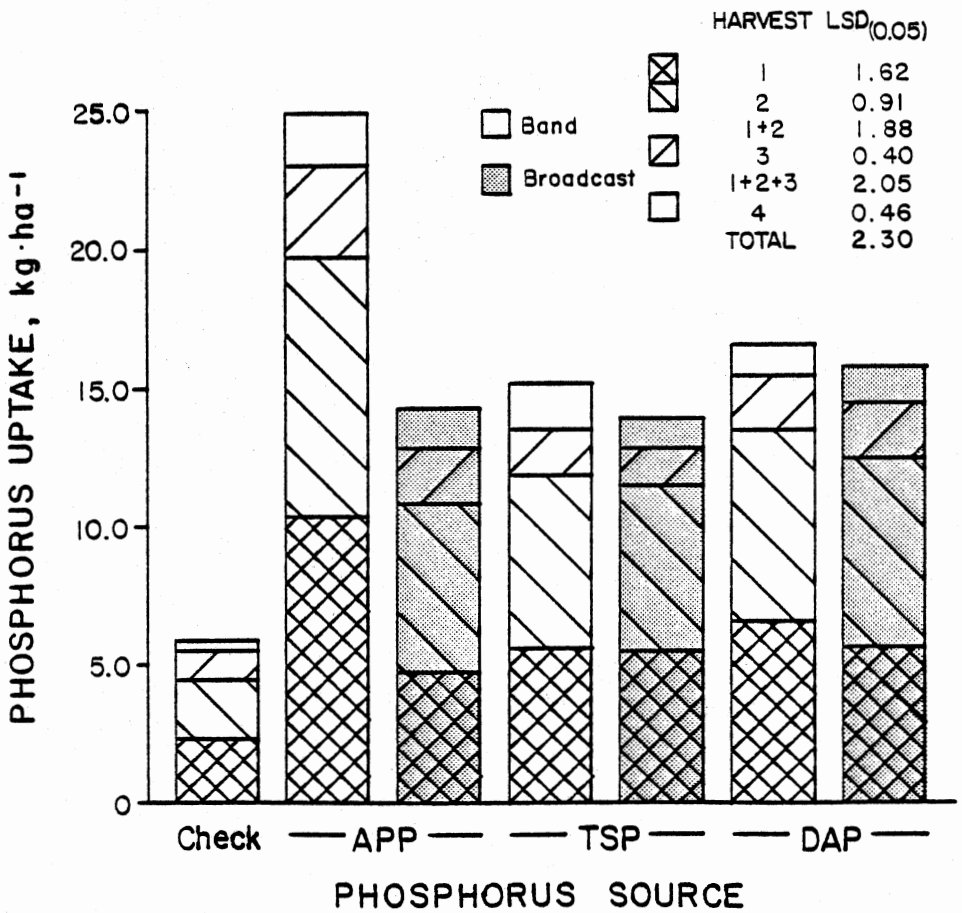


FIGURE 10

Effects of P Sources and Application Methods on Phosphorus Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1981



banded APP was superior to all sources and methods except banded TSP, which itself was better than broadcast rates of TSP.

Overall, the total harvest data illustrated that banded APP resulted in higher P uptake than any other source and method, and banded rates of DAP averaged more uptake than broadcast APP and broadcast TSP.

Banded rates of APP averaged higher P uptake application UECs than all other sources and methods of every individual and successive total harvest. Banded DAP also had higher UECs for P uptake than broadcast APP and broadcast TSP in the first individual and first plus second successive total harvest. Total P uptake application UECs averaged over rates for P sources and method of application are shown in Figure 11. No comparisons for any other harvest indicated significant differences.

Wade location treatment means for all parameters are listed in Table VIII. Dry-matter forage yields were not affected by P fertilization for any harvest, nor were N and K contents in the forage.

Only P content of first harvest forage was increased above that of the check plots by banded and broadcast rates of APP and broadcast DAP (Figure 12). Banded rates of APP resulted in higher percent P in forage than all other source-method combinations. Application UECs for the Wade location are reported in Table IX. Percent P application UECs for the first harvest indicated banded APP had a higher average UEC than all other sources and methods except broadcast DAP.

Nitrogen and K uptake values indicated no differences for any harvest. As shown in Figure 13, P uptake was significantly increased only in the first harvest by all source-method combinations except broadcast APP when compared to check-plot levels. Uptake of P from banded APP was superior to banded DAP and to broadcast rates of both

FIGURE 11

Application Utilization Efficiency Coefficients from Phosphorus Uptake by Alfalfa, Averaged Over Rates, Nesmith Location, 1981

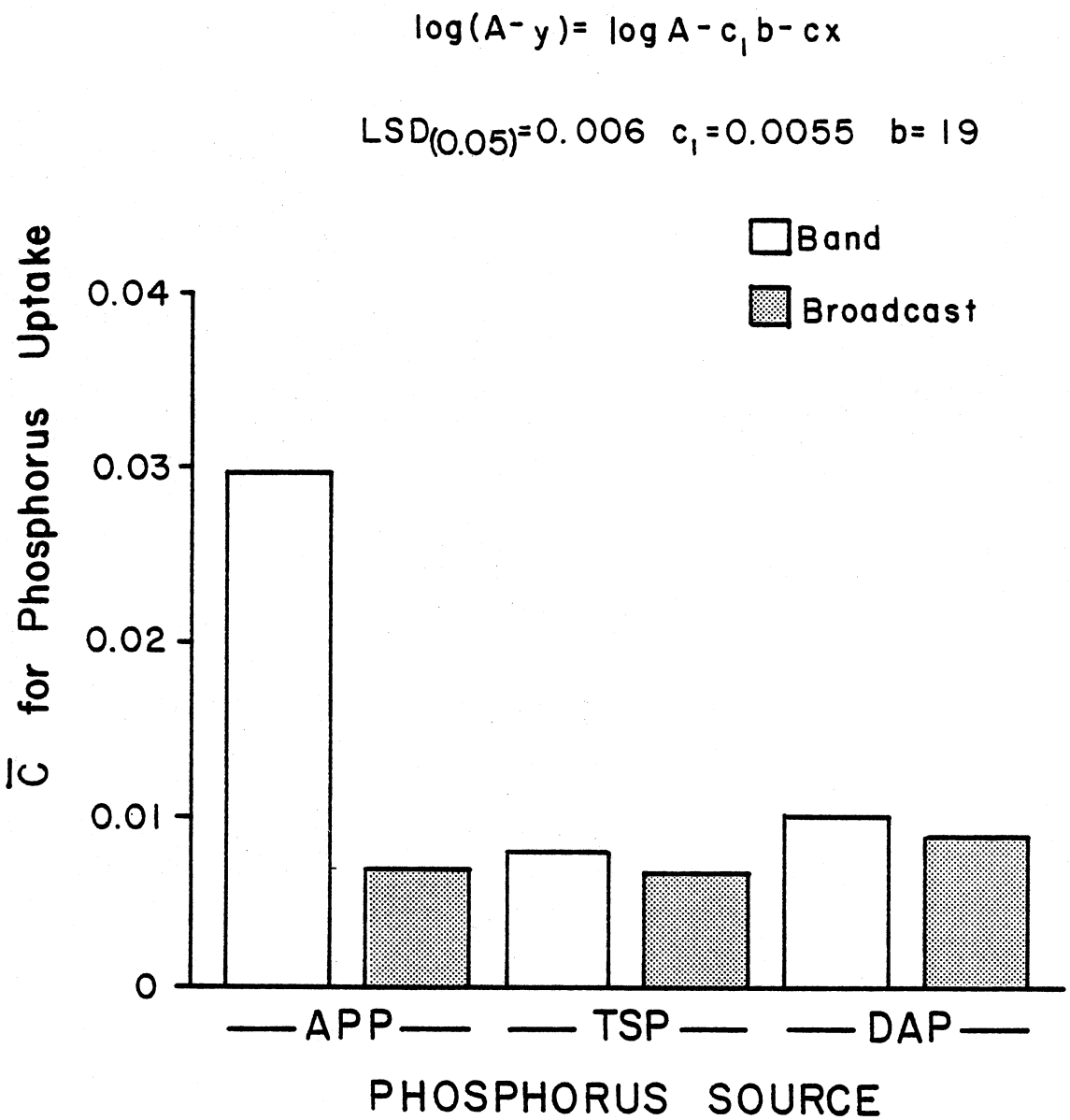


TABLE VIII

Effects of P Sources, Rates, and Application Methods on Dry-Matter Yield, Nutrient Composition, and Nutrient Uptake of Alfalfa, Wade Location, 1981

Harvest 1							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.22	3.83	0.33	2.29	86.42	7.36	50.93
0:BD:APP	2.29	3.84	0.33	2.38	88.28	7.68	54.90
0:BD:TSP/DAP	2.11	3.92	0.33	2.21	82.95	7.02	46.75
20:BC:APP	2.18	3.90	0.35	2.41	84.66	7.63	52.25
30:BC:APP	2.43	3.95	0.35	2.33	95.87	8.45	56.61
40:BC:APP	2.19	3.91	0.36	2.27	85.61	7.82	49.79
20:BC:TSP	2.43	3.75	0.33	2.39	91.01	7.91	58.15
30:BC:TSP	2.27	4.01	0.35	2.42	90.82	7.95	54.76
40:BC:TSP	2.67	3.93	0.35	2.44	104.71	9.30	64.86
20:BC:DAP	2.24	3.87	0.35	2.11	86.46	7.90	47.28
30:BC:DAP	2.34	3.91	0.35	2.32	91.20	8.17	54.12
40:BC:DAP	2.79	4.12	0.36	2.38	114.68	10.01	66.95
20:BD:APP	2.57	3.95	0.35	2.33	102.10	9.15	60.07
30:BD:APP	2.51	4.08	0.37	2.20	102.44	9.23	56.13
40:BD:APP	2.70	4.06	0.40	2.32	108.78	10.87	62.89
20:BD:TSP	2.35	3.51	0.33	2.37	82.89	7.84	55.51
30:BD:TSP	2.51	3.83	0.34	2.27	95.99	8.50	56.89
40:BD:TSP	2.78	3.77	0.36	2.43	105.21	10.03	65.88
20:BD:DAP	2.40	3.87	0.33	2.13	93.35	7.93	49.30
30:BD:DAP	2.64	3.83	0.34	2.13	101.06	9.07	56.53
40:BD:DAP	2.34	3.79	0.36	2.31	88.49	8.39	54.17
0:BC:Check	1.91	3.68	0.32	2.18	71.19	6.14	42.03
$LSD_{.05}$	NS‡	NS	0.03	NS	NS	2.05	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE VIII
(Continued)

Harvest 2							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.86	3.72	0.32	2.80	106.45	9.16	80.04
0:BD:APP	3.17	3.85	0.34	2.78	121.64	10.89	87.65
0:BD:TSP/DAP	2.80	3.74	0.33	2.78	104.89	9.22	78.25
20:BC:APP	3.04	3.74	0.36	2.76	113.48	10.88	83.72
30:BC:APP	3.48	3.46	0.36	2.62	121.00	12.21	92.07
40:BC:APP	2.83	3.57	0.36	2.68	100.60	10.09	75.94
20:BC:TSP	2.94	3.63	0.34	2.85	107.46	9.88	82.57
30:BC:TSP	2.78	3.58	0.35	2.93	99.30	9.80	81.25
40:BC:TSP	2.86	3.71	0.34	2.81	105.20	9.57	79.83
20:BC:DAP	3.32	3.67	0.35	2.89	120.90	11.48	96.36
30:BC:DAP	3.46	3.92	0.35	2.75	135.12	12.19	94.95
40:BC:DAP	3.55	3.72	0.36	2.69	131.94	12.87	94.76
20:BD:APP	2.72	3.78	0.36	2.88	103.19	9.75	78.36
30:BD:APP	3.17	3.50	0.34	3.15	110.11	10.75	101.29
40:BD:APP	3.19	3.46	0.37	2.71	110.02	11.63	86.18
20:BD:TSP	2.96	3.78	0.32	2.85	112.15	9.32	84.15
30:BD:TSP	2.86	3.82	0.35	2.83	108.45	9.86	80.16
40:BD:TSP	3.24	3.78	0.34	2.82	121.38	10.93	89.91
20:BD:DAP	2.68	3.38	0.33	2.99	90.65	8.99	79.96
30:BD:DAP	2.88	3.56	0.34	2.92	102.14	9.61	84.25
40:BD:DAP	3.19	3.75	0.34	3.01	119.29	10.97	95.41
0:BC:Check	2.87	3.94	0.34	2.95	112.64	9.84	85.14
$LSD_{.05}$	NS‡	NS	NS	NS	NS	NS	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE VIII
(Continued)

Total Harvests				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	5.08	192.87	16.52	130.97
0:BD:APP	5.47	209.03	18.58	142.54
0:BD:TSP/DAP	4.92	187.83	16.23	125.00
20:BC:APP	5.22	198.13	18.51	135.96
30:BC:APP	5.92	216.86	20.66	148.68
40:BC:APP	5.02	186.21	17.91	125.72
20:BC:TSP	5.37	198.46	17.80	140.72
30:BC:TSP	5.05	190.13	17.75	136.00
40:BC:TSP	5.53	209.91	18.87	144.68
20:BC:DAP	5.56	207.36	19.38	143.64
30:BC:DAP	5.80	226.32	20.36	149.06
40:BC:DAP	6.35	246.62	22.88	161.71
20:BD:APP	5.29	205.28	18.90	138.43
30:BD:APP	5.69	212.55	19.98	157.42
40:BD:APP	5.89	218.80	22.49	149.07
20:BD:TSP	5.32	195.03	17.15	139.67
30:BD:TSP	5.37	204.44	18.36	137.05
40:BD:TSP	6.02	226.59	20.97	155.79
20:BD:DAP	5.07	183.99	16.92	129.26
30:BD:DAP	5.52	203.20	18.68	149.78
40:BD:DAP	5.53	207.78	19.36	149.58
0:BC:Check	4.79	183.83	15.98	127.17
$LSD_{.05}$	NS‡	NS	NS	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

FIGURE 12

Effects of P Sources and Application Methods on Percent Phosphorus Content in Alfalfa Forage, Averages Over Rates, Wade Location, 1981

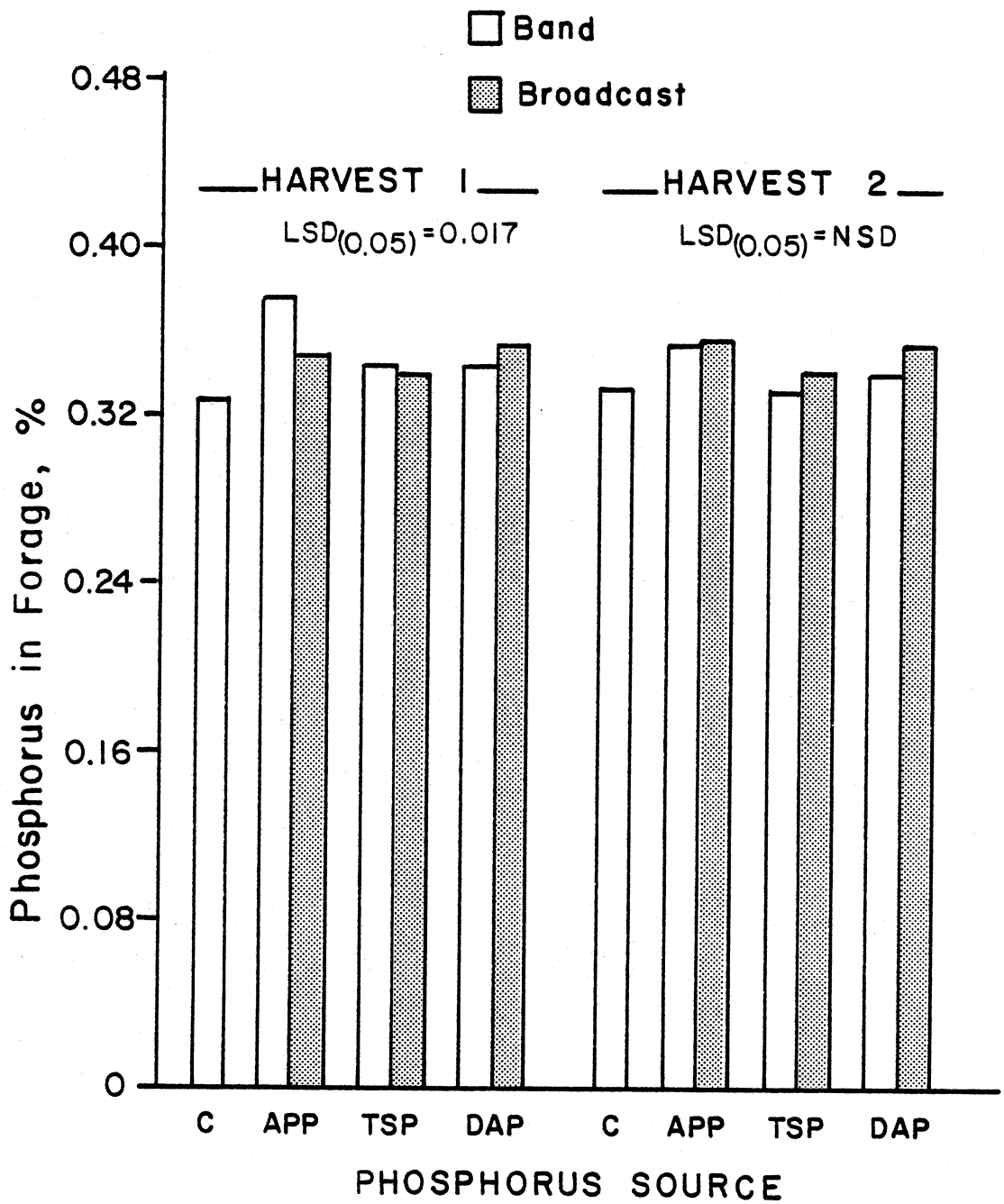


TABLE IX

Application Utilization Efficiency Coefficients (UECs) for Significant Parameters at the Wade Location, 1981

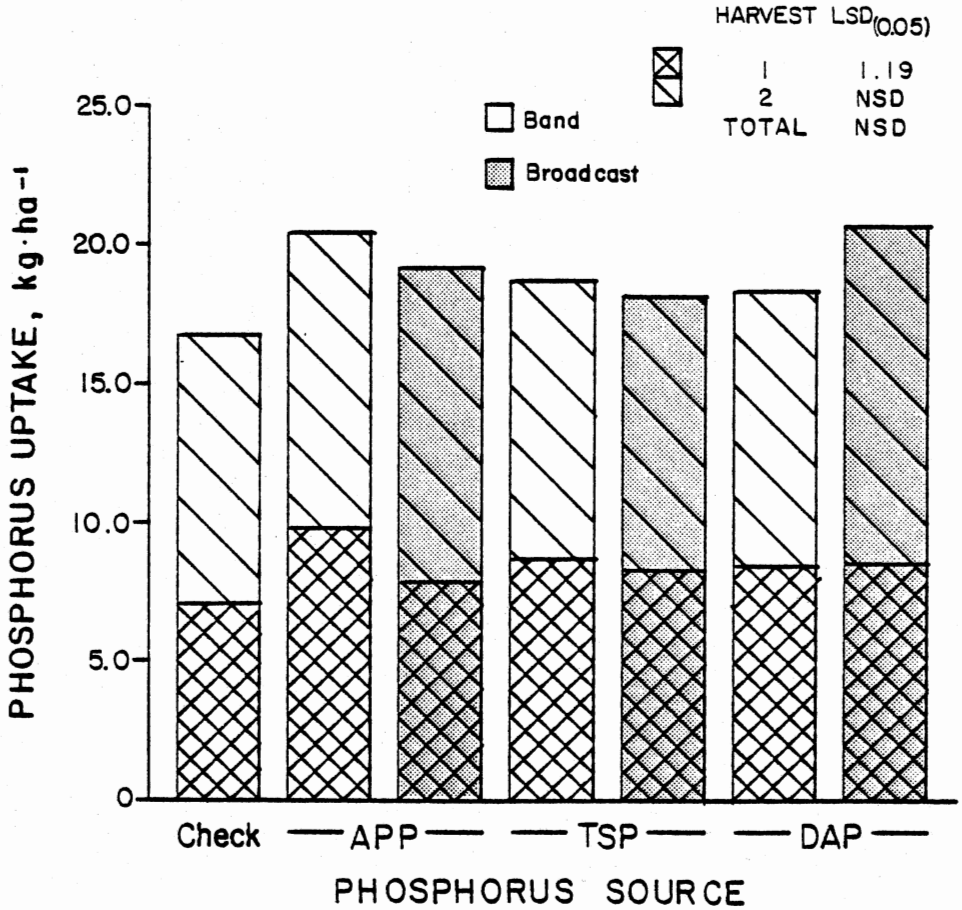
Treatment	%P	P Uptake
Rate:Method†:Source	1	1
20:BC:APP	.0071	.0036
30:BC:APP	.0044	.0066
40:BC:APP	.0052	.0025
20:BC:TSP	0	.0056
30:BC:TSP	.0050	.0039
40:BC:TSP	.0036	.0097
20:BC:DAP	.0090	.0055
30:BC:DAP	.0048	.0050
40:BC:DAP	.0053	.0163
20:BD:APP	.0092	.0174
30:BD:APP	.0110‡	.0122‡
40:BD:APP	.0101‡	.0148‡
20:BD:TSP	.0017	.0050
30:BD:TSP	.0021	.0069
40:BD:TSP	.0063	.0165
20:BD:DAP	.0009	.0057
30:BD:DAP	.0035	.0109
40:BD:DAP	.0052	.0047
S.E.	.0031	.0049

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

FIGURE 13

Effects of P Sources and Application Methods on Phosphorus Uptake by Alfalfa, Averages Over Rates, Wade Location, 1981



APP and TSP. Banded rates of APP also averaged higher application UECs for P uptake in the first harvest than those for broadcast APP and broadcast TSP.

1982 Crop Year

Treatment means of all analyzed parameters for individual, successive total, and season total harvests at the Nesmith location in 1982 are listed in Table X.

Dry-matter forage yield was increased by P fertilization for all individual and successive total harvests. Yields averaged over rates for P sources and application methods are illustrated in Figure 14. All source-method combinations increased yields above those in the check plots for all harvests. Banded APP's superiority to all other sources and methods was the only difference between sources and methods for the first and first plus second successive total harvest. For the second individual harvest, banded APP increased yields only over banded TSP and third harvest data indicated that broadcast APP produced higher yields than either broadcast DAP or banded TSP. Banded APP was superior to broadcast DAP and both banded and broadcast TSP for the successive total of harvests one through three. There were no differences between sources and methods for the fourth harvest and by the season's end, total forage yields indicated that banded APP was only superior to broadcast DAP and banded TSP in increasing dry-matter production.

Application utilization efficiency coefficients (UECs) for the significant parameters at the Nesmith location in 1982 were calculated and are displayed in Table XI. For the first harvest, banded APP had higher UECs for dry-matter yield when averaged over rates than all

TABLE X

Effects of P Sources, Rates, and Application Methods on Dry-Matter Yield, Nutrient Composition, and Nutrient Uptake of Alfalfa, Nesmith Location, 1982

Harvest 1							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	0.30	3.39	0.14	1.66	10.13	0.42	4.64
0:BD:APP	1.19	3.34	0.13	1.58	41.28	1.62	19.74
0:BD:TSP/DAP	0.53	3.35	0.15	1.55	19.85	0.86	8.83
20:BC:APP	1.38	3.66	0.19	1.95	50.81	2.64	27.21
30:BC:APP	1.76	3.62	0.20	1.92	63.81	3.59	34.16
40:BC:APP	2.47	3.60	0.22	1.97	88.60	5.44	48.62
20:BC:TSP	1.42	3.53	0.19	1.85	50.40	2.66	26.53
30:BC:TSP	2.21	3.55	0.19	1.95	68.62	4.36	42.87
40:BC:TSP	1.94	3.72	0.20	1.97	71.85	3.82	38.46
20:BC:DAP	1.59	3.62	0.19	1.98	56.33	2.98	32.26
30:BC:DAP	2.07	3.67	0.20	1.97	76.11	4.17	40.91
40:BC:DAP	2.09	3.58	0.20	1.90	74.30	4.23	40.14
20:BD:APP	1.75	3.81	0.20	1.90	66.44	3.66	33.82
30:BD:APP	2.66	3.59	0.22	1.95	95.26	5.73	52.89
40:BD:APP	2.81	3.48	0.20	1.90	97.59	5.62	53.89
20:BD:TSP	1.84	3.73	0.18	1.81	67.63	3.36	34.20
30:BD:TSP	1.92	3.80	0.20	1.77	73.12	3.88	33.85
40:BD:TSP	1.99	3.80	0.20	1.82	75.48	3.96	37.59
20:BD:DAP	1.90	3.76	0.19	1.76	61.46	3.54	32.90
30:BD:DAP	2.19	3.68	0.19	1.92	80.69	4.26	41.49
40:BD:DAP	2.56	3.58	0.21	1.86	92.04	5.40	47.35
0:BC:Check	0.39	3.47	0.14	1.72	14.18	0.55	7.18
$LSD_{.05}$	0.74	0.27	0.03	0.28	26.84	1.54	15.78

†BD = Banded; BC = Broadcast

TABLE X
(Continued)

Treatment	Forage Yield	Composition			Uptake		
Rate:Method†:Source		N	P	K	N	P	K
	Mg•ha^{-1}	%			kg•ha^{-1}		
0:BC:Check	0.80	3.40	0.17	2.60	26.94	1.34	20.28
0:BD:APP	1.09	3.26	0.17	2.80	34.93	1.82	30.41
0:BD:TSP/DAP	1.08	3.42	0.18	2.85	37.28	2.02	31.32
20:BC:APP	2.47	3.55	0.24	3.12	87.82	6.09	76.95
30:BC:APP	3.02	3.70	0.32	3.18	111.41	9.78	95.96
40:BC:APP	3.39	3.60	0.32	3.17	121.68	10.73	107.11
20:BC:TSP	2.55	3.72	0.25	2.93	95.20	6.49	74.75
30:BC:TSP	2.99	3.34	0.26	3.10	99.37	7.84	92.56
40:BC:TSP	3.16	3.55	0.30	3.00	112.32	9.46	94.65
20:BC:DAP	2.58	3.61	0.27	3.04	93.29	7.02	79.35
30:BC:DAP	2.97	3.50	0.28	2.96	103.91	8.22	87.53
40:BC:DAP	3.12	3.62	0.33	3.14	112.80	10.33	97.87
20:BD:APP	2.60	3.58	0.23	2.67	91.94	6.09	68.67
30:BD:APP	3.24	3.75	0.30	2.84	121.47	9.61	92.06
40:BD:APP	3.40	3.64	0.29	2.93	123.44	10.15	99.64
20:BD:TSP	2.34	3.56	0.24	2.96	83.74	5.51	69.09
30:BD:TSP	2.69	3.57	0.24	2.98	96.63	6.42	79.67
40:BD:TSP	3.23	3.72	0.29	3.16	120.39	9.25	101.94
20:BD:DAP	2.65	3.87	0.24	2.93	102.67	6.46	78.31
30:BD:DAP	3.16	3.85	0.30	3.06	121.48	9.46	96.72
40:BD:DAP	3.00	3.82	0.29	3.01	114.42	8.59	90.18
0:BC:Check	1.04	3.55	0.18	2.86	37.15	1.93	30.55
$LSD_{.05}$	0.52	NS‡	0.03	0.29	19.93	1.86	17.23

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE X
(Continued)

Harvest 1+2				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	1.09	37.06	1.76	24.92
0:BD:APP	2.28	76.20	3.44	50.15
0:BD:TSP/DAP	1.65	57.14	2.89	40.15
20:BC:APP	3.86	138.63	8.73	104.16
30:BC:APP	4.78	175.23	13.38	130.12
40:BC:APP	5.86	210.28	16.16	155.73
20:BC:TSP	3.97	145.60	9.15	101.28
30:BC:TSP	5.20	177.98	12.19	135.43
40:BC:TSP	5.19	184.17	13.28	133.10
20:BC:DAP	4.17	150.62	10.00	111.61
30:BC:DAP	5.04	180.02	12.39	128.44
40:BC:DAP	5.21	187.10	14.56	138.00
20:BD:APP	4.35	158.37	9.75	102.49
30:BD:APP	5.91	216.72	15.34	145.00
40:BD:APP	6.21	221.03	15.76	153.53
20:BD:TSP	4.18	151.37	8.88	103.29
30:BD:TSP	4.62	169.75	10.30	113.52
40:BD:TSP	5.22	195.87	13.20	139.53
20:BD:DAP	4.55	174.13	10.00	111.20
30:BD:DAP	5.35	202.17	13.72	138.21
40:BD:DAP	5.56	206.46	13.99	137.52
0:BC:Check	1.43	51.33	2.48	37.73
$LSD_{.05}$	1.09	39.62	2.89	28.31

†BD = Banded; BC = Broadcast

TABLE X
(Continued)

Harvest 3							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	0.98	2.89	0.11	2.35	28.28	1.10	23.16
0:BD:APP	1.28	2.96	0.13	2.32	37.82	1.62	29.53
0:BD:TSP/DAP	1.27	2.95	0.14	2.38	37.07	1.77	30.39
20:BC:APP	3.30	2.98	0.17	2.39	99.08	5.45	79.41
30:BC:APP	3.57	3.04	0.20	2.32	107.81	6.97	83.47
40:BC:APP	3.55	3.01	0.21	2.27	106.19	7.31	79.95
20:BC:TSP	2.75	2.96	0.16	2.30	80.77	4.30	62.99
30:BC:TSP	3.48	3.16	0.18	2.31	109.54	6.08	80.32
40:BC:TSP	3.23	3.20	0.21	2.32	102.19	6.72	75.52
20:BC:DAP	2.20	3.24	0.18	2.20	71.03	3.87	48.53
30:BC:DAP	3.39	3.13	0.20	2.19	105.85	6.68	74.33
40:BC:DAP	3.40	3.04	0.23	2.23	103.85	7.70	76.26
20:BD:APP	3.09	3.00	0.17	2.21	91.75	5.55	69.16
30:BD:APP	3.40	3.02	0.20	2.07	102.04	6.70	70.56
40:BD:APP	3.40	3.11	0.21	2.05	105.82	7.37	69.41
20:BD:TSP	2.29	3.04	0.15	2.13	70.13	3.46	49.43
30:BD:TSP	3.08	3.05	0.17	2.26	92.31	5.28	70.78
40:BD:TSP	3.49	3.23	0.21	2.31	112.69	7.26	81.90
20:BD:DAP	2.86	3.11	0.16	2.43	89.20	4.50	69.68
30:BD:DAP	3.13	2.96	0.18	2.34	92.48	5.49	73.17
40:BD:DAP	3.42	3.25	0.20	2.04	110.75	6.71	69.96
0:BC:Check	1.04	3.08	0.14	2.21	32.19	1.47	22.86
$LSD_{.05}$	0.69	NS‡	0.02	NS	20.61	1.58	19.02

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE X
(Continued)

Harvest 1+2+3				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	2.08	65.34	2.86	48.08
0:BD:APP	3.56	114.03	5.06	79.68
0:BD:STP/DAP	2.92	94.20	4.66	70.54
20:BC:APP	7.16	237.71	14.18	183.57
30:BC:APP	8.35	283.03	20.35	213.59
40:BC:APP	9.41	316.47	23.47	235.68
20:BC:TSP	6.71	226.37	13.45	164.27
30:BC:TSP	8.68	287.52	18.27	215.76
40:BC:TSP	8.32	286.36	19.99	208.63
20:BC:DAP	6.37	221.64	13.88	160.14
30:BC:DAP	8.42	285.87	19.07	202.77
40:BC:DAP	8.61	290.95	22.26	214.27
20:BD:APP	7.44	250.12	15.30	171.65
30:BD:APP	9.31	318.76	22.04	215.57
40:BD:APP	9.61	326.85	23.14	222.94
20:BD:TSP	6.48	221.49	12.34	152.73
30:BD:TSP	7.70	262.07	15.58	184.30
40:BD:TSP	8.71	308.55	20.46	221.43
20:BD:DAP	7.41	273.33	14.51	180.89
30:BD:DAP	8.49	294.65	19.21	211.38
40:BD:DAP	8.98	317.20	20.70	207.49
0:BC:Check	2.47	83.52	3.96	69.59
$LSD_{.05}$	1.49	50.38	3.94	37.90

†BD = Banded; BC = Broadcast

TABLE X
(Continued)

Harvest 4							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	0.11	3.25	0.15	2.29	3.61	0.17	2.56
0:BD:APP	0.29	3.36	0.16	2.30	9.59	0.46	6.55
0:BD:TSP/DAP	0.35	3.55	0.15	2.16	12.58	0.54	7.54
20:BC:APP	2.21	3.53	0.19	2.14	42.23	2.19	25.57
30:BC:APP	1.31	3.55	0.20	2.05	46.16	2.56	27.10
40:BC:APP	1.39	3.57	0.22	1.99	48.97	2.97	27.01
20:BC:TSP	1.05	3.45	0.17	2.16	35.78	1.77	22.58
30:BC:TSP	1.23	3.65	0.21	2.08	44.18	2.40	25.74
40:BC:STP	1.56	3.52	0.20	2.17	54.83	3.20	34.50
20:BC:DAP	1.05	3.67	0.19	2.14	37.97	1.90	22.42
30:BC:DAP	1.34	3.72	0.21	1.95	46.64	2.74	26.14
40:BC:DAP	1.54	3.49	0.21	1.87	53.91	3.31	28.58
20:BD:APP	0.79	3.42	0.18	1.98	27.28	1.49	15.19
30:BD:APP	1.63	3.59	0.22	1.76	58.45	3.56	28.64
40:BD:APP	1.59	3.67	0.23	1.78	58.91	3.73	27.37
20:BD:TSP	0.90	3.56	0.18	2.12	32.11	1.59	19.12
30:BD:TSP	1.20	3.75	0.19	2.11	45.24	2.34	24.90
40:BD:TSP	1.43	3.74	0.21	2.20	53.11	3.06	31.62
20:BD:DAP	0.93	3.75	0.19	2.18	34.12	1.75	19.85
30:BD:DAP	1.16	3.66	0.21	2.08	42.40	2.39	23.92
40:BD:DAP	1.46	3.61	0.22	1.90	52.69	3.20	27.85
0:BC:Check	0.25	3.63	0.17	2.21	9.26	0.46	5.55
$LSD_{.05}$	0.42	0.22	0.02	0.30	15.11	0.93	8.22

†BD = Banded; BC = Broadcast

TABLE X
(Continued)

Total Harvests				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	2.19	68.95	3.03	50.64
0:BD:APP	3.85	123.62	5.52	86.23
0:BD:TSP/DAP	3.27	106.78	5.19	78.08
20:BC:APP	8.36	279.94	16.38	209.14
30:BC:APP	9.66	329.20	22.90	240.69
40:BC:APP	10.80	365.44	26.44	262.69
20:BC:TSP	7.76	262.15	15.22	186.85
30:BC:TSP	9.91	331.70	20.67	241.49
40:BC:TSP	9.88	341.19	23.20	243.12
20:BC:DAP	7.42	259.61	15.78	182.56
30:BC:DAP	9.76	335.51	21.81	228.91
40:BC:DAP	10.15	344.86	25.57	242.84
20:BD:APP	8.23	277.40	16.79	186.85
30:BD:APP	10.94	377.21	25.61	244.20
40:BD:APP	11.21	385.76	26.86	250.30
20:BD:TSP	7.38	253.61	13.92	171.85
30:BD:TSP	8.90	307.31	17.92	209.20
40:BD:TSP	10.14	361.66	23.52	253.05
20:BD:DAP	8.34	297.45	16.26	200.74
30:BD:DAP	9.75	337.05	21.60	235.30
40:BD:DAP	10.44	369.90	23.90	235.34
0:BC:Check	2.72	92.78	4.42	66.14
$LSD_{.05}$	1.68	56.38	4.42	41.47

†BD = Banded; BC = Broadcast

FIGURE 14

Alfalfa Dry-Matter Yield Responses Averaged Over Rates from P Sources and Application Methods, Nesmith Location, 1982

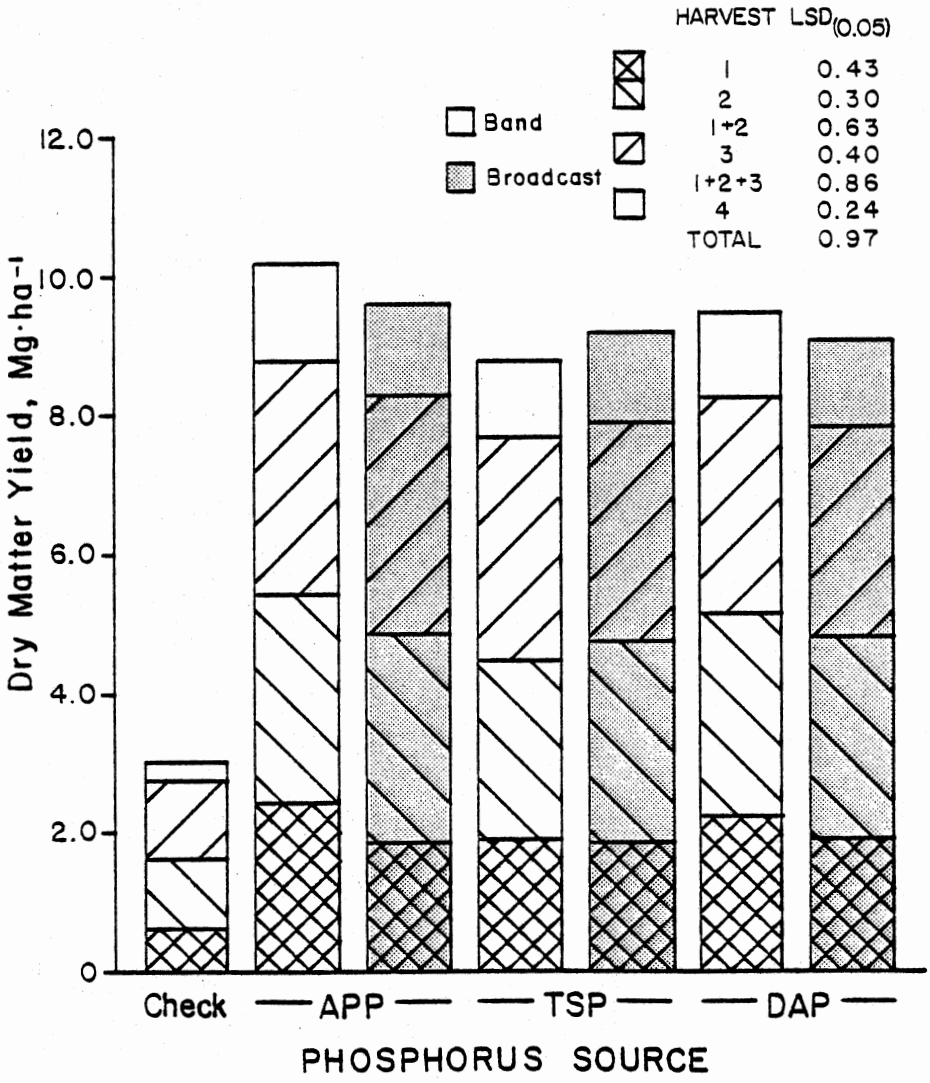


TABLE XI

Application Utilization Efficiency Coefficients (UECs) for Significant Parameters at the Nesmith Location, 1982

Treatment	Yield						
Rate:Method†:Source	1	2	1+2	3	1+2+3	4	Total
20:BC:APP	.0094	.0206	.0145	.0482	.0223	.0255	.0230
30:BC:APP	.0107	.0265	.0169	.0505‡	.0245	.0213	.0241
40:BC:APP	.0202	.0582	.0279	.0528	.0381	.0189	.0325
20:BC:TSP	.0099	.0224	.0156	.0235	.0187	.0187	.0188
30:BC:TSP	.0189	.0254	.0219	.0480	.0289	.0178	.0267
40:BC:TSP	.0100	.0248	.0154	.0213	.0181	.0319	.0198
20:BC:DAP	.0128	.0233	.0176	.0124	.0163	.0185	.0167
30:BC:DAP	.0158	.0247	.0197	.0378	.0254	.0226	.0252
40:BC:DAP	.0121	.0232	.0165	.0292	.0209	.0296	.0222
20:BD:APP	.0158	.0238	.0196	.0354	.0250	.0107	.0220
30:BD:APP	.0393	.0390	.0391	.0389	.0450	.0251‡	.0494
40:BD:APP	.0276‡	.0314‡	.0294‡	.0291	.0350‡	.0394	.0357‡
20:BD:TSP	.0177	.0178	.0178	.0140	.0170	.0139	.0165
30:BD:TSP	.0131	.0176	.0153	.0233	.0184	.0170	.0184
40:BD:TSP	.0107	.0287	.0166	.0376	.0220	.0211	.0222
20:BD:DAP	.0191	.0253	.0221	.0268	.0247	.0146	.0228
30:BD:DAP	.0183	.0334	.0243	.0249	.0261	.0156	.0240
40:BD:DAP	.0234	.0193	.0211	.0308	.0259	.0229	.0258
S.E.	.0075	.0095	.0063	.0121	.0076	.0070	.0079

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

TABLE XI
(Continued)

Treatment	%P			
Rate:Method :Source	1	2	3	4
20:BC:APP	.0216	.0123	.0103	.0105
30:BC:APP	.0237	.0436	.0162	.0137
40:BC:APP	.0227‡	.o257	.0169	.0190
20:BC:TSP	.0207	.0155	.0071	.0041
30:BC:TSP	.0168	.0119	.0092	.0164
40:BC:TSP	.0139	.0172	.0183	.0114
20:BC:DAP	.0190	.0211	.0151	.0114
30:BC:DAP	.0206	.0155	.0177	.0166
40:BC:DAP	.0128	.0183‡	.0164‡	.0173
20:BD:APP	.0307	.0095	.0117	.0096
30:BD:APP	.0442	.0220	.0183	.0314
40:BD:APP	.0139	.0150	.0218	.0205‡
20:BD:TSP	.0174	.0109	.0059	.0061
30:BD:TSP	.0222	.0073	.0089	.0103
40:BD:TSP	.0141	.0134	.0177	.0181
20:BD:DAP	.0203	.0121	.0070	.0108
30:BD:DAP	.0168	.0227	.0091	.0173
40:BD:DAP	.0228	.0137	.0124	.0239
S.E.	.0073	.0082	.0048	.0066

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

TABLE XI
(Continued)

Treatment	P Uptake						
Rate:Method†:Source	1	2	1+2	3	1+2+3	4	Total
20:BC:APP	.0099	.0143	.0130	.0221	.0159	.0168	.0164
30:BC:APP	.0119	.0325	.0229	.0310	.0264	.0151	.0250
40:BC:APP	.0305	.0234‡	.0180‡	.0298	.0212‡	.0160	.0429
20:BC:TSP	.0100	.0163	.0143	.0131	.0143	.0115	.0141
30:BC:TSP	.0183	.0164	.0177	.0194	.0190	.0133	.0186
40:BC:TSP	.0101	.0212	.0168	.0200	.0186	.0201	.0196
20:BC:DAP	.0124	.0191	.0171	.0105	.0152	.0130	.0152
30:BC:DAP	.0165	.0184	.0185	.0262	.0214	.0176	.0215
40:BC:DAP	.0128	.0338	.0231	.0184‡	.0301	.0227	.0309
20:BD:APP	.0186	.0143	.0162	.0230	.0187	.0086	.0173
30:BD:APP	.0298‡	.0302	.0405	.0264	.0378	.0437	.0416
40:BD:APP	.0410	.0297	.0382	.0319	.0442	.0262‡	.0295‡
20:BD:TSP	.0156	.0117	.0134	.0083	.0120	.0095	.0118
30:BD:TSP	.0140	.0106	.0121	.0136	.0130	.0127	.0132
40:BD:TSP	.0110	.0195	.0165	.0286	.0202	.0175	.0206
20:BD:DAP	.0174	.0161	.0171	.0144	.0167	.0113	.0162
30:BD:DAP	.0173	.0283	.0247	.0150	.0219	.0131	.0209
40:BD:DAP	.0292	.0156	.0198	.0199	.0211	.0201	.0219
S.E.	.0088	.0073	.0078	.0072	.0084	.0081	.0090

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

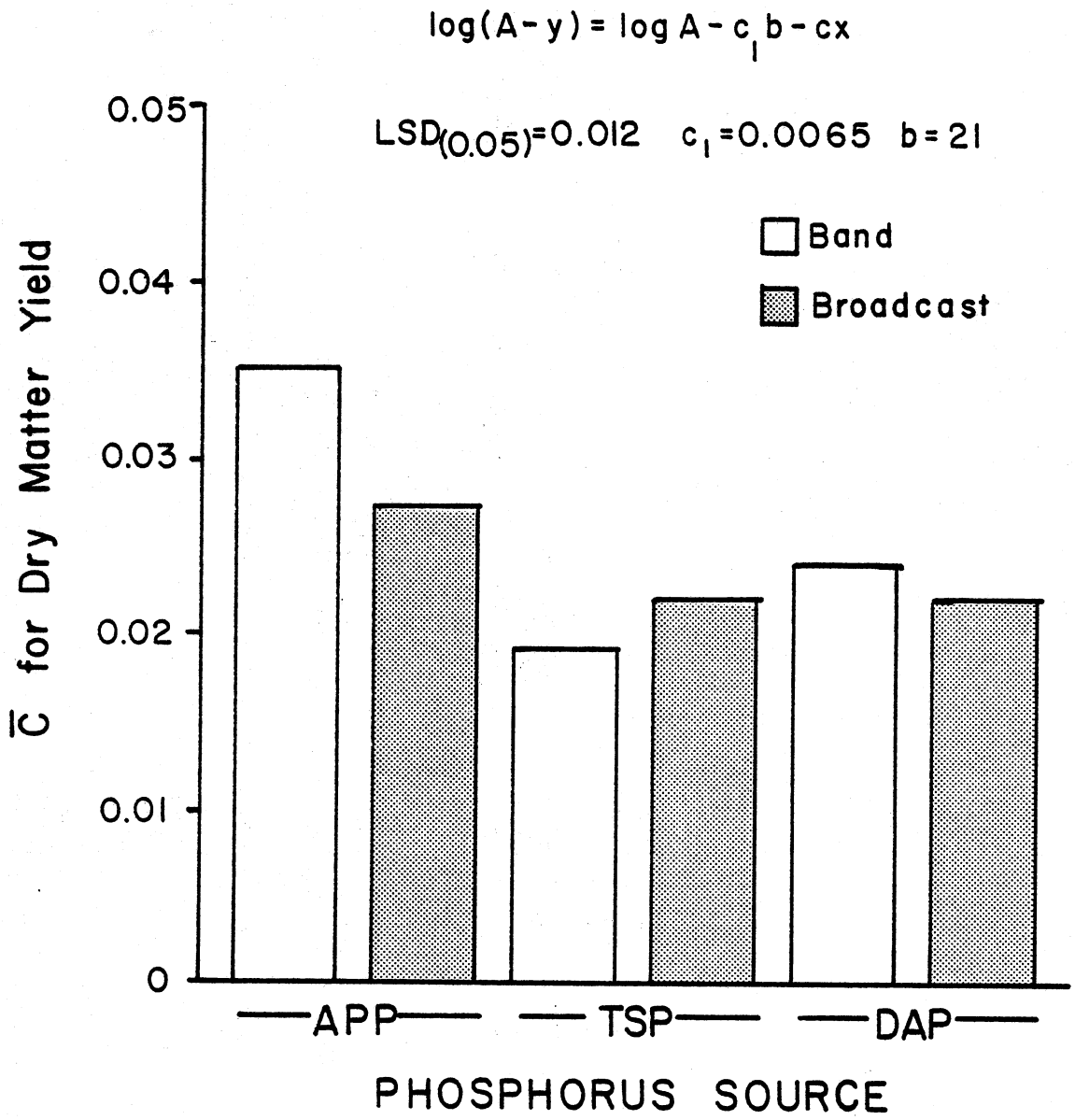
other sources and methods except banded DAP, while no differences between sources and methods were detected for the second harvest. Application UECs calculated for fertilizer rates from yields of the successive total of harvests one plus two indicated those for banded APP were higher than either broadcast DAP or both methods of TSP. For the third harvest, broadcast APP had higher efficiency coefficients than all others except those for banded APP. Successive totals of harvests one through three had application UECs which showed banded APP was superior to broadcast DAP and both banded and broadcast TSP. No differences between sources and methods were observed for UECs calculated for the fourth harvest. Application UECs for the total season harvest and interprestation of those showed that banded APP was superior to all except broadcast APP in terms of efficiency (Figure 15).

Nitrogen content in the forage was increased by P fertilization in both the first and fourth harvests. All P sources and methods of application increased percent N over check plot levels for the first harvest with banded TSP being superior to broadcast DAP as the only significant difference between sources and methods. Only banded TSP and both methods of DAP increased percent N above check-plot levels for the fourth harvest.

The second and fourth harvest data indicated that K content was affected by P fertilization for those harvests. All P sources and methods except banded APP resulted in higher K content for the second harvest and those for banded APP were lower than any other source and method. A "dilution effect" may be responsible for the lower K contents in fourth harvest forage from phosphorus application. All P treatments trended lower than check-plot levels but only banded APP and both banded and broadcast DAP averaged significantly lower than them.

FIGURE 15

Application Utilization Efficiency Coefficients from Total Dry-Matter Yields, Averaged Over Rates, for P Sources and Methods of Application, Nesmith Location, 1982



Phosphorus content was increased by all P sources and methods of application for all harvests as illustrated in Figure 16. No differences were observed between sources and methods for the first harvest but for the second harvest banded TSP caused lower P content than other sources and methods and both broadcast APP and broadcast DAP were superior to banded APP and either method of TSP. Banded APP was superior to banded TSP and banded DAP for the third harvest, and broadcast DAP was also better than banded DAP and either method of TSP. For the fourth harvest banded APP was superior to either method of TSP.

Application UECs were calculated for all four harvests' percent P contents and Figure 17 illustrates the UECs averaged over rates for the various sources and methods. First harvest application UECs showed banded APP's to be higher than those for broadcast TSP, but no other comparisons were significant. Broadcast APP was superior to banded TSP for the second harvest and interpretation of the third harvest data indicated that broadcast DAP and banded APP both had higher average UECs than banded DAP and either method of TSP. The fourth and final harvest showed banded APP to have higher coefficients than either banded or broadcast TSP.

Nitrogen uptake was increased by P fertilization for all individual and successive harvest totals at the Nesmith location in 1982. Nitrogen uptake data for P sources and methods averaged over rates is presented in Figure 18. All P sources and methods increased N uptake above check plot levels for all harvests. The first harvest showed broadcast APP superior to banded TSP, but second harvest values indicated no differences between P sources and methods. Banded APP resulted in higher N uptake than all sources and methods except banded DAP for the

FIGURE 16

Effects of P Sources and Application Methods on Percent Phosphorus Content in Alfalfa Forage, Averages Over Rates, Nesmith Location, 1982

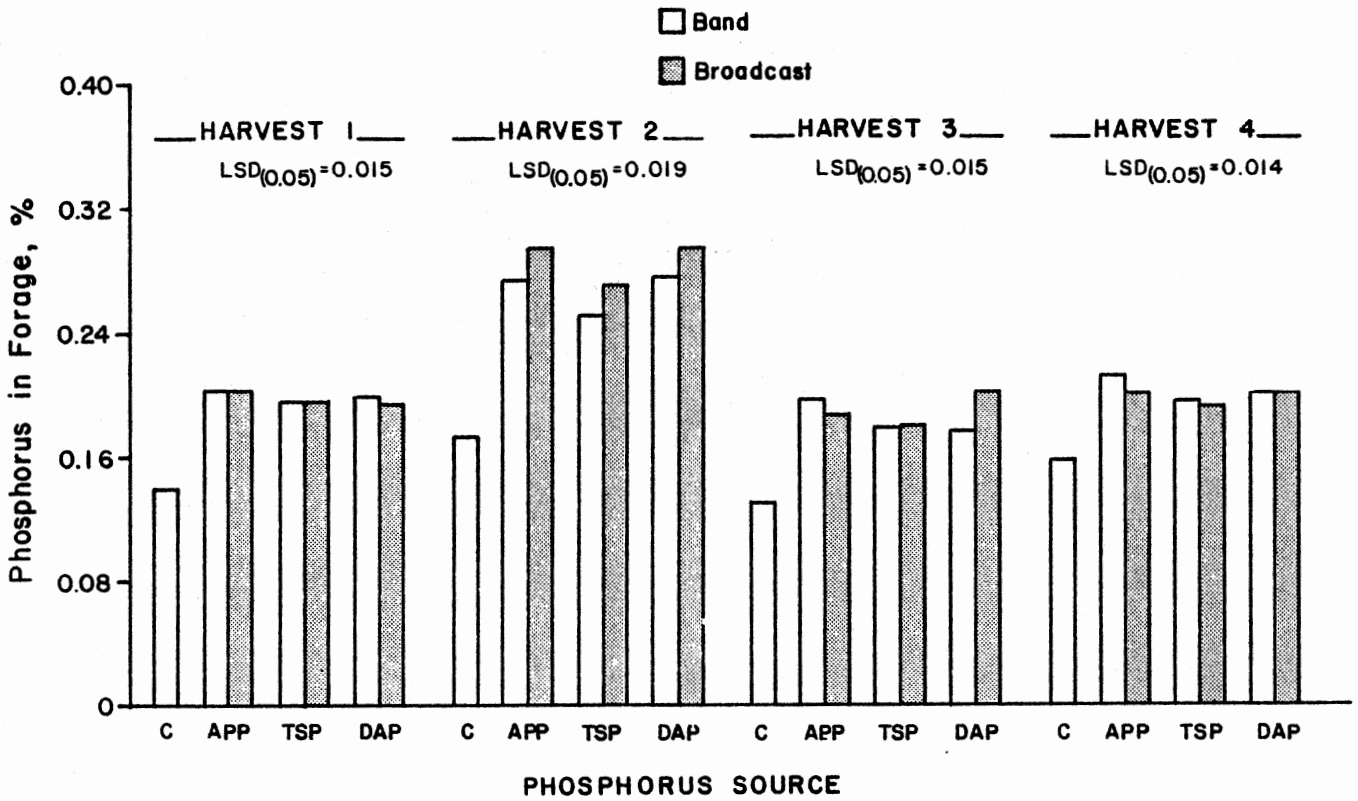


FIGURE 17

Application Utilization Efficiency Coefficients from Percent P in Forage, Averaged Over Rates, for P Sources and Methods of Application, Nesmith Location, 1982

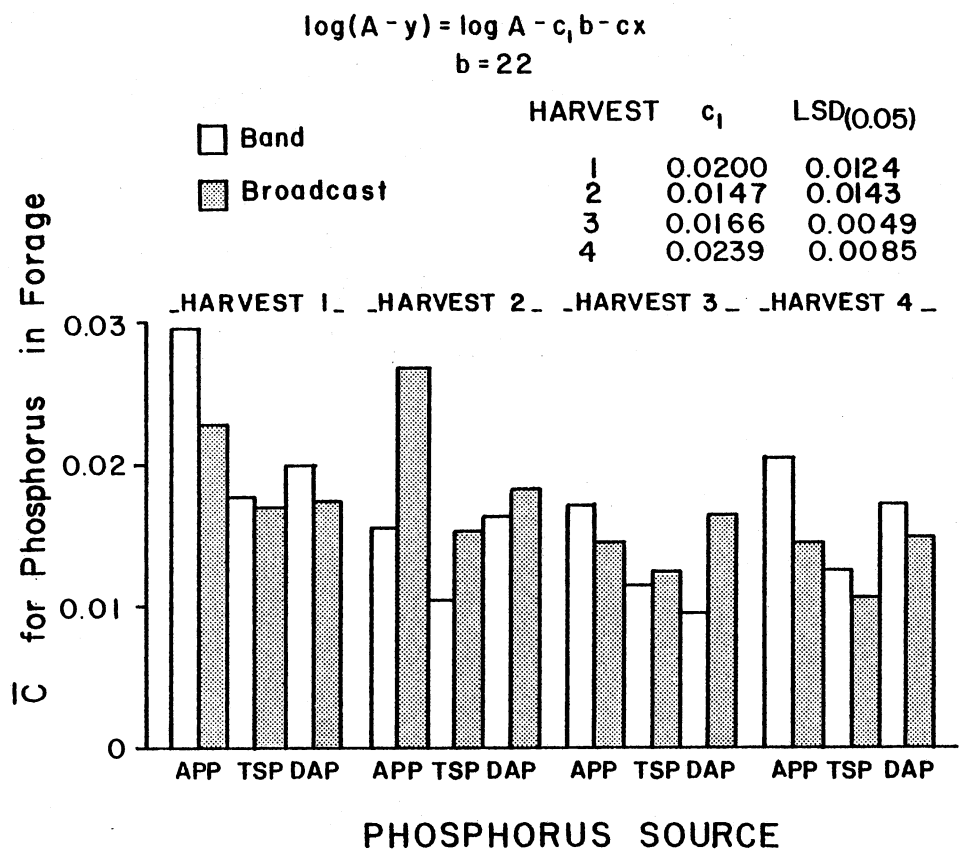
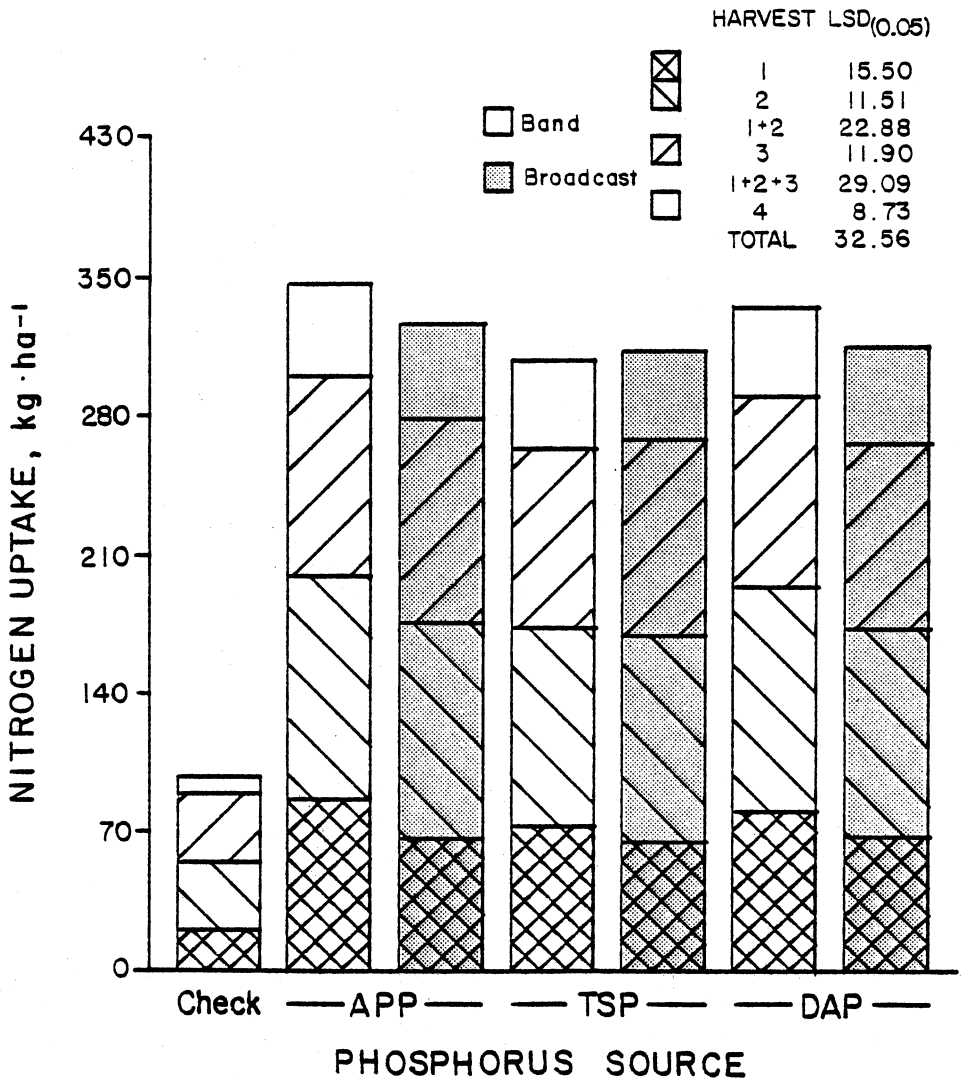


FIGURE 18

Effects of P Sources and Application Methods on Nitrogen Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1982



total of harvests one plus two, while banded APP was superior to all broadcast P sources for the third harvest. The successive total of the first three harvests indicated banded APP superior to broadcast DAP and both methods of applying TSP, but no differences were detected between sources and methods for the fourth harvest. Interpretation of the season total harvest showed banded APP to be superior in increasing N uptake by the crop over broadcast DAP and either banded or broadcast TSP.

Potassium uptake was also increased for every harvest by P fertilization (Figure 19). For all harvests, application of all P sources increased uptake of K over the check plots. Broadcast APP resulted in higher K uptake than broadcast DAP, banded APP, and banded TSP for the first harvest. No differences between P sources and methods were observed for the second individual and first plus second successive total harvest. Banded APP was superior to all sources and broadcast for the third harvest while the total of harvests one through three indicated broadcast APP was superior only to banded TSP. The fourth harvest indicated no significant differences between P sources and methods of application, and broadcast APP only produced higher potassium uptake than banded TSP for the season total.

Phosphorus uptake by P sources and methods averaged over rates of application are shown in Figure 20. All applications, regardless of source or method of application, increased P uptake by the crop for all individual and successive total harvests over check plot levels. Banded APP was superior to all other sources and methods except banded DAP for the first harvest, while second harvest values indicated banded TSP produced lower P uptake than all others except broadcast TSP and banded DAP. Total P uptake for the first two harvests showed banded APP was higher

FIGURE 19

Effects of P Sources and Application Methods on Potassium Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1982

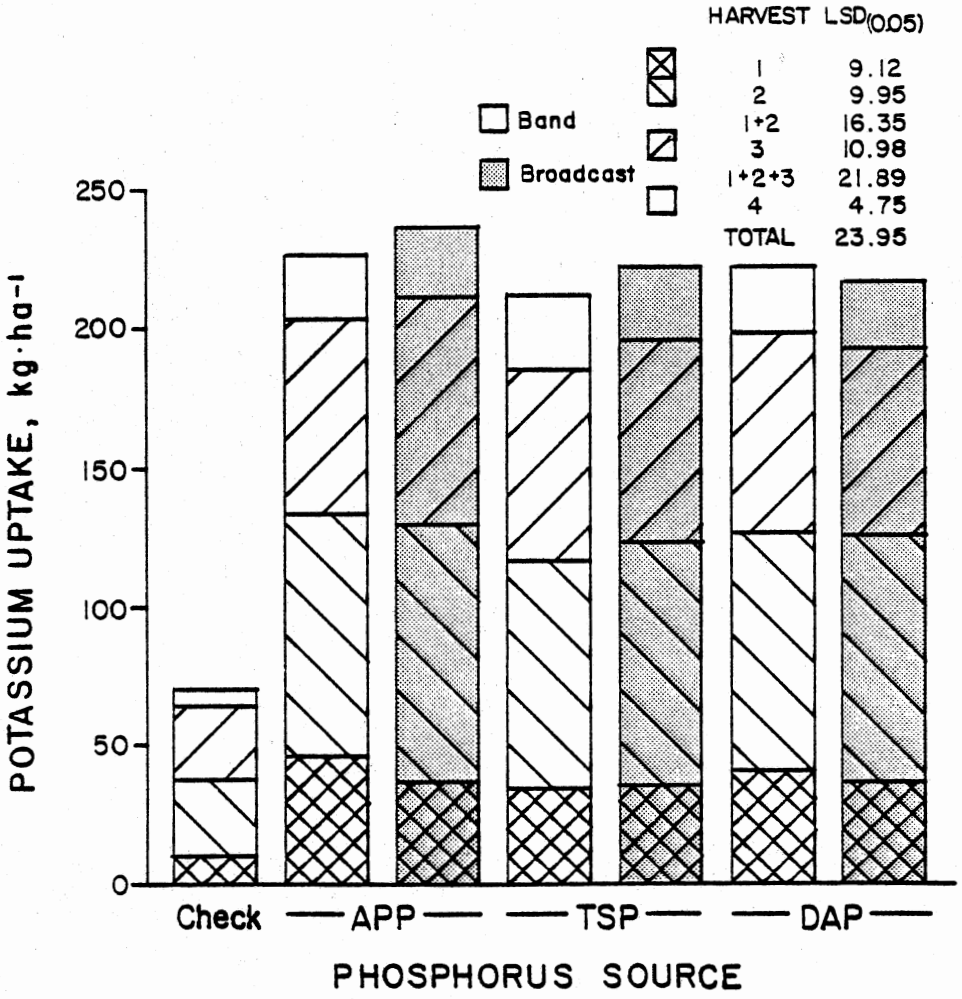
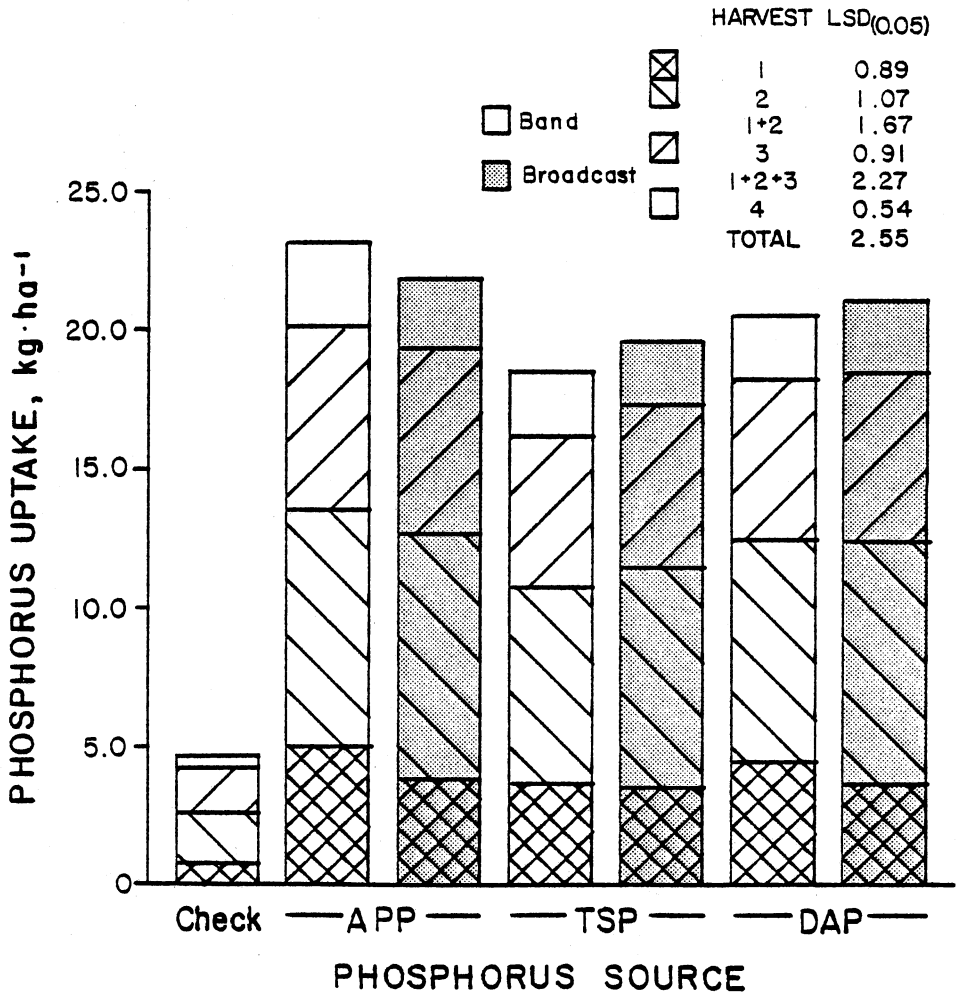


FIGURE 20

Effects of P Sources and Application Methods on Phosphorus Uptake by Alfalfa, Averages Over Rates, Nesmith Location, 1982



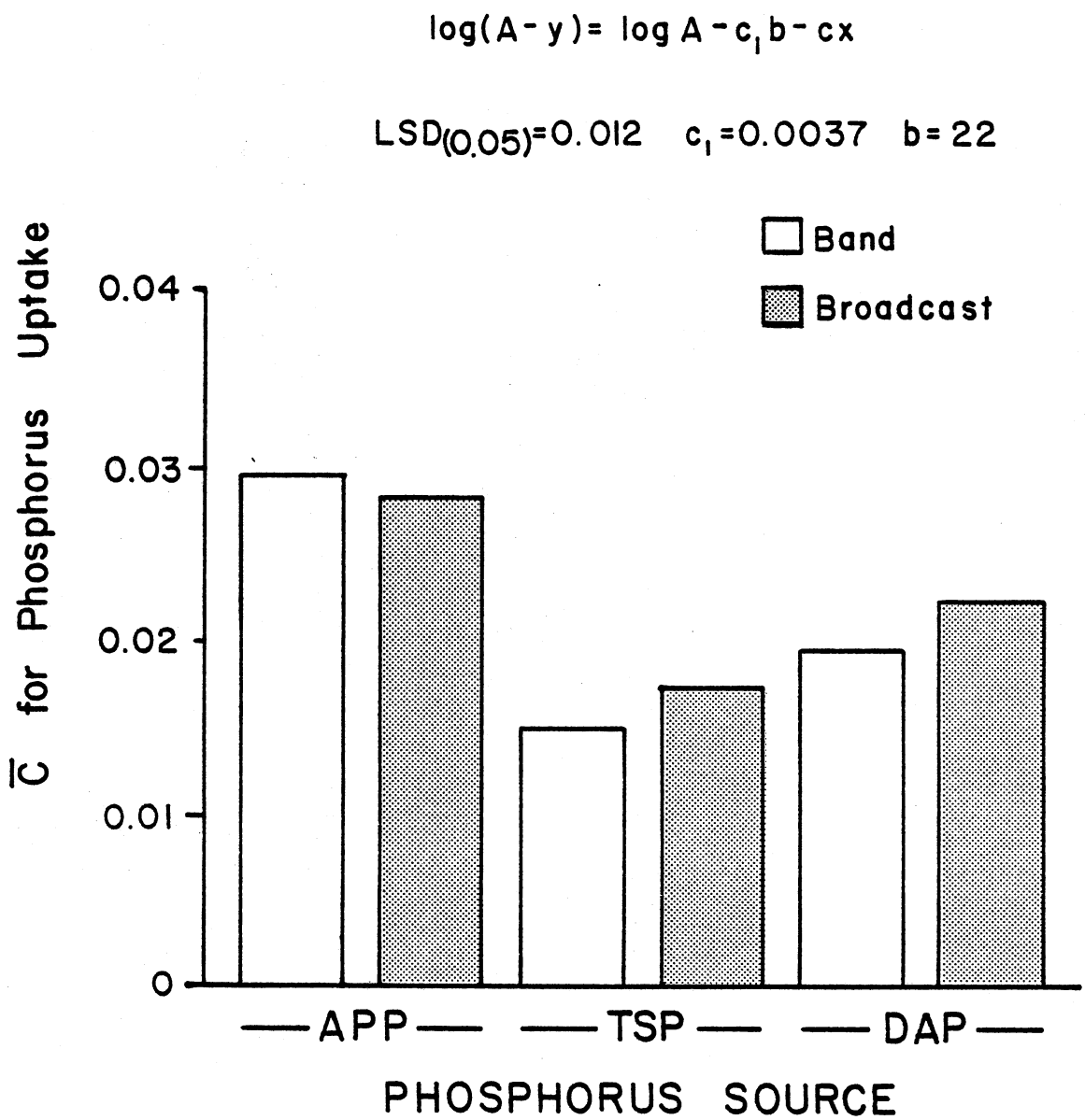
than either method of TSP and all source-method combinations except banded DAP and broadcast APP were superior to banded TSP. Phosphorus uptake in harvest three from both methods of APP application were superior to banded TSP and banded DAP. Successive totals of harvests one through three demonstrated that banded APP was superior to either method of TSP, while broadcast APP and broadcast DAP were higher than banded TSP in terms of P uptake. Banded APP's superiority over banded TSP was the only difference for the fourth harvest. Analysis of the season total P uptake resulted in banded APP being higher than either method of TSP, and both broadcast APP and broadcast DAP were superior to banded TSP.

Application UECs were calculated from P uptake values from each individual and successive total harvest. Banded APP averaged higher UECs over application rates than either method of TSP and broadcast DAP for the first harvest, but there were no differences detected among source-method combinations for the second harvest. Total P uptake application UECs for harvest one plus harvest two indicated banded APP's were higher than all other sources and methods but no other differences were observed. Third harvest average UECs showed that both banded and broadcast APP had higher values than all other comparisons, while the successive total for the first three harvests still illustrated only banded APP superior to all other sources and methods.

No significant differences in UEC's between sources and methods were detected for the fourth harvest. Season total phosphorus uptake application UECs averaged over P rates for the sources and methods are illustrated in Figure 21. Interpretation shows that for the season, banded APP had higher UECs than banded DAP and either method of TSP while broadcast APP had higher UECs than banded TSP.

FIGURE 21

Application Utilization Efficiency Coefficients from Phosphorus Uptake by Alfalfa, Averaged Over Rates, Nesmith Location, 1982



Treatment means for individual, successive, and season total harvests at the Nesmith North location in 1982 are reported in Table XII. Dry-matter yields were not affected for any harvest by the experimental treatments nor were N or K contents of the forage.

Phosphorus content in the forage for all four harvests when sources and methods are averaged over rates is shown in Figure 22. First harvest percent P was increased by all sources and methods above that in the check plots while broadcast DAP was superior to banded TSP and banded APP. All P sources and methods increased percent P over the check plots for the second harvest, but there were no differences between sources and methods. The third harvest data indicated no significant differences in P content. For the fourth harvest all sources and methods except banded and broadcast APP increased percent P above check-plot levels. Also, banded DAP resulted in higher P content than either method of APP application for the fourth harvest.

Percentage P application UECs only showed differences between sources and methods for the first harvest and are listed in Table XIII. Broadcast DAP averaged higher UECs than either banded or broadcast APP and banded TSP. Broadcast TSP also had higher values than did broadcast APP.

Nitrogen uptake was affected by P fertilization in the third harvest. Broadcast TSP and banded and broadcast DAP resulted in N uptakes greater than those from the check plots. Banded DAP was superior to banded TSP and broadcast APP while broadcast TSP was also better than broadcast rates of APP.

Potassium uptake was increased by P fertilization in the first and third harvests. All sources and methods increased K uptake over check-plot levels for the first harvest, but there were no differences in effects

TABLE XII

Effects of P Sources, Rates, and Application Methods on Dry-Matter Yield, Nutrient Composition, and Nutrient Uptake of Alfalfa, Nesmith North Location, 1982

Harvest 1							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.34	3.55	0.21	2.26	83.34	4.85	53.05
0:BD:APP	2.14	3.41	0.20	2.13	72.34	4.30	45.29
0:BD:TSP/DAP	1.77	3.61	0.19	2.12	64.50	3.43	37.88
20:BC:APP	2.61	3.63	0.22	2.31	94.99	6.00	60.61
30:BC:APP	2.42	3.52	0.21	2.24	85.01	5.02	54.89
40:BC:APP	3.35	3.48	0.25	2.31	116.82	8.40	78.04
20:BC:TSP	2.71	3.73	0.23	2.37	101.08	6.22	64.02
30:BC:TSP	2.81	3.73	0.24	2.34	104.75	6.78	66.42
40:BC:TSP	2.91	3.56	0.24	2.47	104.01	7.10	70.51
20:BC:DAP	2.97	3.66	0.24	2.34	108.56	7.11	69.94
30:BC:DAP	2.62	3.70	0.23	2.30	97.12	6.14	60.07
40:BC:DAP	2.82	3.66	0.25	2.35	102.68	6.92	66.40
20:BD:APP	2.65	3.71	0.22	2.28	98.54	5.73	60.34
30:BD:APP	2.55	3.73	0.23	2.33	95.32	5.86	59.74
40:BD:APP	2.71	3.78	0.23	2.27	102.32	6.30	61.56
20:BD:TSP	2.58	3.45	0.23	2.22	88.47	5.80	58.59
30:BD:TSP	2.59	3.64	0.23	2.25	94.31	6.02	58.19
40:BD:TSP	3.01	3.62	0.22	2.29	108.38	6.65	68.40
20:BD:DAP	2.37	3.58	0.22	2.16	85.31	5.30	50.56
30:BD:DAP	3.23	3.50	0.24	2.31	112.78	7.79	74.32
40:BD:DAP	2.69	3.55	0.24	2.20	95.72	6.48	59.34
0:BC:Check	2.41	3.45	0.22	2.23	83.55	5.23	53.40
$LSD_{.05}$	NS‡	NS	0.02	NS	NS	2.07	19.36

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Treatment	Harvest 2						
	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.78	3.66	0.26	2.69	101.57	7.35	75.07
0:BD:APP	2.70	3.68	0.29	2.69	98.78	7.73	72.13
0:BD:TSP/DAP	2.73	3.64	0.26	2.64	99.21	6.97	71.98
20:BC:APP	3.01	3.88	0.33	2.78	116.54	9.89	83.42
30:BC:APP	2.83	3.75	0.28	2.66	105.16	7.91	75.23
40:BC:APP	2.86	3.81	0.33	2.83	108.96	9.38	81.08
20:BC:TSP	2.93	3.59	0.32	2.80	105.54	9.41	81.98
30:BC:TSP	2.80	3.67	0.31	2.69	102.51	8.71	75.25
40:BC:TSP	2.87	3.77	0.32	2.77	108.62	9.13	79.40
20:BC:DAP	2.89	3.68	0.30	2.69	106.55	8.72	76.94
30:BC:DAP	2.95	3.66	0.28	2.61	108.48	8.33	77.08
40:BC:DAP	2.98	3.93	0.34	2.82	117.00	10.24	84.20
20:BD:APP	2.98	3.83	0.28	2.68	113.92	8.42	79.81
30:BD:APP	2.92	3.83	0.33	2.72	111.95	9.61	79.21
40:BD:APP	2.92	3.65	0.31	2.68	106.19	9.07	78.47
20:BD:TSP	2.85	3.85	0.31	2.81	109.85	8.74	80.09
30:BD:TSP	3.31	3.70	0.30	2.69	122.19	10.04	89.57
40:BD:TSP	3.21	3.63	0.29	2.64	116.25	9.38	84.16
20:BD:DAP	2.89	3.88	0.33	2.63	112.24	9.40	75.85
30:BD:DAP	3.08	3.72	0.31	2.67	114.35	9.37	82.18
40:BD:DAP	3.09	3.71	0.33	2.63	114.65	10.06	81.37
0:BC:Check	3.11	3.48	0.28	2.53	107.35	8.53	78.23
$LSD_{.05}$	NS‡	NS	0.04	NS	NS	1.74	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Harvest 1+2				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	5.13	184.91	12.20	128.12
0:BD:APP	4.84	171.12	12.02	117.43
0:BD:TSP/DAP	4.51	163.71	10.40	109.85
20:BC:APP	5.62	211.53	15.89	144.03
30:BC:APP	5.25	190.17	12.94	130.12
40:BC:APP	6.22	225.78	17.79	159.12
20:BC:TSP	5.65	206.62	15.63	146.00
30:BC:TSP	5.61	207.26	15.49	141.67
40:BC:TSP	5.78	212.64	16.22	149.91
20:BC:DAP	5.86	215.11	15.83	146.88
30:BC:DAP	5.56	205.60	14.48	137.15
40:BC:DAP	5.80	219.67	17.16	150.61
20:BD:APP	5.62	212.45	14.15	140.15
30:BD:APP	5.47	207.27	15.47	138.95
40:BD:APP	5.63	208.50	15.37	140.03
20:BD:TSP	5.43	198.32	14.53	138.68
30:BD:TSP	5.90	216.50	16.06	147.76
40:BD:TSP	6.21	224.63	16.03	152.56
20:BD:DAP	5.26	197.55	14.69	126.40
30:BD:DAP	6.31	227.13	17.15	156.49
40:BD:DAP	5.78	210.37	16.54	140.71
0:BC:Check	5.52	190.90	13.76	131.63
$LSD_{.05}$	NS‡	NS	2.88	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Harvest 3							
Treatment	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	3.64	2.70	0.19	2.27	98.24	6.74	82.65
0:BD:APP	3.43	2.61	0.19	2.31	89.31	6.43	79.14
0:BD:TSP/DAP	3.88	2.62	0.19	2.14	101.08	7.23	82.69
20:BC:APP	3.95	2.50	0.19	2.24	98.91	7.49	88.17
30:BC:APP	3.96	2.56	0.19	2.15	100.72	7.50	84.82
40:BC:APP	3.54	2.63	0.20	2.17	92.53	7.10	76.48
20:BC:TSP	4.13	2.58	0.20	2.13	106.19	8.32	87.78
30:BC:TSP	4.30	2.57	0.21	2.12	109.98	8.97	90.54
40:BC:TSP	4.27	2.65	0.21	2.20	113.01	9.08	93.89
20:BC:DAP	4.02	2.64	0.21	2.19	105.14	8.55	88.57
30:BC:DAP	4.00	2.62	0.20	2.23	105.27	8.17	89.24
40:BC:DAP	4.90	2.67	0.22	2.29	128.85	10.74	111.93
20:BD:APP	4.03	2.59	0.19	2.20	103.87	7.49	88.87
30:BD:APP	4.28	2.74	0.22	2.25	117.13	9.19	95.50
40:BD:APP	3.67	2.66	0.20	2.19	104.29	7.75	85.88
20:BD:TSP	3.98	2.53	0.18	2.14	100.00	7.05	84.69
30:BD:TSP	4.30	2.51	0.21	2.20	111.18	9.28	97.75
40:BD:TSP	3.70	2.66	0.21	2.17	92.87	7.24	75.08
20:BD:DAP	3.41	2.96	0.21	2.31	105.97	7.54	82.48
30:BD:DAP	3.90	3.04	0.23	2.26	119.20	9.11	87.59
40:BD:DAP	4.19	2.95	0.23	2.37	126.04	9.79	101.21
0:BC:Check	3.67	2.65	0.19	2.33	100.43	7.26	88.14
$LSD_{.05}$	NS‡	NS	NS	NS	20.40	1.58	15.71

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Harvest 1+2+3				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	8.77	283.15	18.95	210.76
0:BD:APP	8.27	260.43	18.45	196.57
0:BD:TSP/DAP	8.39	264.78	17.63	192.54
20:BC:APP	9.57	310.44	23.38	232.20
30:BC:APP	9.20	290.88	20.43	214.94
40:BC:APP	9.75	318.31	24.89	235.60
20:BC:TSP	9.78	312.80	23.95	233.78
30:BC:TSP	9.91	317.24	24.46	232.21
40:BC:TSP	10.05	325.64	25.30	243.80
20:BC:DAP	9.88	320.25	24.38	235.45
30:BC:DAP	9.56	310.87	22.64	226.39
40:BC:DAP	10.70	348.52	27.91	262.54
20:BD:APP	9.65	316.32	21.63	229.03
30:BD:APP	9.75	324.39	24.66	234.45
40:BD:APP	9.29	286.72	21.18	204.43
20:BD:TSP	9.42	273.32	19.82	202.20
30:BD:TSP	10.20	299.88	23.02	221.07
40:BD:TSP	9.91	294.28	21.46	208.87
20:BD:DAP	8.66	277.03	20.34	188.26
30:BD:DAP	10.21	316.53	23.99	222.19
40:BD:DAP	9.97	304.90	23.88	216.62
0:BC:Check	9.19	266.22	19.21	197.73
$LSD_{.05}$	NS‡	NS	4.99	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant difference between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Treatment	Harvest 4						
	Forage	Composition			Uptake		
Rate:Method†:Source	Yield	N	P	K	N	P	K
	$Mg \cdot ha^{-1}$	%			$kg \cdot ha^{-1}$		
0:BC:Check	2.19	3.02	0.23	2.37	67.29	5.27	53.93
0:BD:APP	2.14	3.03	0.20	2.24	60.34	4.08	44.58
0:BD:TSP/DAP	2.18	2.99	0.19	2.44	65.96	4.28	53.33
20:BC:APP	2.25	3.03	0.23	2.19	65.25	5.01	47.29
30:BC:APP	2.37	2.83	0.20	2.17	63.10	4.62	48.19
40:BC:APP	2.36	2.74	0.24	2.26	65.20	5.72	53.64
20:BC:TSP	2.36	2.58	0.21	2.17	61.38	5.12	51.80
30:BC:TSP	2.56	3.16	0.26	2.23	76.19	6.14	53.60
40:BC:TSP	2.62	2.82	0.24	2.29	67.95	5.80	55.32
20:BC:DAP	2.45	2.87	0.20	2.18	76.47	5.38	58.93
30:BC:DAP	2.41	3.01	0.24	2.38	82.70	6.67	65.31
40:BC:DAP	2.65	3.29	0.26	2.28	93.20	7.47	64.10
20:BD:APP	2.49	2.73	0.20	2.13	76.20	5.46	59.65
30:BD:APP	2.36	2.95	0.23	2.32	61.19	4.79	47.44
40:BD:APP	2.40	3.09	0.24	2.35	76.31	5.82	58.24
20:BD:TSP	2.52	3.13	0.25	2.47	76.81	6.08	60.54
30:BD:TSP	2.49	2.78	0.23	2.28	70.58	5.83	57.87
40:BD:TSP	2.46	2.90	0.23	2.29	68.03	5.52	55.20
20:BD:DAP	2.40	2.95	0.24	2.39	64.61	5.30	53.20
30:BD:DAP	2.51	2.45	0.25	2.37	67.84	6.94	66.55
40:BD:DAP	2.60	2.84	0.25	2.17	75.04	6.80	58.04
0:BC:Check	2.22	2.90	0.21	2.24	63.08	4.52	47.99
$LSD_{.05}$	NS‡	NS	0.03	NS	NS	NS	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

TABLE XII
(Continued)

Total Harvests				
Treatment	Forage	Uptake		
Rate:Method†:Source	Yield	N	P	K
	$Mg \cdot ha^{-1}$	$kg \cdot ha^{-1}$		
0:BC:Check	10.96	316.79	21.58	237.73
0:BD:APP	10.41	290.60	20.49	218.86
0:BD:TSP/DAP	10.57	297.76	19.77	219.21
20:BC:APP	11.82	343.07	25.88	255.85
30:BC:APP	11.58	322.44	22.74	239.04
40:BC:APP	12.11	350.91	27.75	262.42
20:BC:TSP	12.14	343.07	25.88	255.85
30:BC:TSP	12.47	355.33	27.53	259.01
40:BC:TSP	12.67	359.62	28.20	271.46
20:BC:DAP	12.32	358.49	27.07	264.91
30:BC:DAP	11.98	352.22	25.98	259.05
40:BC:DAP	13.35	395.12	31.64	294.59
20:BD:APP	12.14	354.42	24.36	258.85
30:BD:APP	12.12	354.99	27.05	258.85
40:BD:APP	11.67	324.87	24.09	233.55
20:BD:TSP	11.97	311.72	22.86	232.47
30:BD:TSP	12.68	335.18	25.93	250.01
40:BD:TSP	12.38	328.30	24.22	236.47
20:BD:DAP	11.06	309.33	23.00	214.86
30:BD:DAP	12.72	350.45	27.46	255.47
40:BD:DAP	12.57	342.42	27.28	245.64
0:BC:Check	11.41	297.76	21.46	221.72
$LSD_{.05}$	NS‡	NS	NS	NS

†BD = Banded; BC = Broadcast

‡NS denotes no significant differences between treatments at $\alpha = 0.05$

FIGURE 22

Effects of P Sources and Application Methods on Percent Phosphorus Content in Alfalfa Forage, Averages Over Rates, Nesmith North Location, 1982

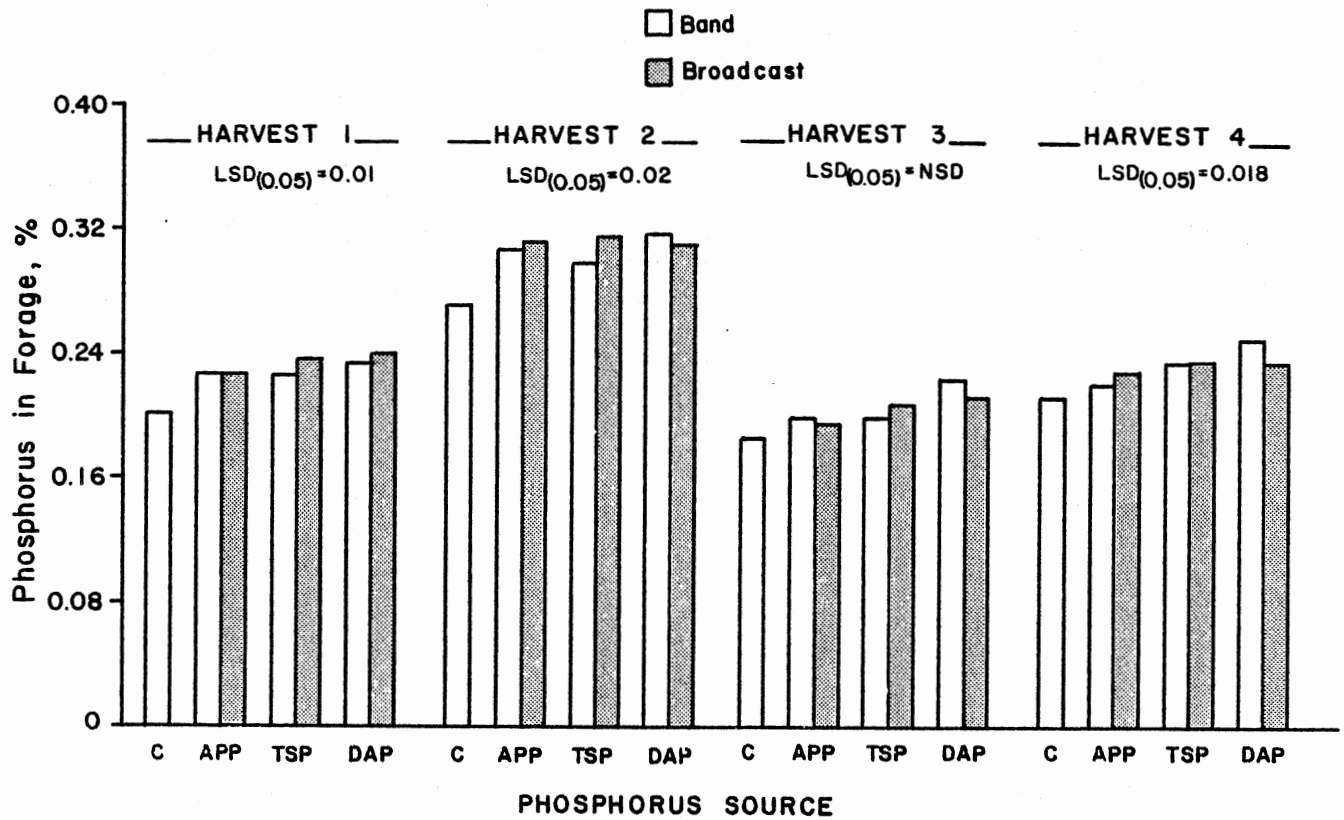


TABLE XIII

Application Utilization Efficiency Coefficients (UECs) for Significant Parameters at the Nesmith North Location, 1982

Treatment	%P
Rate:Method†:Source	Harvest 1
20:BC:APP	.0116
30:BC:APP	.0006
40:BC:APP	.0061‡
20:BC:TSP	.0169
30:BC:TSP	.0282
40:BC:TSP	.0179
20:BC:DAP	.0314
30:BC:DAP	.0152
40:BC:DAP	.0252
20:BD:APP	.0063
30:BD:APP	.0127
40:BD:APP	.0090
20:BD:TSP	.0142
30:BD:TSP	.0145
40:BD:TSP	.0041
20:BD:DAP	.0106
30:BD:DAP	.0231
40:BD:DAP	.0179
S.E.	.0084

†BD = Banded; BC = Broadcast

‡Average of c for associated rates

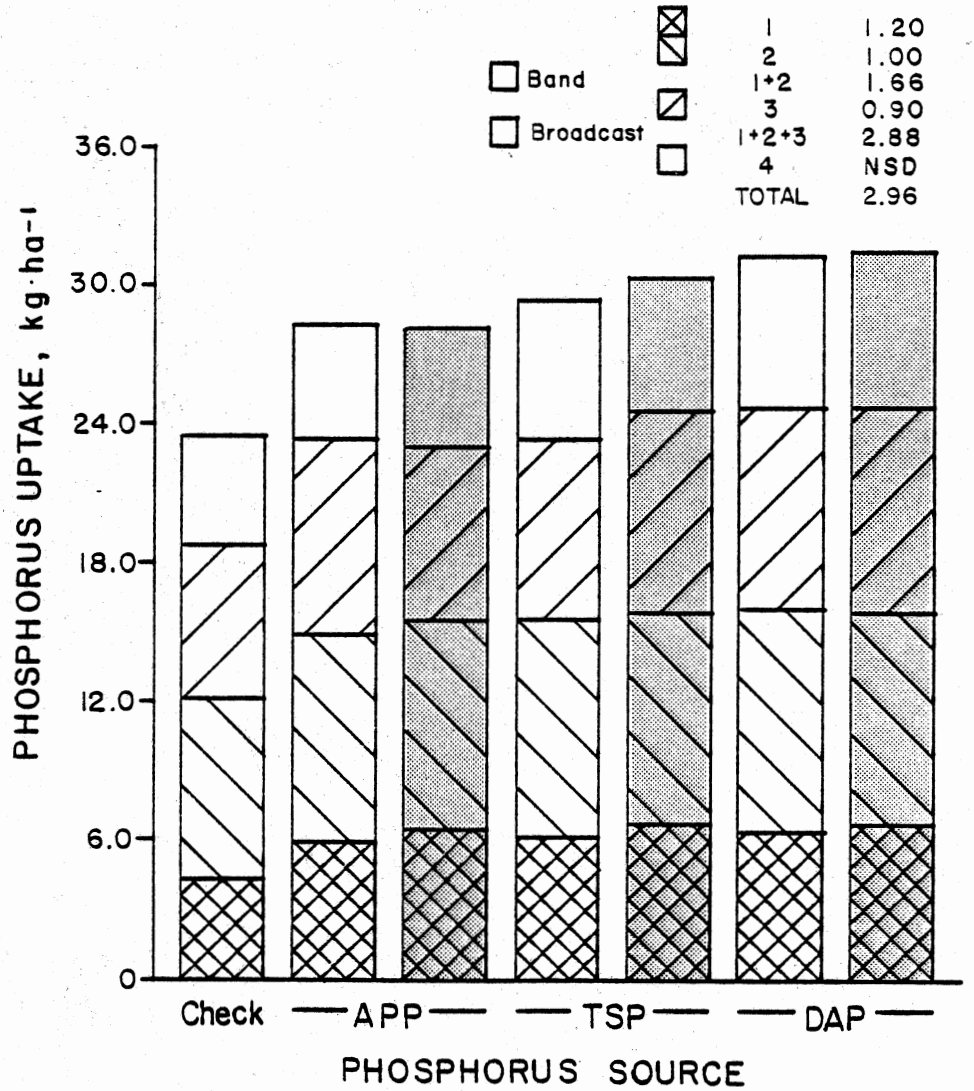
between sources and methods. For the third harvest, broadcast DAP was superior to banded TSP and broadcast APP and was the only source and method which increased K uptake over the check plots.

Phosphorus uptake was increased by P fertilization for all individual and successive total harvests except the fourth (Figure 23). All sources and methods increased P uptake over the check plots except for the third harvest where all but broadcast APP did so. The third and total harvests were the only two harvests in which there were differences in P uptake between sources and methods. Third harvest P uptake data indicated that broadcast DAP was superior to both banded and broadcast APP and banded TSP and that both broadcast TSP and banded DAP were bette th n b nded TSP and broadcast APP. Season total P uptake showed broadcast DAP resulted in higher nutrient assimilation and removal than either method of APP and banded DAP was superior to broadcast APP.

Analysis of P uptake application UECs for all harvests indicated no significant differences in average utilization efficiency coefficients for the various sources and methods of application.

FIGURE 23

Effects of P Sources and Application Methods on Phosphorus Uptake by Alfalfa, Averages Over Rates, Nesmith North Location, 1982



CHAPTER VI

SUMMARY AND CONCLUSION

For all locations, implements used to make subsurface applications of P fertilizer in no way appreciably affected dry-matter yield or nutrient composition of established alfalfa, which is contrary to results from research conducted in Canada by Leyshon (1982). The locations employed had differing Bray P-1 soil P levels and various stand ages.

The first two harvests of four possible were measured at the McGuffin location in 1981. The percent sufficiency soil P level there was near 98 percent with a uniform stand of middle-aged alfalfa. Total yields from those two harvests were increased by P applications, but the check plots were producing 81 percent and 87 percent of the maximum yields obtained for the first and total harvests respectively, therefore, careful consideration of these as meaningful increases should be made. Percent P in the forage and P uptake by the crop was increased consistently by banded applications of APP. Banded APP also trended toward higher UECs than most other P sources and methods for percent P and P uptake.

The first two harvests of four were measured at the Wade location. The stand of alfalfa there was an old one with a lower plant density when compared to other locations in the study and had almost a 94 percent Bray P-1 soil P sufficiency level. Even with this lower soil P level, dry-matter yields were not significantly increased by P fertilization for the harvests taken. Banded APP resulted in the highest percent P

and P uptake for the first harvest but was not statistically superior to all sources and methods. Banded APP also had the highest application UEC but again was not statistically better than all other combinations of P sources and application methods.

In 1981, the Nesmith location had a low Bray P-1 soil P index at approximately 65 percent sufficiency for alfalfa production while the crop was seeded the fall just prior to the late winter fertilization treatments. The combination of low soil P and young stand age provided marked response to the phosphorus applications. Dry-matter yields were increased for all harvests by P fertilization. All P sources increased season total yields, but banded APP established its superiority over the others early and persisted the entire season. This fact is also supported by the application UECs calculated for yields from the various sources and methods with banded APP having higher UECs than others when averaged over rates for all harvests. Banded APP also increased percent P in the forage and P uptake by the crop over other sources even though all P sources increased P content and P uptake over check-plot levels. Banded DAP was producing substantial increases over some other sources and methods for these parameters also.

The second crop year, the experiment was repeated at the 1981 Nesmith location and a new location was initiated. Results from this repeated Nesmith location were again dramatic in terms of growth response to applied P, but treatment differences were somewhat diminished in intensity compared to the previous year. There was still a definite response to P fertilization, but the superiority of banded

APP to all other sources and methods was diminished to superiority over fewer of the source-method combinations.

Season total forage yield indicated banded APP was superior only to broadcast DAP and banded TSP, but in terms of application UECs for yield, banded APP still had higher coefficients than all sources and methods except broadcast APP.

Percent P and P uptake were also significantly affected by P fertilization with APP, particularly banded APP, and banded DAP resulting in the higher values for those parameters throughout the cropping season.

It would be impossible to determine from these experiments whether residual P from the previous year had any effects on the second year's results obtained.

The final location in the study was another middle-aged, very dense and uniform stand of alfalfa with an available soil P level at approximately 80 percent.

Dry-matter yields were not affected by phosphorus fertilization for any harvest. Possible reasons for this include the relatively high plant density and past P fertilization which helped maintain plants with vigorous and extensive root systems which were obviously extracting P for growth from other soil areas than the application zones.

Phosphorus fertilization generally increased P content in the forage, but no differences were detected between sources for most harvests. For this location DAP was the P source which generally produced the higher P contents and P uptakes over other sources and methods. In terms of application UECs, no differences between P sources and methods were detected for either P content or P uptake.

In conclusion, these studies have stimulated many questions and some of these will hopefully be worthy of further investigation. The apparent superiority of subsurface-placed ammonium polyphosphate on newly established alfalfa when the soil P index is low seems to be one of the more intriguing areas for further investigation.

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APPENDIXES

APPENDIX A

FORAGE HARVEST DATES AND PRECIPITATION RECEIVED WITH DEVIATIONS FROM LONG-TERM AVERAGES

Forage Harvest Dates and Precipitation Received
with Deviations from Long Term Averages

Month	1981 Harvest Date	1981 Rainfall	1981 Deviation	1982 Harvest Date	1982 Rainfall	1982 Deviation
		cm			cm	
Jan		0.43	-2.03		3.10	0.64
Feb†		1.37	-1.02		0.86	-1.52
Mar‡		6.65	3.56		4.98	1.88
Apr‡	4-30	9.75	3.61		1.30	-4.85
May‡		9.91	-2.51	5-10	19.46	7.04
June‡	6-16	13.03	6.17	6-09	27.79	20.93
July‡	7-23	4.67	-0.36	7-19	5.94	0.91
Aug‡		7.51	2.31	8-16	0.28	-4.93
Sept‡	9-04	1.32	-4.17		6.58	1.09
Oct		8.97	3.18		0.51	-5.28
Nov		4.75	2.67		5.18	3.10
Dec		0.53	-2.18		0	-2.72
TOTAL		68.91	9.22		75.97	16.28

†Fertilizer Applied

‡Months of Alfalfa's Active growth

APPENDIX B

PRINTOUT OF CALCULATED DATA

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1	MA14	MCGUFFIN - 1981	1	1	1584	3.82	0.376	2.49	60.509	5.95584	39.4416
2	MA14	MCGUFFIN - 1981	1	2	1635	3.66	0.355	2.47	59.841	5.80425	40.3845
3	MA14	MCGUFFIN - 1981	1	3	1658	3.49	0.315	2.36	57.864	5.22270	39.1288
4	MA14	MCGUFFIN - 1981	1	4	1581	4.11	0.383	2.64	64.979	6.05523	41.7384
5	MA14	MCGUFFIN - 1981	1	5	1807	3.64	0.400	2.46	65.775	7.22800	44.4522
6	MA14	MCGUFFIN - 1981	1	6	1571	4.08	0.396	2.70	64.097	6.22116	42.4170
7	MA14	MCGUFFIN - 1981	1	7	1830	3.98	0.392	2.52	72.834	7.17360	46.1160
8	MA14	MCGUFFIN - 1981	1	8	1787	3.79	0.386	2.45	67.727	6.89782	43.7815
9	MA14	MCGUFFIN - 1981	1	9	1955	3.90	0.393	2.57	76.245	7.68315	50.2435
10	MA14	MCGUFFIN - 1981	1	10	1602	3.82	0.370	2.69	61.196	5.92740	43.0938
11	MA14	MCGUFFIN - 1981	1	11	1283	3.90	0.385	2.57	50.037	4.93955	32.9731
12	MA14	MCGUFFIN - 1981	1	12	1662	4.37	0.431	2.67	72.629	7.16322	44.3754
13	MA14	MCGUFFIN - 1981	1	13	1340	3.98	0.375	2.51	53.332	5.02500	33.6340
14	MA14	MCGUFFIN - 1981	1	14	1633	4.09	0.414	2.45	66.790	6.76062	40.0085
15	MA14	MCGUFFIN - 1981	1	15	1937	3.93	0.420	2.33	76.124	8.13540	45.1321
16	MA14	MCGUFFIN - 1981	1	16	1729	3.78	0.352	1.59	65.356	6.08608	27.4911
17	MA14	MCGUFFIN - 1981	1	17	1836	3.61	0.346	2.60	66.280	6.35256	47.7360
18	MA14	MCGUFFIN - 1981	1	18	2011	4.20	0.380	2.20	84.462	7.64180	44.2420
19	MA14	MCGUFFIN - 1981	1	19	1746	4.05	0.391	2.76	70.713	6.82686	48.1896
20	MA14	MCGUFFIN - 1981	1	20	2414	3.99	0.401	2.54	96.319	9.68014	61.3156
21	MA14	MCGUFFIN - 1981	1	21	1736	4.17	0.408	2.54	72.391	7.08288	44.0944
22	MA14	MCGUFFIN - 1981	1	22	1307	4.33	0.350	2.34	56.593	4.57450	30.5838
23	MA14	MCGUFFIN - 1981	2	1	1574	4.04	0.322	2.48	63.590	5.06828	39.0352
24	MA14	MCGUFFIN - 1981	2	2	1694	4.02	0.322	2.38	68.099	5.45468	40.3172
25	MA14	MCGUFFIN - 1981	2	3	1273	3.92	0.323	2.49	49.902	4.11179	31.6977
26	MA14	MCGUFFIN - 1981	2	4	2162	4.02	0.348	2.40	86.912	7.52376	51.8880
27	MA14	MCGUFFIN - 1981	2	5	1741	3.77	0.362	2.58	65.636	6.30242	44.9178
28	MA14	MCGUFFIN - 1981	2	6	1783	3.99	0.358	2.68	71.142	6.38314	47.7844
29	MA14	MCGUFFIN - 1981	2	7	2320	3.77	0.353	2.64	87.464	8.18960	61.2480
30	MA14	MCGUFFIN - 1981	2	8	2027	4.08	0.332	2.93	82.702	6.72964	59.3911
31	MA14	MCGUFFIN - 1981	2	9	1689	3.42	0.361	2.86	57.764	6.09729	48.3054
32	MA14	MCGUFFIN - 1981	2	10	1727	4.08	0.358	2.55	70.462	6.18266	44.0385
33	MA14	MCGUFFIN - 1981	2	11	1760	4.37	0.342	2.35	76.912	6.01920	41.3600
34	MA14	MCGUFFIN - 1981	2	12	1821	4.29	0.368	2.84	78.121	6.70128	51.7164
35	MA14	MCGUFFIN - 1981	2	13	1877	4.35	0.405	2.47	81.649	7.60185	46.3619
36	MA14	MCGUFFIN - 1981	2	14	2072	4.31	0.388	2.22	89.303	8.03936	45.9984
37	MA14	MCGUFFIN - 1981	2	15	1798	4.21	0.443	2.60	75.696	7.96514	46.7480
38	MA14	MCGUFFIN - 1981	2	16	2513	4.10	0.326	2.53	103.033	8.19238	63.5789
39	MA14	MCGUFFIN - 1981	2	17	2304	4.17	0.371	2.81	96.077	8.54784	64.7424
40	MA14	MCGUFFIN - 1981	2	18	1874	3.91	0.363	2.47	73.273	6.80262	46.2878
41	MA14	MCGUFFIN - 1981	2	19	1963	4.06	0.346	2.39	79.698	6.79198	46.9157
42	MA14	MCGUFFIN - 1981	2	20	2061	4.29	0.387	2.66	88.417	7.97607	54.8226
43	MA14	MCGUFFIN - 1981	2	21	1811	3.95	0.387	2.72	71.534	7.00857	49.2592
44	MA14	MCGUFFIN - 1981	2	22	2002	4.43	0.347	2.30	88.689	6.94694	46.0460
45	MA14	MCGUFFIN - 1981	3	1	1660	3.81	0.324	2.39	63.246	5.37840	39.6740
46	MA14	MCGUFFIN - 1981	3	2	1574	4.30	0.330	1.86	67.682	5.19420	29.2764
47	MA14	MCGUFFIN - 1981	3	3	1771	4.04	0.318	2.09	71.548	5.63178	37.0139
48	MA14	MCGUFFIN - 1981	3	4	1978	3.87	0.321	2.28	76.549	6.34938	45.0984
49	MA14	MCGUFFIN - 1981	3	5	1590	3.72	0.364	2.28	59.148	5.78760	36.2520
50	MA14	MCGUFFIN - 1981	3	6	1427	3.76	0.366	2.38	53.655	5.22282	33.9626
51	MA14	MCGUFFIN - 1981	3	7	1524	3.72	0.334	2.31	56.693	5.09016	35.2044
52	MA14	MCGUFFIN - 1981	3	8	1427	3.87	0.348	1.96	55.225	4.96596	27.9692
53	MA14	MCGUFFIN - 1981	3	9	1739	3.88	0.356	2.48	67.473	6.19084	43.1272
54	MA14	MCGUFFIN - 1981	3	10	1788	4.06	0.345	2.33	72.593	6.16860	41.6604

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
55	MA14	MCGUFFIN - 1981	3	11	1830	3.82	0.415	2.30	69.906	7.5945	42.0900
56	MA14	MCGUFFIN - 1981	3	12	2282	3.94	0.377	1.89	89.911	8.6031	43.1298
57	MA14	MCGUFFIN - 1981	3	13	1527	4.21	0.366	2.60	64.287	5.5888	39.7020
58	MA14	MCGUFFIN - 1981	3	14	2638	4.29	0.416	2.72	113.170	10.9741	71.7536
59	MA14	MCGUFFIN - 1981	3	15	2153	3.98	0.409	2.48	85.689	8.8058	53.3944
60	MA14	MCGUFFIN - 1981	3	16	2381	4.08	0.367	2.69	97.145	8.7383	64.0489
61	MA14	MCGUFFIN - 1981	3	17	1680	4.12	0.345	1.83	69.216	5.7960	30.7440
62	MA14	MCGUFFIN - 1981	3	18	1989	4.09	0.360	2.37	81.350	7.1604	47.1393
63	MA14	MCGUFFIN - 1981	3	19	1593	4.18	0.352	2.34	66.587	5.6074	37.2762
64	MA14	MCGUFFIN - 1981	3	20	2338	3.73	0.370	2.36	87.207	8.6506	55.1768
65	MA14	MCGUFFIN - 1981	3	21	1691	3.70	0.389	2.57	62.567	6.5780	43.4587
66	MA14	MCGUFFIN - 1981	3	22	1384	4.16	0.307	2.40	57.574	4.2489	33.2160
67	MA14	MCGUFFIN - 1981	4	1	1249	4.22	0.348	2.03	52.708	4.3465	25.3547
68	MA14	MCGUFFIN - 1981	4	2	1557	3.64	0.298	2.53	56.675	4.6399	39.3921
69	MA14	MCGUFFIN - 1981	4	3	1981	4.00	0.318	2.47	79.240	6.2996	48.9307
70	MA14	MCGUFFIN - 1981	4	4	2262	4.06	0.365	2.72	91.837	8.2563	61.5264
71	MA14	MCGUFFIN - 1981	4	5	1941	4.26	0.385	2.73	82.687	7.4728	52.9893
72	MA14	MCGUFFIN - 1981	4	6	1981	3.76	0.391	3.00	74.486	7.7457	59.4300
73	MA14	MCGUFFIN - 1981	4	7	3101	3.98	0.319	2.33	123.420	9.8922	72.2533
74	MA14	MCGUFFIN - 1981	4	8	2179	3.91	0.327	2.52	85.199	7.1253	54.9108
75	MA14	MCGUFFIN - 1981	4	9	1751	3.61	0.341	2.51	63.211	5.9709	43.9501
76	MA14	MCGUFFIN - 1981	4	10	1589	3.91	0.349	2.56	62.130	5.5456	40.6784
77	MA14	MCGUFFIN - 1981	4	11	1786	3.77	0.338	2.85	67.332	6.0367	50.9010
78	MA14	MCGUFFIN - 1981	4	12	1862	3.81	0.366	2.42	70.942	6.8149	45.0604
79	MA14	MCGUFFIN - 1981	4	13	2032	3.94	0.385	2.74	80.061	7.8232	55.6768
80	MA14	MCGUFFIN - 1981	4	14	2086	3.93	0.395	2.70	81.980	8.2397	56.3220
81	MA14	MCGUFFIN - 1981	4	15	2195	3.89	0.438	2.70	85.385	9.6141	59.2650
82	MA14	MCGUFFIN - 1981	4	16	2176	3.57	0.300	2.95	77.683	6.5280	64.1920
83	MA14	MCGUFFIN - 1981	4	17	1835	4.10	0.329	2.43	75.235	6.0371	44.5905
84	MA14	MCGUFFIN - 1981	4	18	1701	4.01	0.345	2.51	68.210	5.8684	42.6951
85	MA14	MCGUFFIN - 1981	4	19	1943	3.90	0.371	2.68	75.777	7.2085	52.0724
86	MA14	MCGUFFIN - 1981	4	20	2210	3.70	0.339	2.49	81.770	7.4919	55.0290
87	MA14	MCGUFFIN - 1981	4	21	1986	4.08	0.380	2.72	81.029	7.5468	54.0192
88	MA14	MCGUFFIN - 1981	4	22	2307	4.06	0.335	2.70	93.664	7.7284	62.2890
89	MA16	MCGUFFIN - 1981	1	1	1756	3.51	0.336	2.52	61.636	5.9002	44.2512
90	MA16	MCGUFFIN - 1981	1	2	2714	3.38	0.336	2.28	91.733	9.1190	61.8792
91	MA16	MCGUFFIN - 1981	1	3	1955	3.74	0.326	2.13	73.117	6.3733	41.6415
92	MA16	MCGUFFIN - 1981	1	4	1929	3.70	0.394	2.29	71.373	7.6003	44.1741
93	MA16	MCGUFFIN - 1981	1	5	3061	3.46	0.328	1.91	105.911	10.0401	58.4651
94	MA16	MCGUFFIN - 1981	1	6	1944	3.52	0.336	2.54	68.429	6.5318	49.3776
95	MA16	MCGUFFIN - 1981	1	7	2165	3.53	0.408	2.67	76.424	8.8332	57.8055
96	MA16	MCGUFFIN - 1981	1	8	3046	3.51	0.400	1.99	106.915	12.1840	60.6154
97	MA16	MCGUFFIN - 1981	1	9	2822	3.76	0.370	2.38	106.107	10.4414	67.1636
98	MA16	MCGUFFIN - 1981	1	10	1812	3.98	0.408	2.58	72.118	7.3930	46.7496
99	MA16	MCGUFFIN - 1981	1	11	1619	3.74	0.392	2.44	60.551	6.3465	39.5036
100	MA16	MCGUFFIN - 1981	1	12	2076	3.70	0.396	2.49	76.812	8.2210	51.6924
101	MA16	MCGUFFIN - 1981	1	13	1842	3.58	0.372	2.76	65.944	6.8522	50.8392
102	MA16	MCGUFFIN - 1981	1	14	1929	3.65	0.396	2.51	70.408	7.6388	48.4179
103	MA16	MCGUFFIN - 1981	1	15	2640	3.76	0.388	2.43	99.264	10.2432	64.1520
104	MA16	MCGUFFIN - 1981	1	16	1945	3.74	0.360	2.60	72.743	7.0020	50.5700
105	MA16	MCGUFFIN - 1981	1	17	2200	3.68	0.342	2.64	80.960	7.5240	58.0800
106	MA16	MCGUFFIN - 1981	1	18	2739	3.69	0.332	1.85	101.069	9.0935	50.6715
107	MA16	MCGUFFIN - 1981	1	19	2804	3.80	0.340	2.62	106.552	9.5336	73.4648
108	MA16	MCGUFFIN - 1981	1	20	2730	3.69	0.326	2.46	100.737	8.8998	67.1580

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
109	MA16	MCGUFFIN - 1981	1	21	1756	3.77	0.380	2.62	66.201	6.6728	46.0072
110	MA16	MCGUFFIN - 1981	1	22	3043	3.50	0.328	2.16	106.505	9.9810	65.7288
111	MA16	MCGUFFIN - 1981	2	1	2266	3.79	0.330	2.67	85.881	7.4778	60.5022
112	MA16	MCGUFFIN - 1981	2	2	2219	3.82	0.328	2.69	84.766	7.2783	59.6911
113	MA16	MCGUFFIN - 1981	2	3	1844	3.64	0.326	2.56	67.122	6.0114	47.2064
114	MA16	MCGUFFIN - 1981	2	4	2688	4.00	0.354	2.56	107.520	9.5155	68.8128
115	MA16	MCGUFFIN - 1981	2	5	2328	3.69	0.376	2.71	85.903	8.7533	63.0888
116	MA16	MCGUFFIN - 1981	2	6	2390	4.03	0.398	2.77	96.317	9.5122	66.2030
117	MA16	MCGUFFIN - 1981	2	7	2439	3.83	0.364	2.45	93.414	8.8780	59.7555
118	MA16	MCGUFFIN - 1981	2	8	2679	3.70	0.316	2.62	99.123	8.4656	70.1898
119	MA16	MCGUFFIN - 1981	2	9	2451	3.80	0.352	2.46	93.138	8.6275	60.2946
120	MA16	MCGUFFIN - 1981	2	10	2274	3.57	0.346	2.66	81.182	7.8680	60.4884
121	MA16	MCGUFFIN - 1981	2	11	2408	3.57	0.382	2.63	85.966	9.1986	63.3304
122	MA16	MCGUFFIN - 1981	2	12	2375	3.89	0.344	2.50	92.387	8.1700	59.3750
123	MA16	MCGUFFIN - 1981	2	13	2117	3.87	0.352	2.52	81.928	7.4518	53.3484
124	MA16	MCGUFFIN - 1981	2	14	2349	3.39	0.374	2.64	79.631	8.7853	62.0136
125	MA16	MCGUFFIN - 1981	2	15	2262	3.84	0.398	2.37	86.861	9.0028	53.6094
126	MA16	MCGUFFIN - 1981	2	16	2526	3.40	0.306	2.52	85.884	7.7296	63.6552
127	MA16	MCGUFFIN - 1981	2	17	3001	3.64	0.328	2.31	109.236	9.8433	69.3231
128	MA16	MCGUFFIN - 1981	2	18	2568	3.70	0.346	2.59	95.016	8.8853	66.5112
129	MA16	MCGUFFIN - 1981	2	19	2651	3.30	0.338	2.61	87.483	8.9604	69.1911
130	MA16	MCGUFFIN - 1981	2	20	3110	3.21	0.362	2.54	99.831	11.2582	78.9940
131	MA16	MCGUFFIN - 1981	2	21	2720	3.58	0.380	2.55	97.376	10.3360	69.3600
132	MA16	MCGUFFIN - 1981	2	22	2560	3.38	0.348	2.38	86.528	8.9088	60.9280
133	MA16	MCGUFFIN - 1981	3	1	2455	3.58	0.332	2.04	87.889	8.1506	50.0820
134	MA16	MCGUFFIN - 1981	3	2	2598	3.74	0.344	2.35	97.165	8.9371	61.0530
135	MA16	MCGUFFIN - 1981	3	3	2447	3.63	0.290	2.35	88.826	7.0963	57.5045
136	MA16	MCGUFFIN - 1981	3	4	2372	3.73	0.334	2.29	88.476	7.9225	54.3188
137	MA16	MCGUFFIN - 1981	3	5	2234	3.59	0.330	2.20	80.201	7.3722	49.1480
138	MA16	MCGUFFIN - 1981	3	6	2257	3.66	0.330	2.48	82.606	7.4481	55.9736
139	MA16	MCGUFFIN - 1981	3	7	2271	3.57	0.314	2.38	81.075	7.1309	54.0498
140	MA16	MCGUFFIN - 1981	3	8	2148	3.86	0.340	2.34	82.913	7.3032	50.2632
141	MA16	MCGUFFIN - 1981	3	9	2453	3.64	0.350	2.32	89.289	8.5855	56.9096
142	MA16	MCGUFFIN - 1981	3	10	2313	3.89	0.324	2.49	89.976	7.4941	57.5937
143	MA16	MCGUFFIN - 1981	3	11	2170	3.78	0.366	2.24	82.026	7.9422	48.6080
144	MA16	MCGUFFIN - 1981	3	12	2716	3.71	0.352	2.93	100.764	9.5603	79.5788
145	MA16	MCGUFFIN - 1981	3	13	2378	3.75	0.344	2.31	89.175	8.1803	54.9318
146	MA16	MCGUFFIN - 1981	3	14	2963	3.81	0.332	2.41	112.890	9.8372	71.4083
147	MA16	MCGUFFIN - 1981	3	15	2595	3.59	0.342	2.47	93.160	8.8749	64.0965
148	MA16	MCGUFFIN - 1981	3	16	2370	3.82	0.296	2.46	90.534	7.0152	58.3020
149	MA16	MCGUFFIN - 1981	3	17	2521	3.79	0.302	2.37	95.546	7.6134	59.7477
150	MA16	MCGUFFIN - 1981	3	18	2165	3.85	0.326	2.29	83.352	7.0579	49.5785
151	MA16	MCGUFFIN - 1981	3	19	2182	3.70	0.304	2.67	80.734	6.6333	58.2594
152	MA16	MCGUFFIN - 1981	3	20	2786	3.65	0.310	2.42	101.689	8.6366	67.4212
153	MA16	MCGUFFIN - 1981	3	21	2451	3.79	0.312	2.48	92.893	7.6471	60.7848
154	MA16	MCGUFFIN - 1981	3	22	2077	3.79	0.284	2.57	78.718	5.8987	53.3789
155	MA16	MCGUFFIN - 1981	4	1	2162	3.82	0.306	2.51	82.588	6.6157	54.2662
156	MA16	MCGUFFIN - 1981	4	2	1963	3.72	0.296	2.49	73.024	5.8105	48.8787
157	MA16	MCGUFFIN - 1981	4	3	2434	3.71	0.296	2.36	90.301	7.2046	57.4424
158	MA16	MCGUFFIN - 1981	4	4	2562	4.20	0.338	2.51	107.604	8.6596	64.3062
159	MA16	MCGUFFIN - 1981	4	5	2285	3.78	0.328	2.56	86.373	7.4948	58.4960
160	MA16	MCGUFFIN - 1981	4	6	2889	3.47	0.356	2.51	100.248	10.2848	72.5139
161	MA16	MCGUFFIN - 1981	4	7	2227	3.93	0.304	2.39	87.521	6.7701	53.2253
162	MA16	MCGUFFIN - 1981	4	8	2546	3.45	0.340	2.37	87.837	8.6564	60.3402

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
163	MA16	MCGUFFIN - 1981	4	9	2528	2.73	0.324	2.58	69.014	8.1907	65.222
164	MA16	MCGUFFIN - 1981	4	10	2551	3.09	0.316	2.34	78.826	8.0612	59.693
165	MA16	MCGUFFIN - 1981	4	11	2101	3.31	0.322	2.44	69.543	6.7652	51.264
166	MA16	MCGUFFIN - 1981	4	12	2301	3.04	0.332	2.43	69.950	7.6393	55.914
167	MA16	MCGUFFIN - 1981	4	13	2812	3.03	0.314	2.47	85.204	8.8297	69.456
168	MA16	MCGUFFIN - 1981	4	14	2653	3.57	0.328	2.44	94.712	8.7018	64.733
169	MA16	MCGUFFIN - 1981	4	15	2392	3.19	0.354	2.33	76.305	8.4677	55.734
170	MA16	MCGUFFIN - 1981	4	16	2869	3.19	0.260	2.41	91.521	7.4594	69.143
171	MA16	MCGUFFIN - 1981	4	17	2534	3.12	0.278	2.38	79.061	7.0445	60.309
172	MA16	MCGUFFIN - 1981	4	18	2442	3.57	0.344	2.43	87.179	8.4005	59.341
173	MA16	MCGUFFIN - 1981	4	19	2091	3.64	0.312	2.45	76.112	6.5239	51.229
174	MA16	MCGUFFIN - 1981	4	20	3311	3.13	0.304	2.29	103.634	10.0654	75.822
175	MA16	MCGUFFIN - 1981	4	21	2437	3.24	0.330	2.09	78.959	8.0421	50.933
176	MA16	MCGUFFIN - 1981	4	22	2562	3.32	0.298	2.39	85.058	7.6348	61.232
177	NA14	NESMITH - 1981	1	1	1207	3.07	0.161	1.97	37.055	1.9433	23.778
178	NA14	NESMITH - 1981	1	2	1822	3.08	0.188	2.08	56.118	3.4254	37.898
179	NA14	NESMITH - 1981	1	3	659	3.05	0.158	2.00	20.099	1.0412	13.180
180	NA14	NESMITH - 1981	1	4	1698	3.02	0.193	1.87	51.280	3.2771	31.753
181	NA14	NESMITH - 1981	1	5	850	3.41	0.225	2.14	28.985	1.9125	18.190
182	NA14	NESMITH - 1981	1	6	1700	3.41	0.260	2.24	57.970	4.4200	38.080
183	NA14	NESMITH - 1981	1	7	1225	3.60	0.199	1.99	44.100	2.4377	24.377
184	NA14	NESMITH - 1981	1	8	1805	3.60	0.225	2.16	64.980	4.0612	38.988
185	NA14	NESMITH - 1981	1	9	2157	3.80	0.204	2.25	81.966	4.4003	48.532
186	NA14	NESMITH - 1981	1	10	1355	3.00	0.204	1.96	40.650	2.7642	26.558
187	NA14	NESMITH - 1981	1	11	2491	3.50	0.218	2.14	87.185	5.4304	53.307
188	NA14	NESMITH - 1981	1	12	2207	3.75	0.248	2.06	82.762	5.4734	45.464
189	NA14	NESMITH - 1981	1	13	3009	3.04	0.232	1.94	91.474	6.9809	58.375
190	NA14	NESMITH - 1981	1	14	2718	4.00	0.301	1.97	108.720	8.1812	53.545
191	NA14	NESMITH - 1981	1	15	4188	3.83	0.304	2.41	160.400	12.7315	100.931
192	NA14	NESMITH - 1981	1	16	1183	4.00	0.189	1.90	47.320	2.2359	22.477
193	NA14	NESMITH - 1981	1	17	1549	3.88	0.235	1.95	60.101	3.6401	30.205
194	NA14	NESMITH - 1981	1	18	3575	3.86	0.255	2.30	137.995	9.1162	82.225
195	NA14	NESMITH - 1981	1	19	3608	2.97	0.221	2.41	107.158	7.9737	86.953
196	NA14	NESMITH - 1981	1	20	3169	3.28	0.168	1.96	103.943	5.3239	62.112
197	NA14	NESMITH - 1981	1	21	3608	3.31	0.256	1.95	119.425	9.2365	70.356
198	NA14	NESMITH - 1981	1	22	272	3.47	0.155	1.80	9.438	0.4216	4.896
199	NA14	NESMITH - 1981	2	1	563	3.42	0.146	1.85	19.255	0.8220	10.415
200	NA14	NESMITH - 1981	2	2	2070	3.90	0.202	2.11	80.730	4.1814	43.677
201	NA14	NESMITH - 1981	2	3	830	3.10	0.149	1.68	25.730	1.2367	13.944
202	NA14	NESMITH - 1981	2	4	1345	3.48	0.193	1.94	46.806	2.5958	26.093
203	NA14	NESMITH - 1981	2	5	1951	3.44	0.219	1.99	67.114	4.2727	38.825
204	NA14	NESMITH - 1981	2	6	4663	2.82	0.241	2.17	131.497	11.2378	101.187
205	NA14	NESMITH - 1981	2	7	3526	2.87	0.206	1.81	101.196	7.2636	63.821
206	NA14	NESMITH - 1981	2	8	2043	3.28	0.231	1.90	67.010	4.7193	38.817
207	NA14	NESMITH - 1981	2	9	2588	3.50	0.239	2.06	90.580	6.1853	53.313
208	NA14	NESMITH - 1981	2	10	1573	2.81	0.214	1.89	44.201	3.3662	29.730
209	NA14	NESMITH - 1981	2	11	3961	2.97	0.224	1.65	117.642	8.8726	65.356
210	NA14	NESMITH - 1981	2	12	3349	3.44	0.241	2.08	115.206	8.0711	69.659
211	NA14	NESMITH - 1981	2	13	3219	3.11	0.245	1.53	100.111	7.8865	49.251
212	NA14	NESMITH - 1981	2	14	3009	3.73	0.290	1.93	112.236	8.7261	58.074
213	NA14	NESMITH - 1981	2	15	3732	3.27	0.288	1.44	122.036	10.7482	53.741
214	NA14	NESMITH - 1981	2	16	2609	2.91	0.155	1.63	75.922	4.0439	42.527
215	NA14	NESMITH - 1981	2	17	2492	3.80	0.243	1.92	94.696	6.0556	47.846
216	NA14	NESMITH - 1981	2	18	2440	3.49	0.205	2.07	85.156	5.0020	50.508

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
217	NA14	NESMITH - 1981	2	19	2336	3.56	0.219	1.82	83.162	5.1158	42.515
218	NA14	NESMITH - 1981	2	20	3579	3.66	0.244	1.87	130.991	8.7328	66.927
219	NA14	NESMITH - 1981	2	21	2257	4.00	0.262	1.56	90.280	5.9133	35.209
220	NA14	NESMITH - 1981	2	22	1962	3.37	0.159	2.05	66.119	3.1196	40.221
221	NA14	NESMITH - 1981	3	1	1513	3.15	0.139	1.56	47.659	2.1031	23.603
222	NA14	NESMITH - 1981	3	2	1436	3.46	0.181	1.96	49.686	2.5992	28.146
223	NA14	NESMITH - 1981	3	3	2398	2.62	0.149	1.71	62.828	3.5730	41.006
224	NA14	NESMITH - 1981	3	4	2633	3.33	0.190	1.76	87.679	5.0027	46.341
225	NA14	NESMITH - 1981	3	5	1926	2.75	0.200	1.80	52.965	3.8520	34.668
226	NA14	NESMITH - 1981	3	6	2763	3.80	0.289	2.11	104.994	7.9851	58.299
227	NA14	NESMITH - 1981	3	7	2268	3.54	0.215	1.82	80.287	4.8762	41.278
228	NA14	NESMITH - 1981	3	8	1998	3.78	0.232	1.73	75.524	4.6354	34.565
229	NA14	NESMITH - 1981	3	9	2948	2.55	0.241	1.77	75.174	7.1047	52.180
230	NA14	NESMITH - 1981	3	10	3801	3.11	0.233	2.01	118.211	8.8563	76.400
231	NA14	NESMITH - 1981	3	11	2747	3.44	0.217	1.64	94.497	5.9610	45.051
232	NA14	NESMITH - 1981	3	12	1880	3.90	0.201	1.84	73.320	3.7788	34.592
233	NA14	NESMITH - 1981	3	13	5516	2.02	0.190	1.74	111.423	10.4804	95.978
234	NA14	NESMITH - 1981	3	14	5220	2.86	0.269	2.01	149.292	14.0418	104.922
235	NA14	NESMITH - 1981	3	15	3072	3.20	0.308	1.52	98.304	9.4618	46.694
236	NA14	NESMITH - 1981	3	16	2569	4.16	0.240	1.56	106.870	6.1656	40.076
237	NA14	NESMITH - 1981	3	17	2353	3.99	0.247	1.29	93.885	5.8119	30.354
238	NA14	NESMITH - 1981	3	18	3966	3.11	0.268	1.61	123.343	10.6289	63.853
239	NA14	NESMITH - 1981	3	19	1801	3.64	0.220	1.46	65.556	3.9622	26.295
240	NA14	NESMITH - 1981	3	20	2460	3.40	0.243	1.44	83.640	5.9778	35.424
241	NA14	NESMITH - 1981	3	21	2732	3.28	0.261	1.38	89.610	7.1305	37.702
242	NA14	NESMITH - 1981	3	22	1782	2.81	0.180	1.43	50.074	3.2076	25.483
243	NA14	NESMITH - 1981	4	1	753	3.35	0.146	1.38	25.225	1.0994	10.391
244	NA14	NESMITH - 1981	4	2	1296	3.30	0.170	1.46	42.768	2.2032	18.922
245	NA14	NESMITH - 1981	4	3	1809	3.35	0.172	1.52	60.601	3.1115	27.497
246	NA14	NESMITH - 1981	4	4	3330	2.78	0.256	1.61	92.574	8.5248	53.613
247	NA14	NESMITH - 1981	4	5	946	3.01	0.234	1.50	28.475	2.2136	14.190
248	NA14	NESMITH - 1981	4	6	1535	3.91	0.234	1.51	60.018	3.5919	23.178
249	NA14	NESMITH - 1981	4	7	1512	3.62	0.249	1.54	54.734	3.7649	23.285
250	NA14	NESMITH - 1981	4	8	3270	3.98	0.318	1.61	130.146	10.3986	52.647
251	NA14	NESMITH - 1981	4	9	2840	4.05	0.297	1.60	115.020	8.4348	45.440
252	NA14	NESMITH - 1981	4	10	3146	3.13	0.223	1.55	98.470	7.0156	48.763
253	NA14	NESMITH - 1981	4	11	2593	2.90	0.212	1.40	75.197	5.4972	36.302
254	NA14	NESMITH - 1981	4	12	2100	3.51	0.231	1.36	73.710	4.8510	28.560
255	NA14	NESMITH - 1981	4	13	4145	3.75	0.302	1.65	155.437	12.5179	68.392
256	NA14	NESMITH - 1981	4	14	3102	3.93	0.305	2.02	121.909	9.4611	62.660
257	NA14	NESMITH - 1981	4	15	3699	3.88	0.319	1.95	143.521	11.7998	72.130
258	NA14	NESMITH - 1981	4	16	2995	3.66	0.220	2.06	109.617	6.5890	61.697
259	NA14	NESMITH - 1981	4	17	2622	3.75	0.200	2.00	98.325	5.2440	52.440
260	NA14	NESMITH - 1981	4	18	2000	4.36	0.253	1.81	87.200	5.0600	36.200
261	NA14	NESMITH - 1981	4	19	2784	3.07	0.213	2.20	85.469	5.9299	61.248
262	NA14	NESMITH - 1981	4	20	2622	4.17	0.307	2.21	109.337	8.0495	57.946
263	NA14	NESMITH - 1981	4	21	2662	3.38	0.271	2.04	89.976	7.2140	54.305
264	NA14	NESMITH - 1981	4	22	1926	3.34	0.177	2.07	64.328	3.4090	39.868
265	NA16	NESMITH - 1981	1	1	1290	2.74	0.144	2.04	35.346	1.8576	26.316
266	NA16	NESMITH - 1981	1	2	2270	2.13	0.137	2.00	48.351	3.1099	45.400
267	NA16	NESMITH - 1981	1	3	960	2.71	0.141	2.04	26.016	1.3536	19.584
268	NA16	NESMITH - 1981	1	4	2501	2.59	0.157	2.08	64.776	3.9266	52.021
269	NA16	NESMITH - 1981	1	5	2698	2.71	0.180	2.09	73.116	4.8564	56.388
270	NA16	NESMITH - 1981	1	6	3856	2.52	0.160	1.97	97.171	6.1696	75.963

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
271	NA16	NESMITH - 1981	1	7	2832	2.81	0.159	2.02	79.579	4.5029	57.2064
272	NA16	NESMITH - 1981	1	8	2861	2.57	0.177	2.13	73.528	5.0640	60.9393
273	NA16	NESMITH - 1981	1	9	3203	2.75	0.180	2.20	88.082	5.7654	70.4660
274	NA16	NESMITH - 1981	1	10	2944	2.32	0.161	2.05	68.301	4.7398	60.3520
275	NA16	NESMITH - 1981	1	11	3466	2.44	0.159	2.12	84.570	5.5109	73.4792
276	NA16	NESMITH - 1981	1	12	3661	2.56	0.202	1.97	93.722	7.3952	72.1217
277	NA16	NESMITH - 1981	1	13	4294	2.69	0.244	1.91	115.509	10.4774	82.0154
278	NA16	NESMITH - 1981	1	14	4657	2.51	0.217	1.65	116.891	10.1057	76.8405
279	NA16	NESMITH - 1981	1	15	4824	2.72	0.222	1.94	131.213	10.7093	93.5856
280	NA16	NESMITH - 1981	1	16	1984	2.48	0.212	2.12	49.203	4.2061	42.0608
281	NA16	NESMITH - 1981	1	17	3401	2.45	0.152	1.91	83.324	5.1695	64.9591
282	NA16	NESMITH - 1981	1	18	3978	2.47	0.201	1.99	98.257	7.9958	79.1622
283	NA16	NESMITH - 1981	1	19	3417	2.42	0.168	1.98	82.691	5.7406	67.6566
284	NA16	NESMITH - 1981	1	20	3286	2.50	0.166	1.96	82.150	5.4548	64.4056
285	NA16	NESMITH - 1981	1	21	3100	2.41	0.188	1.93	74.710	5.8280	59.8300
286	NA16	NESMITH - 1981	1	22	966	2.38	0.162	1.88	22.991	1.5649	18.1608
287	NA16	NESMITH - 1981	2	1	954	2.55	0.144	1.90	24.327	1.3738	18.1260
288	NA16	NESMITH - 1981	2	2	2402	2.55	0.174	1.81	61.251	4.1795	43.4762
289	NA16	NESMITH - 1981	2	3	1058	2.57	0.151	1.90	27.191	1.5976	20.1020
290	NA16	NESMITH - 1981	2	4	3229	2.42	0.188	1.76	78.142	6.0705	56.8304
291	NA16	NESMITH - 1981	2	5	3446	2.73	0.198	1.90	94.076	6.8231	65.4740
292	NA16	NESMITH - 1981	2	6	3084	2.53	0.189	1.87	78.025	5.8288	57.6708
293	NA16	NESMITH - 1981	2	7	2897	2.45	0.168	1.80	70.976	4.8670	52.1460
294	NA16	NESMITH - 1981	2	8	3110	2.57	0.200	1.68	79.927	6.2200	52.2480
295	NA16	NESMITH - 1981	2	9	3335	2.27	0.170	1.77	75.704	5.6695	59.0295
296	NA16	NESMITH - 1981	2	10	3114	2.51	0.153	1.79	78.161	4.7644	55.7406
297	NA16	NESMITH - 1981	2	11	4106	2.63	0.186	1.86	107.988	7.6372	76.3716
298	NA16	NESMITH - 1981	2	12	4072	2.74	0.175	1.88	111.573	7.1260	76.5536
299	NA16	NESMITH - 1981	2	13	4196	2.52	0.171	1.67	105.739	7.1752	70.0732
300	NA16	NESMITH - 1981	2	14	4568	2.84	0.204	1.69	129.731	9.3187	77.1992
301	NA16	NESMITH - 1981	2	15	4381	2.78	0.215	1.72	121.792	9.4191	75.3532
302	NA16	NESMITH - 1981	2	16	2575	2.57	0.150	1.88	66.177	3.8625	48.4100
303	NA16	NESMITH - 1981	2	17	2849	2.32	0.135	1.78	66.097	3.8461	50.7122
304	NA16	NESMITH - 1981	2	18	3634	2.56	0.160	1.87	93.030	5.8144	67.9558
305	NA16	NESMITH - 1981	2	19	2833	2.41	0.136	1.90	68.275	3.8529	53.8270
306	NA16	NESMITH - 1981	2	20	3801	2.84	0.163	1.78	107.948	6.1956	67.6578
307	NA16	NESMITH - 1981	2	21	4111	2.80	0.183	1.81	115.108	7.5231	74.4091
308	NA16	NESMITH - 1981	2	22	1506	2.38	0.137	1.99	35.843	2.0632	29.9694
309	NA16	NESMITH - 1981	3	1	1522	2.36	0.132	1.80	35.919	2.0090	27.3960
310	NA16	NESMITH - 1981	3	2	1671	2.44	0.126	1.95	40.772	2.1055	32.5845
311	NA16	NESMITH - 1981	3	3	1637	2.55	0.134	1.91	41.743	2.1936	31.2667
312	NA16	NESMITH - 1981	3	4	3455	3.10	0.193	1.67	107.105	6.6681	57.6985
313	NA16	NESMITH - 1981	3	5	3353	3.15	0.202	1.95	105.619	6.7731	65.3835
314	NA16	NESMITH - 1981	3	6	3056	3.24	0.213	2.00	99.014	6.5093	61.1200
315	NA16	NESMITH - 1981	3	7	3477	3.35	0.195	1.73	116.479	6.7801	60.1521
316	NA16	NESMITH - 1981	3	8	3400	2.98	0.173	1.78	101.320	5.8820	60.5200
317	NA16	NESMITH - 1981	3	9	3644	3.23	0.212	1.89	117.701	7.7253	68.8716
318	NA16	NESMITH - 1981	3	10	3483	2.46	0.160	1.84	85.682	5.5728	64.0872
319	NA16	NESMITH - 1981	3	11	3440	3.16	0.242	1.72	108.704	8.3248	59.1680
320	NA16	NESMITH - 1981	3	12	3228	3.42	0.256	1.82	110.398	8.2637	58.7496
321	NA16	NESMITH - 1981	3	13	3583	3.38	0.225	1.90	121.105	8.0617	68.0770
322	NA16	NESMITH - 1981	3	14	4085	3.21	0.226	2.04	131.128	9.2321	83.3340
323	NA16	NESMITH - 1981	3	15	4443	3.39	0.274	1.69	150.618	12.1738	75.0867
324	NA16	NESMITH - 1981	3	16	2362	3.28	0.165	1.90	77.474	3.8973	44.8780

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
325	NA16	NESMITH - 1981	3	17	3032	3.12	0.189	1.49	94.598	5.7305	45.1768
326	NA16	NESMITH - 1981	3	18	4334	3.40	0.218	1.88	147.356	9.4481	81.4792
327	NA16	NESMITH - 1981	3	19	2730	3.34	0.179	1.81	91.182	4.8867	49.4130
328	NA16	NESMITH - 1981	3	20	3930	3.27	0.234	1.51	128.511	9.1962	59.3430
329	NA16	NESMITH - 1981	3	21	3459	3.31	0.243	1.72	114.493	8.4054	59.4948
330	NA16	NESMITH - 1981	3	22	2212	3.02	0.167	2.02	66.802	3.6940	44.6824
331	NA16	NESMITH - 1981	4	1	931	3.55	0.162	1.85	33.050	1.5082	17.2235
332	NA16	NESMITH - 1981	4	2	1200	3.23	0.166	1.85	38.760	1.9920	22.2000
333	NA16	NESMITH - 1981	4	3	2036	3.24	0.153	1.94	65.966	3.1151	39.4984
334	NA16	NESMITH - 1981	4	4	2528	3.22	0.197	1.94	81.402	4.9802	49.0432
335	NA16	NESMITH - 1981	4	5	2808	3.00	0.185	1.85	84.240	5.1948	51.9480
336	NA16	NESMITH - 1981	4	6	3526	3.38	0.234	1.99	119.179	8.2508	70.1674
337	NA16	NESMITH - 1981	4	7	2707	3.20	0.182	1.82	86.624	4.9267	49.2674
338	NA16	NESMITH - 1981	4	8	3090	3.02	0.200	1.90	93.318	6.1800	58.7100
339	NA16	NESMITH - 1981	4	9	3160	3.14	0.200	1.93	99.224	6.3200	60.9880
340	NA16	NESMITH - 1981	4	10	3485	3.16	0.218	2.00	110.126	7.5973	69.7000
341	NA16	NESMITH - 1981	4	11	3148	3.26	0.229	1.72	102.625	7.2089	54.1456
342	NA16	NESMITH - 1981	4	12	2970	3.40	0.231	1.93	100.980	6.8607	57.3210
343	NA16	NESMITH - 1981	4	13	3452	3.65	0.225	1.96	125.998	7.7670	67.6592
344	NA16	NESMITH - 1981	4	14	4301	3.29	0.254	1.75	141.503	10.9245	75.2675
345	NA16	NESMITH - 1981	4	15	3755	3.24	0.270	1.62	121.662	10.1385	60.8310
346	NA16	NESMITH - 1981	4	16	3433	3.14	0.233	1.55	107.796	7.9989	53.2115
347	NA16	NESMITH - 1981	4	17	3116	3.25	0.246	1.84	101.270	7.6654	57.3344
348	NA16	NESMITH - 1981	4	18	3941	3.14	0.198	1.69	123.747	7.8032	66.6029
349	NA16	NESMITH - 1981	4	19	2511	3.38	0.238	1.92	84.872	5.9762	48.2112
350	NA16	NESMITH - 1981	4	20	3958	3.40	0.243	1.92	134.572	9.6179	75.9936
351	NA16	NESMITH - 1981	4	21	4076	3.03	0.252	1.77	123.503	10.2715	72.1452
352	NA16	NESMITH - 1981	4	22	1891	3.08	0.201	1.92	58.243	3.8009	36.3072
353	NA17	NESMITH - 1981	1	1	552	2.97	0.155	1.87	16.394	0.8556	10.3224
354	NA17	NESMITH - 1981	1	2	763	2.60	0.139	1.92	19.838	1.0606	14.6496
355	NA17	NESMITH - 1981	1	3	702	2.85	0.135	1.86	20.007	0.9477	13.0572
356	NA17	NESMITH - 1981	1	4	1059	2.90	0.148	1.82	30.711	1.5673	19.2738
357	NA17	NESMITH - 1981	1	5	868	2.77	0.128	2.04	24.044	1.1110	17.7072
358	NA17	NESMITH - 1981	1	6	1902	2.98	0.158	1.96	56.680	3.0052	37.2792
359	NA17	NESMITH - 1981	1	7	811	2.62	0.144	2.00	21.248	1.1678	16.2200
360	NA17	NESMITH - 1981	1	8	981	2.55	0.152	2.06	25.015	1.4911	20.2086
361	NA17	NESMITH - 1981	1	9	1178	2.63	0.184	2.08	30.981	2.1675	24.5024
362	NA17	NESMITH - 1981	1	10	835	2.54	0.126	1.85	21.209	1.0521	15.4475
363	NA17	NESMITH - 1981	1	11	1374	2.62	0.134	1.98	35.999	1.8412	27.2052
364	NA17	NESMITH - 1981	1	12	1202	3.01	0.174	1.76	36.180	2.0915	21.1552
365	NA17	NESMITH - 1981	1	13	1742	2.82	0.160	1.83	49.124	2.7872	31.8786
366	NA17	NESMITH - 1981	1	14	1704	3.04	0.186	1.71	51.802	3.1694	29.1384
367	NA17	NESMITH - 1981	1	15	2088	3.21	0.185	2.04	67.025	3.8628	42.5952
368	NA17	NESMITH - 1981	1	16	1076	2.67	0.138	1.92	28.729	1.4849	20.6592
369	NA17	NESMITH - 1981	1	17	824	2.75	0.149	1.87	22.660	1.2278	15.4088
370	NA17	NESMITH - 1981	1	18	1582	2.62	0.165	1.99	41.448	2.6103	31.4818
371	NA17	NESMITH - 1981	1	19	1150	2.82	0.167	1.90	32.430	1.9205	21.8500
372	NA17	NESMITH - 1981	1	20	1261	2.98	0.163	1.90	37.578	2.0554	23.9590
373	NA17	NESMITH - 1981	1	21	1238	3.16	0.164	1.75	39.121	2.0303	21.6650
374	NA17	NESMITH - 1981	1	22	275	3.15	0.133	1.89	8.662	0.3657	5.1975
375	NA17	NESMITH - 1981	2	1	441	2.87	0.136	1.91	12.657	0.5998	8.4231
376	NA17	NESMITH - 1981	2	2	1047	2.72	0.131	1.84	28.478	1.3716	19.2648
377	NA17	NESMITH - 1981	2	3	636	2.88	0.164	1.91	18.317	1.0430	12.1476
378	NA17	NESMITH - 1981	2	4	1158	2.97	0.165	1.76	34.393	1.9107	20.3808

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
379	NA17	NESMITH - 1981	2	5	1765	2.77	0.173	1.89	48.8905	3.05345	33.3585
380	NA17	NESMITH - 1981	2	6	1271	2.68	0.178	1.96	34.0628	2.26238	24.9116
381	NA17	NESMITH - 1981	2	7	1020	2.66	0.144	1.86	27.1320	1.46880	18.9720
382	NA17	NESMITH - 1981	2	8	1028	2.87	0.150	1.79	29.5036	1.54200	18.4012
383	NA17	NESMITH - 1981	2	9	1050	2.65	0.136	1.89	27.8250	1.42800	19.8450
384	NA17	NESMITH - 1981	2	10	1057	2.90	0.147	1.88	30.6530	1.55379	19.8716
385	NA17	NESMITH - 1981	2	11	1869	2.65	0.163	1.87	49.5285	3.04647	34.9503
386	NA17	NESMITH - 1981	2	12	1502	2.70	0.168	1.78	40.5540	2.52336	26.7356
387	NA17	NESMITH - 1981	2	13	1697	2.38	0.153	1.88	40.3886	2.59641	31.9036
388	NA17	NESMITH - 1981	2	14	1685	2.45	0.194	1.77	41.2825	3.26890	29.8245
389	NA17	NESMITH - 1981	2	15	1648	2.77	0.198	1.67	45.6496	3.26304	27.5216
390	NA17	NESMITH - 1981	2	16	832	2.70	0.138	1.78	22.4640	1.14816	14.8096
391	NA17	NESMITH - 1981	2	17	1278	2.64	0.130	1.73	33.7392	1.66140	22.1094
392	NA17	NESMITH - 1981	2	18	1044	2.85	0.156	2.10	29.7540	1.62864	21.9240
393	NA17	NESMITH - 1981	2	19	1359	2.50	0.116	2.03	33.9750	1.57644	27.5877
394	NA17	NESMITH - 1981	2	20	1559	3.00	0.133	1.76	46.7700	2.07347	27.4384
395	NA17	NESMITH - 1981	2	21	1524	2.88	0.169	1.77	43.8912	2.57556	26.9748
396	NA17	NESMITH - 1981	2	22	615	2.74	0.123	1.89	16.8510	0.75645	11.6235
397	NA17	NESMITH - 1981	3	1	482	3.13	0.129	1.74	15.0866	0.62178	8.3868
398	NA17	NESMITH - 1981	3	2	731	3.04	0.126	2.01	22.2224	0.92106	14.6931
399	NA17	NESMITH - 1981	3	3	646	2.98	0.128	1.91	19.2508	0.82688	12.3386
400	NA17	NESMITH - 1981	3	4	1548	2.69	0.140	1.70	41.6412	2.16720	26.3160
401	NA17	NESMITH - 1981	3	5	1471	2.93	0.158	1.86	43.1003	2.32418	27.3606
402	NA17	NESMITH - 1981	3	6	1115	2.87	0.136	1.99	32.0005	1.51640	22.1885
403	NA17	NESMITH - 1981	3	7	1541	2.69	0.135	1.66	41.4529	2.08035	25.5806
404	NA17	NESMITH - 1981	3	8	1117	2.84	0.151	1.74	31.7228	1.68667	19.4358
405	NA17	NESMITH - 1981	3	9	1185	2.97	0.156	1.88	35.1945	1.84860	22.2780
406	NA17	NESMITH - 1981	3	10	1211	2.93	0.130	1.99	35.4823	1.57430	24.0989
407	NA17	NESMITH - 1981	3	11	1100	2.84	0.146	1.66	31.2400	1.60600	18.2600
408	NA17	NESMITH - 1981	3	12	1074	3.03	0.155	1.78	32.5422	1.66470	19.1172
409	NA17	NESMITH - 1981	3	13	1038	3.13	0.155	1.88	32.4894	1.60890	19.5144
410	NA17	NESMITH - 1981	3	14	1565	3.17	0.184	1.90	49.6105	2.87960	29.7350
411	NA17	NESMITH - 1981	3	15	1880	2.99	0.194	1.73	56.2120	3.64720	32.5240
412	NA17	NESMITH - 1981	3	16	565	3.27	0.134	1.91	18.4755	0.75710	10.7915
413	NA17	NESMITH - 1981	3	17	1119	2.60	0.128	1.52	29.0940	1.43232	17.0088
414	NA17	NESMITH - 1981	3	18	1542	2.94	0.145	2.00	45.3348	2.23590	30.8400
415	NA17	NESMITH - 1981	3	19	524	2.94	0.156	1.80	15.4056	0.81744	9.4320
416	NA17	NESMITH - 1981	3	20	1269	2.82	0.160	1.71	35.7858	2.03040	21.6999
417	NA17	NESMITH - 1981	3	21	1429	3.23	0.165	1.58	46.1567	2.35785	22.5782
418	NA17	NESMITH - 1981	3	22	714	3.20	0.122	1.87	22.8480	0.87108	13.3518
419	NA17	NESMITH - 1981	4	1	380	3.29	0.129	1.98	12.5020	0.49020	7.5240
420	NA17	NESMITH - 1981	4	2	447	3.18	0.132	1.86	14.2146	0.59004	8.3142
421	NA17	NESMITH - 1981	4	3	889	3.12	0.122	1.97	27.7368	1.08458	17.5133
422	NA17	NESMITH - 1981	4	4	948	3.08	0.136	1.96	29.1984	1.28928	18.5808
423	NA17	NESMITH - 1981	4	5	1033	3.33	0.134	1.85	34.3989	1.38422	19.1105
424	NA17	NESMITH - 1981	4	6	1216	3.04	0.143	1.93	36.9664	1.73888	23.4688
425	NA17	NESMITH - 1981	4	7	503	3.49	0.127	1.91	17.5547	0.63881	9.6073
426	NA17	NESMITH - 1981	4	8	649	2.97	0.135	1.96	19.2753	0.87615	12.7204
427	NA17	NESMITH - 1981	4	9	686	3.18	0.143	1.87	21.8148	0.98098	12.8282
428	NA17	NESMITH - 1981	4	10	2070	3.02	0.149	2.04	62.5140	3.08430	42.2280
429	NA17	NESMITH - 1981	4	11	1194	2.62	0.141	1.94	31.2828	1.68354	23.1636
430	NA17	NESMITH - 1981	4	12	1305	3.02	0.174	1.48	39.4110	2.27070	19.3140
431	NA17	NESMITH - 1981	4	13	1350	3.44	0.188	1.88	46.4400	2.53800	25.3800
432	NA17	NESMITH - 1981	4	14	2324	2.84	0.179	1.62	66.0016	4.15996	37.6488

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
433	NA17	NESMITH - 1981	4	15	2021	3.01	0.205	1.40	60.8321	4.14305	28.2940
434	NA17	NESMITH - 1981	4	16	916	3.54	0.151	1.72	32.4264	1.38316	15.7552
435	NA17	NESMITH - 1981	4	17	1450	3 06	0.139	1.73	44.3700	2.01550	25.0850
436	NA17	NESMITH - 1981	4	18	1670	3.14	0.161	1.43	52.4380	2.68870	23.8810
437	NA17	NESMITH - 1981	4	19	730	3.21	0.147	2.05	23.4330	1.07310	14.9650
438	NA17	NESMITH - 1981	4	20	1202	2.89	0.144	2.04	34.7378	1.73088	24.5208
439	NA17	NESMITH - 1981	4	21	1239	3.38	0.159	1.65	41.8782	1.97001	20.4435
440	NA17	NESMITH - 1981	4	22	441	3.32	0.140	1.99	14.6412	0.61740	8.7759
441	NA19	NESMITH - 1981	1	1	239	2.92	0.114	1.91	6.9788	0.27246	4.5649
442	NA19	NESMITH - 1981	1	2	533	2.92	0.115	1.98	15.5636	0.61295	10.5534
443	NA19	NESMITH - 1981	1	3	667	2.89	0.129	2.06	19.2763	0.86043	13.7402
444	NA19	NESMITH - 1981	1	4	737	2.97	0.122	2.02	21.8889	0.89914	14.8874
445	NA19	NESMITH - 1981	1	5	338	2.53	0.099	1.70	8.5514	0.33462	5.7460
446	NA19	NESMITH - 1981	1	6	976	3.28	0.145	1.97	32.0128	1.41520	19.2272
447	NA19	NESMITH - 1981	1	7	262	2.77	0.114	1.85	7.2574	0.29868	4.8470
448	NA19	NESMITH - 1981	1	8	678	2.88	0:120	2.01	19.5264	0.81360	13.6278
449	NA19	NESMITH - 1981	1	9	944	3.25	0.145	2.01	30.6800	1.36880	18.9744
450	NA19	NESMITH - 1981	1	10	434	3.19	0.124	1.68	13.8446	0.53816	7.2912
451	NA19	NESMITH - 1981	1	11	1092	2.91	0.137	2.01	31.7772	1.49604	21.9492
452	NA19	NESMITH - 1981	1	12	1315	3.06	0.145	1.91	40.2390	1.90675	25.1165
453	NA19	NESMITH - 1981	1	13	1399	3.03	0.145	1.70	42.3897	2.02855	23.7830
454	NA19	NESMITH - 1981	1	14	998	3.24	0.152	1.79	32.3352	1.51696	17.8642
455	NA19	NESMITH - 1981	1	15	1412	3.43	0.181	2.13	48.4316	2.55572	30.0756
456	NA19	NESMITH - 1981	1	16	726	3.24	0.130	2.13	23.5224	0.94380	15.4638
457	NA19	NESMITH - 1981	1	17	500	3.19	0.142	2.14	15.9500	0.71000	10.7000
458	NA19	NESMITH - 1981	1	18	1213	3.33	0.156	2.37	40.3929	1.89228	28.7481
459	NA19	NESMITH - 1981	1	19	917	3.14	0.145	2.42	28.7938	1.32965	22.1914
460	NA19	NESMITH - 1981	1	20	969	3.18	0.149	2.28	30.8142	1.44381	22.0932
461	NA19	NESMITH - 1981	1	21	915	3.14	0.134	2.22	28.7310	1.22610	20.3130
462	NA19	NESMITH - 1981	1	22	95	3.16	0.120	1.89	3.0020	0.11400	1.7955
463	NA19	NESMITH - 1981	2	1	267	3.01	0.116	1.92	8.0367	0.30972	5.1264
464	NA19	NESMITH - 1981	2	2	455	3.19	0.137	2.06	14.5145	0.62335	9.3730
465	NA19	NESMITH - 1981	2	3	263	2.99	0.119	1.72	7.8637	0.31297	4.5236
466	NA19	NESMITH - 1981	2	4	989	3.28	0.139	2.00	32.4392	1.37471	19.7800
467	NA19	NESMITH - 1981	2	5	1013	3.25	0.148	2.26	32.9225	1.49924	22.8938
468	NA19	NESMITH - 1981	2	6	1725	3.09	0.151	2.16	53.3025	2.60475	37.2600
469	NA19	NESMITH - 1981	2	7	635	3.23	0.126	2.00	20.5105	0.80010	12.7000
470	NA19	NESMITH - 1981	2	8	755	3.48	0.147	1.92	26.2740	1.10985	14.4960
471	NA19	NESMITH - 1981	2	9	363	2.94	0.111	1.81	10.6722	0.40293	6.5703
472	NA19	NESMITH - 1981	2	10	575	2.98	0.126	1.85	17.1350	0.72450	10.6375
473	NA19	NESMITH - 1981	2	11	1124	2.94	0.139	2.07	33.0456	1.56236	23.2668
474	NA19	NESMITH - 1981	2	12	1242	3.09	0.160	2.30	38.3778	1.98720	28.5660
475	NA19	NESMITH - 1981	2	13	964	3.00	0.138	1.86	28.9200	1.33032	17.9304
476	NA19	NESMITH - 1981	2	14	1420	2.93	0.167	2.01	41.6060	2.37140	28.5420
477	NA19	NESMITH - 1981	2	15	1544	3.05	0.176	1.82	47.0920	2.71744	28.1008
478	NA19	NESMITH - 1981	2	16	779	3.07	0.132	1.77	23.9153	1.02828	13.7883
479	NA19	NESMITH - 1981	2	17	576	3.03	0.127	1.92	17.4528	0.73152	11.0592
480	NA19	NESMITH - 1981	2	18	512	3.02	0.137	2.07	15.4624	0.70144	10.5984
481	NA19	NESMITH - 1981	2	19	543	3.16	0.126	2.07	17.1588	0.68418	11.2401
482	NA19	NESMITH - 1981	2	20	593	3.12	0.127	1.77	18.5016	0.75311	10.4961
483	NA19	NESMITH - 1981	2	21	1036	2.86	0.128	1.85	29.6296	1.32608	19.1660
484	NA19	NESMITH - 1981	2	22	221	3.28	0.126	2.02	7.2488	0.27846	4.4642
485	NA19	NESMITH - 1981	3	1	407	2.80	0.125	1.93	11.3960	0.50875	7.8551
486	NA19	NESMITH - 1981	3	2	261	3.29	0.128	2.25	8.5869	0.33408	5.8725

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
487	NA19	NESMITH - 1981	3	3	529	3.07	0.124	2.13	16.240	0.65596	11.268
488	NA19	NESMITH - 1981	3	4	1125	3.55	0.131	1.88	39.937	1.47375	21.150
489	NA19	NESMITH - 1981	3	5	1288	3.35	0.146	2.04	43.148	1.88048	26.275
490	NA19	NESMITH - 1981	3	6	679	3.15	0.134	2.42	21.388	0.90986	16.432
491	NA19	NESMITH - 1981	3	7	1079	3.41	0.162	1.84	36.794	1.74798	19.854
492	NA19	NESMITH - 1981	3	8	1117	3.42	0.152	1.85	38.201	1.69784	20.664
493	NA19	NESMITH - 1981	3	9	890	3.36	0.144	2.35	29.904	1.28160	20.915
494	NA19	NESMITH - 1981	3	10	853	2.94	0.124	2.25	25.078	1.05772	19.192
495	NA19	NESMITH - 1981	3	11	986	3.29	0.153	1.87	32.439	1.50858	18.438
496	NA19	NESMITH - 1981	3	12	858	3.10	0.144	2.09	26.598	1.23552	17.932
497	NA19	NESMITH - 1981	3	13	888	3.16	0.152	2.18	28.061	1.34976	19.358
498	NA19	NESMITH - 1981	3	14	1788	2.92	0.172	2.38	52.210	3.07536	42.554
499	NA19	NESMITH - 1981	3	15	1077	3.27	0.166	1.75	35.218	1.78782	18.847
500	NA19	NESMITH - 1981	3	16	434	3.07	0.139	2.19	13.324	0.60326	9.505
501	NA19	NESMITH - 1981	3	17	1546	2.73	0.184	1.81	42.206	2.84464	27.983
502	NA19	NESMITH - 1981	3	18	1482	3.15	0.152	2.38	46.683	2.25264	35.272
503	NA19	NESMITH - 1981	3	19	536	2.85	0.127	1.97	15.276	0.68072	10.559
504	NA19	NESMITH - 1981	3	20	1102	2.99	0.147	1.89	32.950	1.61994	20.828
505	NA19	NESMITH - 1981	3	21	1100	3.06	0.166	1.91	33.660	1.82600	21.010
506	NA19	NESMITH - 1981	3	22	609	2.94	0.132	2.26	17.905	0.80388	13.763
507	NA19	NESMITH - 1981	4	1	262	2.97	0.133	2.23	7.781	0.34846	5.843
508	NA19	NESMITH - 1981	4	2	177	3.14	0.145	1.76	5.558	0.25665	3.115
509	NA19	NESMITH - 1981	4	3	500	3.28	0.149	2.40	16.400	0.74500	12.000
510	NA19	NESMITH - 1981	4	4	867	3.36	0.153	2.44	29.131	1.32651	21.155
511	NA19	NESMITH - 1981	4	5	802	3.14	0.149	2.30	25.183	1.19498	18.446
512	NA19	NESMITH - 1981	4	6	999	3.34	0.156	2.23	33.367	1.55844	22.278
513	NA19	NESMITH - 1981	4	7	436	3.07	0.136	2.23	13.385	0.59296	9.723
514	NA19	NESMITH - 1981	4	8	580	3.26	0.144	2.14	18.908	0.83520	12.412
515	NA19	NESMITH - 1981	4	9	808	2.93	0.139	2.30	23.674	1.12312	18.584
516	NA19	NESMITH - 1981	4	10	1531	3.40	0.162	2.56	52.054	2.48022	39.194
517	NA19	NESMITH - 1981	4	11	736	3.03	0.152	2.25	22.301	1.11872	16.560
518	NA19	NESMITH - 1981	4	12	751	3.16	0.150	1.82	23.732	1.12650	13.668
519	NA19	NESMITH - 1981	4	13	804	2.93	0.155	2.38	23.557	1.24620	19.135
520	NA19	NESMITH - 1981	4	14	821	2.94	0.150	2.32	24.137	1.23150	19.047
521	NA19	NESMITH - 1981	4	15	1004	3.23	0.201	1.91	32.429	2.01804	19.176
522	NA19	NESMITH - 1981	4	16	1492	3.20	0.154	2.32	47.744	2.29768	34.614
523	NA19	NESMITH - 1981	4	17	679	2.89	0.142	2.20	19.623	0.96418	14.938
524	NA19	NESMITH - 1981	4	18	1667	2.83	0.193	2.02	47.176	3.21731	33.673
525	NA19	NESMITH - 1981	4	19	260	3.38	0.147	2.27	8.788	0.38220	5.902
526	NA19	NESMITH - 1981	4	20	1119	3.17	0.153	2.38	35.472	1.71207	26.632
527	NA19	NESMITH - 1981	4	21	1173	3.08	0.163	2.03	36.128	1.91199	23.812
528	NA19	NESMITH - 1981	4	22	324	3.39	0.146	2.31	10.984	0.47304	7.484
529	NNA14	NES NORTH-1982	1	1	2569	3.84	0.243	2.48	98.650	6.24267	63.711
530	NNA14	NES NORTH-1982	1	2	1771	3.61	0.205	2.34	63.933	3.63055	41.441
531	NNA14	NES NORTH-1982	1	3	1988	3.71	0.197	2.34	73.755	3.91636	46.519
532	NNA14	NES NORTH-1982	1	4	2681	3.45	0.210	2.41	92.494	5.63010	64.612
533	NNA14	NES NORTH-1982	1	5	2957	3.48	0.226	2.63	102.904	6.68282	77.769
534	NNA14	NES NORTH-1982	1	6	3426	3.35	0.244	2.76	114.771	8.35944	94.558
535	NNA14	NES NORTH-1982	1	7	2304	3.76	0.218	2.53	86.630	5.02272	58.291
536	NNA14	NES NORTH-1982	1	8	3983	3.74	0.232	2.57	148.964	9.24056	102.363
537	NNA14	NES NORTH-1982	1	9	2305	3.55	0.241	2.67	81.827	5.55505	61.543
538	NNA14	NES NORTH-1982	1	10	2251	3.79	0.242	2.41	85.313	5.44742	54.249
539	NNA14	NES NORTH-1982	1	11	2160	3.74	0.218	2.42	80.784	4.70880	52.272
540	NNA14	NES NORTH-1982	1	12	3065	3.63	0.240	2.55	111.259	7.35600	78.157

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
541	NNA14	NES NORTH-1982	1	13	2492	3.97	0.224	2.34	98.932	5.5821	58.3128
542	NNA14	NES NORTH-1982	1	14	2486	3.86	0.243	2.75	95.960	6.0410	68.3650
543	NNA14	NES NORTH-1982	1	15	2322	3.74	0.212	2.42	86.843	4.9226	56.1924
544	NNA14	NES NORTH-1982	1	16	3075	3.08	0.218	2.40	94.710	6.7035	73.8000
545	NNA14	NES NORTH-1982	1	17	2532	3.23	0.239	2.48	81.784	6.0515	62.7936
546	NNA14	NES NORTH-1982	1	18	2149	3.84	0.203	2.46	82.522	4.3625	52.8654
547	NNA14	NES NORTH-1982	1	19	1625	3.31	0.201	2.38	53.787	3.2662	38.6750
548	NNA14	NES NORTH-1982	1	20	3369	3.30	0.238	2.46	111.177	8.0182	82.8774
549	NNA14	NES NORTH-1982	1	21	2513	3.18	0.240	2.16	79.913	6.0312	54.2808
550	NNA14	NES NORTH-1982	1	22	2312	3.36	0.210	2.36	77.683	4.8552	54.5632
551	NNA14	NES NORTH-1982	2	1	2213	3.30	0.158	2.26	73.029	3.4965	50.0138
552	NNA14	NES NORTH-1982	2	2	2472	2.99	0.193	2.26	73.913	4.7710	55.8672
553	NNA14	NES NORTH-1982	2	3	1355	3.19	0.176	2.02	43.224	2.3848	27.3710
554	NNA14	NES NORTH-1982	2	4	2062	3.71	0.187	2.10	76.500	3.8559	43.3020
555	NNA14	NES NORTH-1982	2	5	2190	3.67	0.195	2.18	80.373	4.2705	47.7420
556	NNA14	NES NORTH-1982	2	6	3140	3.05	0.239	2.12	95.770	7.5046	66.5680
557	NNA14	NES NORTH-1982	2	7	2647	3.75	0.230	2.32	99.262	6.0881	61.4104
558	NNA14	NES NORTH-1982	2	8	2668	3.68	0.234	2.26	98.182	6.2431	60.2968
559	NNA14	NES NORTH-1982	2	9	2138	3.32	0.223	2.68	70.982	4.7677	57.2984
560	NNA14	NES NORTH-1982	2	10	3199	3.59	0.242	2.46	114.844	7.7416	78.6954
561	NNA14	NES NORTH-1982	2	11	2065	3.48	0.235	2.22	71.862	4.8527	45.8430
562	NNA14	NES NORTH-1982	2	12	2390	3.92	0.244	2.16	93.688	5.8316	51.6240
563	NNA14	NES NORTH-1982	2	13	1849	3.48	0.202	2.26	64.345	3.7350	41.7874
564	NNA14	NES NORTH-1982	2	14	2569	3.82	0.203	2.02	98.136	5.2151	51.8938
565	NNA14	NES NORTH-1982	2	15	3501	3.79	0.252	2.22	132.688	8.8225	77.7222
566	NNA14	NES NORTH-1982	2	16	2371	3.60	0.219	2.10	85.356	5.1925	49.7910
567	NNA14	NES NORTH-1982	2	17	3115	3.74	0.222	2.24	116.501	6.9153	69.7760
568	NNA14	NES NORTH-1982	2	18	3358	3.72	0.227	2.38	124.918	7.6227	79.9204
569	NNA14	NES NORTH-1982	2	19	2685	3.67	0.218	2.01	98.539	5.8533	53.9685
570	NNA14	NES NORTH-1982	2	20	2660	3.49	0.229	2.32	92.834	6.0914	61.7120
571	NNA14	NES NORTH-1982	2	21	2810	3.79	0.226	2.36	106.499	6.3506	66.3160
572	NNA14	NES NORTH-1982	2	22	2869	3.71	0.211	2.01	106.440	6.0536	57.6669
573	NNA14	NES NORTH-1982	3	1	2285	3.34	0.186	2.27	76.319	4.2501	51.8695
574	NNA14	NES NORTH-1982	3	2	2378	3.46	0.205	1.90	82.279	4.8749	45.1820
575	NNA14	NES NORTH-1982	3	3	2091	3.67	0.184	2.12	76.740	3.8474	44.3292
576	NNA14	NES NORTH-1982	3	4	2034	3.58	0.220	2.32	72.817	4.4748	47.1888
577	NNA14	NES NORTH-1982	3	5	2243	3.66	0.205	2.10	82.094	4.5981	47.1030
578	NNA14	NES NORTH-1982	3	6	4050	3.70	0.266	2.31	149.850	10.7730	93.5550
579	NNA14	NES NORTH-1982	3	7	2937	3.84	0.250	2.34	112.781	7.3425	68.7258
580	NNA14	NES NORTH-1982	3	8	2147	3.63	0.243	2.34	77.936	5.2172	50.2398
581	NNA14	NES NORTH-1982	3	9	3215	3.69	0.234	2.23	118.633	7.5231	71.6945
582	NNA14	NES NORTH-1982	3	10	2983	3.61	0.230	2.24	107.686	6.8609	66.8192
583	NNA14	NES NORTH-1982	3	11	3217	3.82	0.231	2.27	122.889	7.4313	73.0259
584	NNA14	NES NORTH-1982	3	12	2787	3.33	0.226	2.36	92.807	6.2986	65.7732
585	NNA14	NES NORTH-1982	3	13	2904	3.55	0.219	2.28	103.092	6.3598	66.2112
586	NNA14	NES NORTH-1982	3	14	3098	3.67	0.229	2.45	113 697	7.0944	75.9010
587	NNA14	NES NORTH-1982	3	15	2948	3.83	0.234	2.34	112.908	6.8983	68.9832
588	NNA14	NES NORTH-1982	3	16	3387	3.56	0.228	2.39	120.577	7.7224	80.9493
589	NNA14	NES NORTH-1982	3	17	2203	3.83	0.228	2.27	84.375	5.0228	50.0081
590	NNA14	NES NORTH-1982	3	18	3731	3.47	0.237	2.18	129.466	8.8425	81.3358
591	NNA14	NES NORTH-1982	3	19	2603	3.60	0.242	2.20	93.708	6.2993	57.2660
592	NNA14	NES NORTH-1982	3	20	3366	3.76	0.245	2.26	126.562	8.2467	76.0716
593	NNA14	NES NORTH-1982	3	21	2872	3.59	0.241	2.18	103.105	6.9215	62.6096
594	NNA14	NES NORTH-1982	3	22	2072	3.20	0.207	2.22	66.304	4.2890	45.9984

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
595	NNA14	NES NORTH-1982	4	1	2307	3.70	0.234	2.02	85.359	5.3984	46.6014
596	NNA14	NES NORTH-1982	4	2	1934	3.58	0.202	2.00	69.237	3.9067	38.6800
597	NNA14	NES NORTH-1982	4	3	1665	3.86	0.214	2.00	64.269	3.5631	33.3000
598	NNA14	NES NORTH-1982	4	4	3655	3.78	0.275	2.39	138.159	10.0512	87.3545
599	NNA14	NES NORTH-1982	4	5	2291	3.26	0.198	2.05	74.687	4.5362	46.9655
600	NNA14	NES NORTH-1982	4	6	2791	3.83	0.250	2.06	106.895	6.9775	57.4946
601	NNA14	NES NORTH-1982	4	7	2967	3.56	0.217	2.28	105.625	6.4384	67.6476
602	NNA14	NES NORTH-1982	4	8	2433	3.86	0.264	2.17	93.914	6.4231	52.7961
603	NNA14	NES NORTH-1982	4	9	3962	3.65	0.266	2.31	144.613	10.5389	91.5222
604	NNA14	NES NORTH-1982	4	10	3463	3.65	0.242	2.31	126.399	8.3805	79.9953
605	NNA14	NES NORTH-1982	4	11	3020	3.74	0.251	2.29	112.948	7.5802	69.1580
606	NNA14	NES NORTH-1982	4	12	3020	3.74	0.271	2.32	112.948	8.1842	70.0640
607	NNA14	NES NORTH-1982	4	13	3336	3.83	0.217	2.25	127.769	7.2391	75.0600
608	NNA14	NES NORTH-1982	4	14	2058	3.57	0.248	2.08	73.471	5.1038	42.8064
609	NNA14	NES NORTH-1982	4	15	2054	3.74	0.221	2.11	76.820	4.5393	43.3394
610	NNA14	NES NORTH-1982	4	16	1491	3.57	0.239	2.00	53.229	3.5635	29.8200
611	NNA14	NES NORTH-1982	4	17	2509	3.77	0.243	2.00	94.589	6.0969	50.1800
612	NNA14	NES NORTH-1982	4	18	2792	3.46	0.207	2.13	96.603	5.7794	59.4696
613	NNA14	NES NORTH-1982	4	19	2552	3.73	0.226	2.05	95.190	5.7675	52.3160
614	NNA14	NES NORTH-1982	4	20	3514	3.43	0.250	2.18	120.530	8.7850	76.6052
615	NNA14	NES NORTH-1982	4	21	2579	3.62	0.257	2.10	93.360	6.6280	54.1590
616	NNA14	NES NORTH-1982	4	22	2387	3.51	0.240	2.32	83.784	5.7288	55.3784
617	NNA16	NES NORTH-1982	1	1	2769	3.40	0.288	2.65	94.146	7.9747	73.3785
618	NNA16	NES NORTH-1982	1	2	3036	3.74	0.267	2.66	113.546	8.1061	80.7576
619	NNA16	NES NORTH-1982	1	3	3221	3.49	0.245	2.67	112.413	7.8914	86.0007
620	NNA16	NES NORTH-1982	1	4	3050	3.27	0.313	2.72	99.735	9.5465	82.9600
621	NNA16	NES NORTH-1982	1	5	3345	3.30	0.251	2.70	110.385	8.3959	90.3150
622	NNA16	NES NORTH-1982	1	6	3121	3.86	0.351	2.80	120.471	10.9547	87.3880
623	NNA16	NES NORTH-1982	1	7	2712	3.12	0.297	2.92	84.614	8.0546	79.1904
624	NNA16	NES NORTH-1982	1	8	2827	3.93	0.318	2.76	111.101	8.9899	78.0252
625	NNA16	NES NORTH-1982	1	9	3222	3.67	0.357	2.88	118.247	11.5025	92.7936
626	NNA16	NES NORTH-1982	1	10	2766	3.63	0.326	2.73	100.406	9.0172	75.5118
627	NNA16	NES NORTH-1982	1	11	2703	3.61	0.282	2.67	97.578	7.6225	72.1701
628	NNA16	NES NORTH-1982	1	12	3151	3.60	0.365	2.86	113.436	11.5011	90.1186
629	NNA16	NES NORTH-1982	1	13	1975	3.81	0.284	2.60	75.247	5.6090	51.3500
630	NNA16	NES NORTH-1982	1	14	3086	4.02	0.334	2.74	124.057	10.3072	84.5564
631	NNA16	NES NORTH-1982	1	15	3392	3.72	0.315	2.73	126.182	10.6848	92.6016
632	NNA16	NES NORTH-1982	1	16	2392	3.71	0.306	2.85	88.743	7.3195	68.1720
633	NNA16	NES NORTH-1982	1	17	3001	4.04	0.341	2.82	121.240	10.2334	84.6282
634	NNA16	NES NORTH-1982	1	18	3101	3.34	0.288	2.63	103.573	8.9309	81.5563
635	NNA16	NES NORTH-1982	1	19	2823	4.02	0.312	2.70	113.485	8.8078	76.2210
636	NNA16	NES NORTH-1982	1	20	3506	3.56	0.279	2.67	124.814	9.7817	93.6102
637	NNA16	NES NORTH-1982	1	21	3054	3.39	0.313	2.75	103.531	9.5590	83.9850
638	NNA16	NES NORTH-1982	1	22	2669	3.78	0.298	2.87	100.888	7.9536	76.6003
639	NNA16	NES NORTH-1982	2	1	2622	3.57	0.230	2.69	93.605	6.0306	70.5318
640	NNA16	NES NORTH-1982	2	2	2644	3.55	0.297	2.70	93.862	7.8527	71.3880
641	NNA16	NES NORTH-1982	2	3	2146	3.72	0.256	2.71	79.831	5.4938	58.1566
642	NNA16	NES NORTH-1982	2	4	3092	3.99	0.313	2.71	123.371	9.6780	83.7932
643	NNA16	NES NORTH-1982	2	5	2552	4.13	0.353	2.91	105.398	9.0086	74.2632
644	NNA16	NES NORTH-1982	2	6	2628	3.79	0.311	2.91	99.601	8.1731	76.4748
645	NNA16	NES NORTH-1982	2	7	2920	3.83	0.383	3.00	111.836	11.1836	87.6000
646	NNA16	NES NORTH-1982	2	8	2424	3.87	0.310	2.72	93.809	7.5144	65.9328
647	NNA16	NES NORTH-1982	2	9	3291	3.78	0.293	2.70	124.400	9.6426	88.8570
648	NNA16	NES NORTH-1982	2	10	2632	3.45	0.297	2.66	90.804	7.8170	70.0112

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
649	NNA16	NES NORTH-1982	2	11	2675	3.24	0.307	2.53	86.670	8.2122	67.677
650	NNA16	NES NORTH-1982	2	12	3197	4.01	0.343	2.87	128.200	10.9657	91.754
651	NNA16	NES NORTH-1982	2	13	2892	3.97	0.307	2.94	114.812	8.8784	85.025
652	NNA16	NES NORTH-1982	2	14	2750	3.50	0.301	2.88	96.250	8.2775	79.200
653	NNA16	NES NORTH-1982	2	15	3111	3.46	0.322	2.83	107.641	10.0174	88.041
654	NNA16	NES NORTH-1982	2	16	3217	3.80	0.324	2.83	122.246	10.4231	91.041
655	NNA16	NES NORTH-1982	2	17	3775	3.61	0.322	2.93	136.277	12.1555	110.607
656	NNA16	NES NORTH-1982	2	18	3015	3.94	0.332	2.92	118.791	10.0098	88.038
657	NNA16	NES NORTH-1982	2	19	2871	3.64	0.308	2.85	104.504	8.8427	81.823
658	NNA16	NES NORTH-1982	2	20	2951	3.78	0.343	3.22	111.548	10.1219	95.022
659	NNA16	NES NORTH-1982	2	21	3228	3.51	0.356	2.94	113.303	11.4917	94.903
660	NNA16	NES NORTH-1982	2	22	3739	3.11	0.270	2.44	116.283	10.0953	91.232
661	NNA16	NES NORTH-1982	3	1	3192	3.60	0.253	2.82	114.912	8.0758	90.014
662	NNA16	NES NORTH-1982	3	2	2216	4.06	0.333	2.87	89.970	7.3793	63.599
663	NNA16	NES NORTH-1982	3	3	2701	3.48	0.267	2.74	93.995	7.2117	74.007
664	NNA16	NES NORTH-1982	3	4	2846	4.15	0.351	2.81	118.109	9.9895	79.973
665	NNA16	NES NORTH-1982	3	5	2753	3.85	0.278	2.70	105.990	7.6533	74.331
666	NNA16	NES NORTH-1982	3	6	3129	3.76	0.334	2.84	117.650	10.4509	88.864
667	NNA16	NES NORTH-1982	3	7	3011	3.98	0.335	2.87	119.838	10.0868	86.416
668	NNA16	NES NORTH-1982	3	8	3248	3.56	0.311	2.62	115.629	10.1013	85.098
669	NNA16	NES NORTH-1982	3	9	2056	3.52	0.308	2.89	72.371	6.3325	59.418
670	NNA16	NES NORTH-1982	3	10	2614	3.83	0.318	2.91	100.116	8.3125	76.067
671	NNA16	NES NORTH-1982	3	11	3249	4.14	0.300	2.77	134.509	9.7470	89.997
672	NNA16	NES NORTH-1982	3	12	2718	4.24	0.360	3.07	115.243	9.7848	83.443
673	NNA16	NES NORTH-1982	3	13	3649	3.82	0.290	2.73	139.392	10.5821	99.618
674	NNA16	NES NORTH-1982	3	14	2653	3.96	0.344	2.77	105.059	9.1263	73.488
675	NNA16	NES NORTH-1982	3	15	2792	3.44	0.287	2.56	96.045	8.0130	71.475
676	NNA16	NES NORTH-1982	3	16	3015	3.82	0.282	2.89	115.173	8.5023	87.133
677	NNA16	NES NORTH-1982	3	17	3635	3.57	0.268	2.57	129.769	9.7418	93.419
678	NNA16	NES NORTH-1982	3	18	3155	3.45	0.265	2.55	108.847	8.3607	80.452
679	NNA16	NES NORTH-1982	3	19	2988	4.07	0.329	2.62	121.612	9.8305	78.286
680	NNA16	NES NORTH-1982	3	20	2965	3.76	0.282	2.48	111.484	8.3613	73.532
681	NNA16	NES NORTH-1982	3	21	3065	4.22	0.314	2.57	129.343	9.6241	78.770
682	NNA16	NES NORTH-1982	3	22	3098	3.78	0.266	2.46	117.104	8.2407	76.211
683	NNA16	NES NORTH-1982	4	1	2552	4.06	0.287	2.60	103.611	7.3242	66.352
684	NNA16	NES NORTH-1982	4	2	2900	3.37	0.261	2.51	97.730	7.5690	72.790
685	NNA16	NES NORTH-1982	4	3	2858	3.87	0.255	2.44	110.605	7.2879	69.735
686	NNA16	NES NORTH-1982	4	4	3040	4.11	0.340	2.86	124.944	10.3360	86.944
687	NNA16	NES NORTH-1982	4	5	2650	3.73	0.249	2.34	98.845	6.5985	62.010
688	NNA16	NES NORTH-1982	4	6	2575	3.81	0.309	2.78	98.107	7.9567	71.585
689	NNA16	NES NORTH-1982	4	7	3087	3.43	0.269	2.42	105.884	8.3040	74.705
690	NNA16	NES NORTH-1982	4	8	2704	3.31	0.304	2.66	89.502	8.2202	71.926
691	NNA16	NES NORTH-1982	4	9	2921	4.09	0.309	2.62	119.469	9.0259	76.530
692	NNA16	NES NORTH-1982	4	10	3531	3.82	0.276	2.44	134.884	9.7456	86.156
693	NNA16	NES NORTH-1982	4	11	3164	3.64	0.245	2.48	115.170	7.7518	78.467
694	NNA16	NES NORTH-1982	4	12	2871	3.87	0.304	2.49	111.108	8.7278	71.488
695	NNA16	NES NORTH-1982	4	13	3384	3.73	0.254	2.46	126.223	8.5954	83.246
696	NNA16	NES NORTH-1982	4	14	3197	3.83	0.335	2.49	122.445	10.7099	79.605
697	NNA16	NES NORTH-1982	4	15	2384	3.98	0.318	2.59	94.883	7.5811	61.746
698	NNA16	NES NORTH-1982	4	16	2782	4.07	0.313	2.66	113.227	8.7077	74.001
699	NNA16	NES NORTH-1982	4	17	2842	3.57	0.282	2.45	101.459	8.0144	69.629
700	NNA16	NES NORTH-1982	4	18	3549	3.77	0.288	2.44	133.797	10.2211	86.596
701	NNA16	NES NORTH-1982	4	19	2878	3.80	0.351	2.33	109.364	10.1018	67.057
702	NNA16	NES NORTH-1982	4	20	2906	3.77	0.317	2.29	109.556	9.2120	66.547

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
703	NNA16	NES NORTH-1982	4	21	3014	3.73	0.317	2.25	112.422	9.5544	67.815
704	NNA16	NES NORTH-1982	4	22	2918	3.26	0.268	2.36	95.127	7.8202	68.865
705	NNA17	NES NORTH-1982	1	1	3587	2.56	0.199	2.10	91.827	7.1381	75.327
706	NNA17	NES NORTH-1982	1	2	3563	2.63	0.181	2.17	93.707	6.4490	77.317
707	NNA17	NES NORTH-1982	1	3	4249	2.41	0.182	2.08	102.401	7.7332	88.379
708	NNA17	NES NORTH-1982	1	4	4165	2.64	0.210	1.96	109.956	8.7465	81.634
709	NNA17	NES NORTH-1982	1	5	4302	2.54	0.184	1.99	109.271	7.9157	85.610
710	NNA17	NES NORTH-1982	1	6	3940	2.41	0.207	2.04	94.954	8.1558	80.376
711	NNA17	NES NORTH-1982	1	7	3927	2.46	0.183	1.89	96.604	7.1864	74.220
712	NNA17	NES NORTH-1982	1	8	4926	2.62	0.204	2.10	129.061	10.0490	103.446
713	NNA17	NES NORTH-1982	1	9	4246	2.46	0.201	2.04	104.452	8.5345	86.618
714	NNA17	NES NORTH-1982	1	10	3655	2.92	0.226	2.02	106.726	8.2603	73.831
715	NNA17	NES NORTH-1982	1	11	4318	2.79	0.193	2.08	120.472	8.3337	89.814
716	NNA17	NES NORTH-1982	1	12	4651	2.82	0.231	2.22	131.158	10.7438	103.252
717	NNA17	NES NORTH-1982	1	13	3604	2.69	0.198	1.91	96.948	7.1359	68.836
718	NNA17	NES NORTH-1982	1	14	3939	2.76	0.208	2.23	108.716	8.1931	87.840
719	NNA17	NES NORTH-1982	1	15	3691	2.36	0.159	2.05	87.108	5.8687	75.665
720	NNA17	NES NORTH-1982	1	16	3529	2.56	0.162	2.13	90.342	5.7170	75.168
721	NNA17	NES NORTH-1982	1	17	4233	2.70	0.189	2.15	114.291	8.0004	91.009
722	NNA17	NES NORTH-1982	1	18	3775	2.72	0.162	1.91	102.680	6.1155	72.102
723	NNA17	NES NORTH-1982	1	19	3508	2.70	0.178	2.08	94.716	6.2442	72.966
724	NNA17	NES NORTH-1982	1	20	4251	2.81	0.205	1.95	119.453	8.7145	82.894
725	NNA17	NES NORTH-1982	1	21	4309	3.15	0.234	2.35	135.733	10.0831	101.261
726	NNA17	NES NORTH-1982	1	22	3821	2.53	0.174	2.41	96.671	6.6485	92.086
727	NNA17	NES NORTH-1982	2	1	3798	2.85	0.162	2.37	108.243	6.1528	90.013
728	NNA17	NES NORTH-1982	2	2	3220	2.77	0.193	2.33	89.194	6.2146	75.026
729	NNA17	NES NORTH-1982	2	3	3858	2.42	0.154	2.12	93.364	5.9413	81.790
730	NNA17	NES NORTH-1982	2	4	3885	2.41	0.153	2.10	93.628	5.9440	81.585
731	NNA17	NES NORTH-1982	2	5	3773	2.69	0.199	2.34	101.494	7.5083	88.288
732	NNA17	NES NORTH-1982	2	6	3330	2.69	0.208	1.92	89.577	6.9264	63.936
733	NNA17	NES NORTH-1982	2	7	3559	2.84	0.223	2.26	101.076	7.9366	80.433
734	NNA17	NES NORTH-1982	2	8	4515	2.76	0.228	1.99	124.614	10.2942	89.848
735	NNA17	NES NORTH-1982	2	9	4463	2.29	0.208	2.16	102.203	9.2830	96.401
736	NNA17	NES NORTH-1982	2	10	4399	2.61	0.204	2.30	114.814	8.9740	101.177
737	NNA17	NES NORTH-1982	2	11	3777	2.50	0.216	2.18	94.425	8.1583	82.339
738	NNA17	NES NORTH-1982	2	12	4244	2.60	0.234	2.30	110.344	9.9310	97.612
739	NNA17	NES NORTH-1982	2	13	3463	2.62	0.184	2.38	90.731	6.3719	82.419
740	NNA17	NES NORTH-1982	2	14	4306	3.01	0.202	2.31	129.611	8.6981	99.469
741	NNA17	NES NORTH-1982	2	15	3716	3.02	0.221	2.37	112.223	8.2124	88.069
742	NNA17	NES NORTH-1982	2	16	4243	2.20	0.168	2.00	93.346	7.1282	84.860
743	NNA17	NES NORTH-1982	2	17	4470	2.52	0.201	2.16	112.644	8.9847	96.552
744	NNA17	NES NORTH-1982	2	18	3672	2.68	0.202	2.15	98.410	7.4174	78.948
745	NNA17	NES NORTH-1982	2	19	3680	2.96	0.212	2.27	108.928	7.8016	83.536
746	NNA17	NES NORTH-1982	2	20	3421	2.88	0.237	2.47	98.525	8.1078	84.499
747	NNA17	NES NORTH-1982	2	21	4326	2.68	0.229	2.51	115.937	9.9065	108.583
748	NNA17	NES NORTH-1982	2	22	3357	2.70	0.200	2.30	90.639	6.7140	77.211
749	NNA17	NES NORTH-1982	3	1	3345	2.77	0.180	2.38	92.656	6.0210	79.611
750	NNA17	NES NORTH-1982	3	2	3360	2.62	0.199	2.33	88.032	6.6864	78.288
751	NNA17	NES NORTH-1982	3	3	3564	2.96	0.204	2.24	105.494	7.2706	79.834
752	NNA17	NES NORTH-1982	3	4	4131	2.44	0.189	2.28	100.796	7.8076	94.187
753	NNA17	NES NORTH-1982	3	5	4200	2.22	0.186	2.10	93.240	7.8120	88.200
754	NNA17	NES NORTH-1982	3	6	3672	2.60	0.161	2.20	95.472	5.9119	80.784
755	NNA17	NES NORTH-1982	3	7	3992	2.45	0.206	2.19	97.804	8.2235	87.425
756	NNA17	NES NORTH-1982	3	8	4226	1.95	0.174	1.98	82.407	7.3532	83.675

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
757	NNA17	NES NORTH-1982	3	9	4375	3.14	0.225	2.38	137.375	9.8437	104.125
758	NNA17	NES NORTH-1982	3	10	3558	2.71	0.210	2.08	96.422	7.4718	74.006
759	NNA17	NES NORTH-1982	3	11	3782	2.06	0.177	2.16	77.909	6.6941	81.691
760	NNA17	NES NORTH-1982	3	12	3701	2.88	0.230	2.32	106.589	8.5123	85.863
761	NNA17	NES NORTH-1982	3	13	4546	2.51	0.190	2.27	114.105	8.6374	103.194
762	NNA17	NES NORTH-1982	3	14	3655	2.57	0.232	2.37	93.933	8.4796	86.623
763	NNA17	NES NORTH-1982	3	15	4367	2.60	0.210	2.15	113.542	9.1707	93.890
764	NNA17	NES NORTH-1982	3	16	4125	2.82	0.201	2.28	116.325	8.2912	94.050
765	NNA17	NES NORTH-1982	3	17	4635	2.30	0.234	2.28	106.605	10.8459	105.678
766	NNA17	NES NORTH-1982	3	18	3016	2.57	0.271	2.46	77.511	8.1734	74.194
767	NNA17	NES NORTH-1982	3	19	3538	3.23	0.242	2.57	114.277	8.5620	90.927
768	NNA17	NES NORTH-1982	3	20	4059	3.44	0.259	2.35	139.630	10.5128	95.386
769	NNA17	NES NORTH-1982	3	21	4187	3.02	0.224	2.24	126.447	9.3789	93.789
770	NNA17	NES NORTH-1982	3	22	4190	2.72	0.201	2.27	113.968	8.4219	95.113
771	NNA17	NES NORTH-1982	4	1	3840	2.61	0.200	2.23	100.224	7.6800	85.632
772	NNA17	NES NORTH-1982	4	2	3581	2.41	0.178	2.40	86.302	6.3742	85.944
773	NNA17	NES NORTH-1982	4	3	3845	2.68	0.207	2.10	103.046	7.9591	80.745
774	NNA17	NES NORTH-1982	4	4	3636	2.51	0.205	2.62	91.264	7.4538	95.263
775	NNA17	NES NORTH-1982	4	5	3556	2.78	0.190	2.17	98.857	6.7564	77.165
776	NNA17	NES NORTH-1982	4	6	3207	2.81	0.231	2.52	90.117	7.4082	80.816
777	NNA17	NES NORTH-1982	4	7	5049	2.56	0.197	2.16	129.254	9.9465	109.058
778	NNA17	NES NORTH-1982	4	8	3520	2.95	0.233	2.42	103.840	8.2016	85.184
779	NNA17	NES NORTH-1982	4	9	4000	2.70	0.216	2.21	108.000	8.6400	88.400
780	NNA17	NES NORTH-1982	4	10	4461	2.30	0.213	2.36	102.603	9.5019	105.280
781	NNA17	NES NORTH-1982	4	11	4124	3.11	0.230	2.50	128.256	9.4852	103.100
782	NNA17	NES NORTH-1982	4	12	7000	2.39	0.197	2.30	167.300	13.7900	161.000
783	NNA17	NES NORTH-1982	4	13	4511	2.52	0.173	2.24	113.677	7.8040	101.046
784	NNA17	NES NORTH-1982	4	14	5220	2.61	0.218	2.07	136.242	11.3796	108.054
785	NNA17	NES NORTH-1982	4	15	2895	.	.	.	.	.	.
786	NNA17	NES NORTH-1982	4	16	4034	.	.	.	.	.	.
787	NNA17	NES NORTH-1982	4	17	3845	.	.	.	.	.	.
788	NNA17	NES NORTH-1982	4	18	4337	.	.	.	.	.	.
789	NNA17	NES NORTH-1982	4	19	2903	.	.	.	.	.	.
790	NNA17	NES NORTH-1982	4	20	3857	.	.	.	.	.	.
791	NNA17	NES NORTH-1982	4	21	3924	.	.	.	.	.	.
792	NNA17	NES NORTH-1982	4	22	3313	.	.	.	.	.	.
793	NNA18	NES NORTH-1982	1	1	1872	.	.	.	.	.	.
794	NNA18	NES NORTH-1982	1	2	2648	.	.	.	.	.	.
795	NNA18	NES NORTH-1982	1	3	2580	.	.	.	.	.	.
796	NNA18	NES NORTH-1982	1	4	2414	.	.	.	.	.	.
797	NNA18	NES NORTH-1982	1	5	2635	.	.	.	.	.	.
798	NNA18	NES NORTH-1982	1	6	2312	.	.	.	.	.	.
799	NNA18	NES NORTH-1982	1	7	2612	.	.	.	.	.	.
800	NNA18	NES NORTH-1982	1	8	3095	.	.	.	.	.	.
801	NNA18	NES NORTH-1982	1	9	2871	.	.	.	.	.	.
802	NNA18	NES NORTH-1982	1	10	1852	.	.	.	.	.	.
803	NNA18	NES NORTH-1982	1	11	2521	.	.	.	.	.	.
804	NNA18	NES NORTH-1982	1	12	2738	.	.	.	.	.	.
805	NNA18	NES NORTH-1982	1	13	2137	.	.	.	.	.	.
806	NNA18	NES NORTH-1982	1	14	2592	.	.	.	.	.	.
807	NNA18	NES NORTH-1982	1	15	2568	.	.	.	.	.	.
808	NNA18	NES NORTH-1982	1	16	2404	.	.	.	.	.	.
809	NNA18	NES NORTH-1982	1	17	2743	.	.	.	.	.	.
810	NNA18	NES NORTH-1982	1	18	2621	.	.	.	.	.	.

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
811	NNA18	NES NORTH-1982	1	19	2346	.	.	.	.	.	.
812	NNA18	NES NORTH-1982	1	20	2457	.	.	.	.	.	.
813	NNA18	NES NORTH-1982	1	21	2906	.	.	.	.	.	.
814	NNA18	NES NORTH-1982	1	22	2566	.	.	.	.	.	.
815	NNA18	NES NORTH-1982	2	1	2394	.	.	.	.	.	.
816	NNA18	NES NORTH-1982	2	2	1952	.	.	.	.	.	.
817	NNA18	NES NORTH-1982	2	3	1731	.	.	.	.	.	.
818	NNA18	NES NORTH-1982	2	4	2278	.	.	.	.	.	.
819	NNA18	NES NORTH-1982	2	5	2414	.	.	.	.	.	.
820	NNA18	NES NORTH-1982	2	6	2359	.	.	.	.	.	.
821	NNA18	NES NORTH-1982	2	7	2053	.	.	.	.	.	.
822	NNA18	NES NORTH-1982	2	8	2322	.	.	.	.	.	.
823	NNA18	NES NORTH-1982	2	9	2764	.	.	.	.	.	.
824	NNA18	NES NORTH-1982	2	10	2530	.	.	.	.	.	.
825	NNA18	NES NORTH-1982	2	11	1654	.	.	.	.	.	.
826	NNA18	NES NORTH-1982	2	12	2220	.	.	.	.	.	.
827	NNA18	NES NORTH-1982	2	13	2234	.	.	.	.	.	.
828	NNA18	NES NORTH-1982	2	14	2744	.	.	.	.	.	.
829	NNA18	NES NORTH-1982	2	15	2058	.	.	.	.	.	.
830	NNA18	NES NORTH-1982	2	16	2766	.	.	.	.	.	.
831	NNA18	NES NORTH-1982	2	17	2129	.	.	.	.	.	.
832	NNA18	NES NORTH-1982	2	18	2392	.	.	.	.	.	.
833	NNA18	NES NORTH-1982	2	19	2844	.	.	.	.	.	.
834	NNA18	NES NORTH-1982	2	20	1991	.	.	.	.	.	.
835	NNA18	NES NORTH-1982	2	21	2154	.	.	.	.	.	.
836	NNA18	NES NORTH-1982	2	22	2022	.	.	.	.	.	.
837	NNA18	NES NORTH-1982	3	1	2622	2.82	0.235	2.50	73.9404	6.16170	65.5500
838	NNA18	NES NORTH-1982	3	2	1905	2.68	0.186	2.10	51.0540	3.54330	40.0050
839	NNA18	NES NORTH-1982	3	3	1901	2.96	0.194	2.61	56.2696	3.68794	49.6161
840	NNA18	NES NORTH-1982	3	4	2128	3.02	0.222	2.00	64.2656	4.72416	42.5600
841	NNA18	NES NORTH-1982	3	5	2334	3.11	0.205	2.23	72.5874	4.78470	52.0482
842	NNA18	NES NORTH-1982	3	6	2487	2.86	0.242	2.34	71.1282	6.01854	58.1958
843	NNA18	NES NORTH-1982	3	7	2279	2.73	0.212	2.24	62.2167	4.83148	51.0496
844	NNA18	NES NORTH-1982	3	8	2437	3.15	0.242	2.05	76.7655	5.89754	49.9585
845	NNA18	NES NORTH-1982	3	9	2292	3.08	0.219	2.29	70.5936	5.01948	52.4868
846	NNA18	NES NORTH-1982	3	10	2230	3.05	0.201	2.13	68.0150	4.48230	47.4990
847	NNA18	NES NORTH-1982	3	11	2588	2.72	0.214	2.28	70.3936	5.53832	59.0064
848	NNA18	NES NORTH-1982	3	12	2640	3.14	0.251	2.36	82.8960	6.62640	62.3040
849	NNA18	NES NORTH-1982	3	13	2955	2.74	0.184	2.26	80.9670	5.43720	66.7830
850	NNA18	NES NORTH-1982	3	14	2466	3.06	0.234	2.24	75.4596	5.77044	55.2384
851	NNA18	NES NORTH-1982	3	15	2768	2.86	0.219	2.26	79.1648	6.06192	62.5568
852	NNA18	NES NORTH-1982	3	16	2729	3.14	0.226	2.42	85.6906	6.16754	66.0418
853	NNA18	NES NORTH-1982	3	17	2628	2.87	0.224	2.47	75.4236	5.88672	64.9116
854	NNA18	NES NORTH-1982	3	18	2099	3.54	0.246	2.33	74.3046	5.16354	48.9067
855	NNA18	NES NORTH-1982	3	19	2562	2.84	0.221	2.52	72.7608	5.66202	64.5624
856	NNA18	NES NORTH-1982	3	20	2976	2.09	0.246	2.48	62.1984	7.32096	73.8048
857	NNA18	NES NORTH-1982	3	21	2377	2.98	0.230	2.07	70.8346	5.46710	49.2039
858	NNA18	NES NORTH-1982	3	22	2364	3.26	0.203	2.22	77.0664	4.79892	52.4808
859	NNA18	NES NORTH-1982	4	1	1889	3.21	0.232	2.24	60.6369	4.38248	42.3136
860	NNA18	NES NORTH-1982	4	2	2066	3.37	0.223	2.38	69.6242	4.60718	49.1708
861	NNA18	NES NORTH-1982	4	3	2513	3.01	0.194	2.27	75.6413	4.87522	57.0451
862	NNA18	NES NORTH-1982	4	4	2186	3.03	0.242	2.38	66.2358	5.29012	52.0268
863	NNA18	NES NORTH-1982	4	5	2111	2.54	0.211	2.10	53.6194	4.45421	44.3310
864	NNA18	NES NORTH-1982	4	6	2262	2.62	0.240	2.17	59.2644	5.42880	49.0854

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
865	NNA18	NES NORTH-1982	4	7	2502	2.42	0.216	2.10	60.548	5.40432	52.5420
866	NNA18	NES NORTH-1982	4	8	2385	3.17	0.268	2.40	75.604	6.39180	57.2400
867	NNA18	NES NORTH-1982	4	9	2551	2.56	0.258	2.28	65.306	6.58158	58.1628
868	NNA18	NES NORTH-1982	4	10	3169	2.68	0.198	2.22	84.929	6.27462	70.3518
869	NNA18	NES NORTH-1982	4	11	2888	3.29	0.270	2.48	95.015	7.79760	71.6224
870	NNA18	NES NORTH-1982	4	12	3009	3.44	0.276	2.19	103.510	8.30484	65.8971
871	NNA18	NES NORTH-1982	4	13	2626	2.72	0.209	2.00	71.427	5.48834	52.5200
872	NNA18	NES NORTH-1982	4	14	1652	2.84	0.231	2.40	46.917	3.81612	39.6480
873	NNA18	NES NORTH-1982	4	15	2219	3.31	0.251	2.43	73.449	5.56969	53.9217
874	NNA18	NES NORTH-1982	4	16	2184	3.11	0.274	2.52	67.922	5.98416	55.0368
875	NNA18	NES NORTH-1982	4	17	2444	2.69	0.236	2.08	65.744	5.76784	50.8352
876	NNA18	NES NORTH-1982	4	18	2745	2.25	0.214	2.24	61.762	5.87430	61.4880
877	NNA18	NES NORTH-1982	4	19	1851	3.05	0.267	2.26	56.455	4.94217	41.8326
878	NNA18	NES NORTH-1982	4	20	2624	2.80	0.250	2.26	73.472	6.56000	59.3024
879	NNA18	NES NORTH-1982	4	21	2946	2.69	0.276	2.27	79.247	8.13096	66.8742
880	NNA18	NES NORTH-1982	4	22	1933	2.54	0.219	2.25	49.098	4.23327	43.4925
881	NSA15	NES SOUTH-1982	1	1	210	3.60	0.153	1.95	7.560	0.32130	4.0950
882	NSA15	NES SOUTH-1982	1	2	921	3.24	0.145	1.50	29.840	1.33545	13.8150
883	NSA15	NES SOUTH-1982	1	3	368	3.23	0.149	1.61	11.886	0.54832	5.9248
884	NSA15	NES SOUTH-1982	1	4	657	3.68	0.195	1.83	24.178	1.28115	12.0231
885	NSA15	NES SOUTH-1982	1	5	1347	3.68	0.210	2.05	49.570	2.82870	27.6135
886	NSA15	NES SOUTH-1982	1	6	1864	3.45	0.212	1.98	64.308	3.95168	36.9072
887	NSA15	NES SOUTH-1982	1	7	842	3.42	0.201	1.78	28.796	1.69242	14.9876
888	NSA15	NES SOUTH-1982	1	8	1314	3.66	0.199	2.10	48.092	2.61486	27.5940
889	NSA15	NES SOUTH-1982	1	9	1666	3.95	0.207	1.90	65.807	3.44862	31.6540
890	NSA15	NES SOUTH-1982	1	10	1001	3.68	0.172	1.72	36.837	1.72172	17.2172
891	NSA15	NES SOUTH-1982	1	11	1634	3.65	0.180	1.81	59.641	2.94120	29.5754
892	NSA15	NES SOUTH-1982	1	12	1769	3.79	0.225	1.91	67.045	3.98025	33.7879
893	NSA15	NES SOUTH-1982	1	13	2371	3.65	0.238	2.07	86.541	5.64298	49.0797
894	NSA15	NES SOUTH-1982	1	14	1973	3.86	0.236	1.66	76.158	4.65628	32.7518
895	NSA15	NES SOUTH-1982	1	15	2278	3.41	0.169	1.82	77.680	3.84982	41.4596
896	NSA15	NES SOUTH-1982	1	16	1645	3.75	0.200	1.72	61.687	3.29000	28.2940
897	NSA15	NES SOUTH-1982	1	17	1607	3.78	0.219	1.90	60.745	3.51933	30.5330
898	NSA15	NES SOUTH-1982	1	18	1985	3.83	0.205	1.83	76.025	4.06925	36.3255
899	NSA15	NES SOUTH-1982	1	19	1588	3.71	0.193	1.76	58.915	3.06484	27.9488
900	NSA15	NES SOUTH-1982	1	20	1454	3.66	0.190	2.14	53.216	2.76260	31.1156
901	NSA15	NES SOUTH-1982	1	21	2784	3.51	0.209	1.77	97.718	5.81856	49.2768
902	NSA15	NES SOUTH-1982	1	22	72	2.96	0.113	1.33	2.131	0.08136	0.9576
903	NSA15	NES SOUTH-1982	2	1	116	3.05	0.122	1.48	3.538	0.14152	1.7168
904	NSA15	NES SOUTH-1982	2	2	2970	3.53	0.135	1.76	104.841	4.00950	52.2720
905	NSA15	NES SOUTH-1982	2	3	531	3.71	0.168	1.67	19.700	0.89208	8.8677
906	NSA15	NES SOUTH-1982	2	4	1698	3.70	0.207	1.97	62.826	3.51486	33.4506
907	NSA15	NES SOUTH-1982	2	5	1883	3.43	0.213	2.04	64.587	4.01079	38.4132
908	NSA15	NES SOUTH-1982	2	6	3361	3.51	0.224	2.12	117.971	7.52864	71.2532
909	NSA15	NES SOUTH-1982	2	7	1395	3.43	0.195	1.90	47.848	2.72025	26.5050
910	NSA15	NES SOUTH-1982	2	8	1570	3.33	0.173	1.82	52.281	2.71610	28.5740
911	NSA15	NES SOUTH-1982	2	9	1961	3.63	0.194	1.87	71.184	3.80434	36.6707
912	NSA15	NES SOUTH-1982	2	10	1475	3.71	0.196	1.76	54.722	2.89100	25.9600
913	NSA15	NES SOUTH-1982	2	11	2183	3.65	0.205	1.97	79.679	4.47515	43.0051
914	NSA15	NES SOUTH-1982	2	12	2867	3.29	0.229	2.03	94.324	6.56543	58.2001
915	NSA15	NES SOUTH-1982	2	13	1156	3.65	0.158	1.79	42.194	1.82648	20.6924
916	NSA15	NES SOUTH-1982	2	14	2640	3.33	0.197	1.93	87.912	5.20080	50.9520
917	NSA15	NES SOUTH-1982	2	15	2983	3.43	0.222	2.18	102.317	6.62226	65.0294
918	NSA15	NES SOUTH-1982	2	16	1345	3.84	0.190	1.87	51.648	2.55550	25.1515

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
919	NSA15	NES SOUTH-1982	2	17	2207	3.83	0.205	1.87	84.528	4.52435	41.2709
920	NSA15	NES SOUTH-1982	2	18	1982	3.83	0.214	2.06	75.911	4.24148	40.8292
921	NSA15	NES SOUTH-1982	2	19	1686	3.72	0.179	1.95	62.719	3.01794	32.8770
922	NSA15	NES SOUTH-1982	2	20	2487	3.56	0.198	2.03	88.537	4.92426	50.4861
923	NSA15	NES SOUTH-1982	2	21	2865	3.90	0.220	1.91	111.735	6.30300	54.7215
924	NSA15	NES SOUTH-1982	2	22	280	3.62	0.145	1.79	10.136	0.40600	5.0120
925	NSA15	NES SOUTH-1982	3	1	693	3.43	0.143	1.42	23.770	0.99099	9.8406
926	NSA15	NES SOUTH-1982	3	2	121	3.02	0.121	1.61	3.654	0.14641	1.9481
927	NSA15	NES SOUTH-1982	3	3	743	3.37	0.142	1.65	25.039	1.05506	12.2595
928	NSA15	NES SOUTH-1982	3	4	1837	3.77	0.192	1.96	69.255	3.52704	36.0052
929	NSA15	NES SOUTH-1982	3	5	2278	3.72	0.198	2.05	84.742	4.51044	46.6990
930	NSA15	NES SOUTH-1982	3	6	2147	3.81	0.231	2.18	81.801	4.95957	46.8046
931	NSA15	NES SOUTH-1982	3	7	1958	3.67	0.184	2.05	71.859	3.60272	40.1390
932	NSA15	NES SOUTH-1982	3	8	3167	3.44	0.187	1.95	108.945	5.92229	61.7565
933	NSA15	NES SOUTH-1982	3	9	2188	3.59	0.192	2.15	78.549	4.20096	47.0420
934	NSA15	NES SOUTH-1982	3	10	1831	3.44	0.204	2.26	62.986	3.73524	41.3806
935	NSA15	NES SOUTH-1982	3	11	2602	3.74	0.202	1.96	97.315	5.25604	50.9992
936	NSA15	NES SOUTH-1982	3	12	2118	3.84	0.218	1.95	81.331	4.61724	41.3010
937	NSA15	NES SOUTH-1982	3	13	1713	4.12	0.205	1.85	70.576	3.51165	31.6905
938	NSA15	NES SOUTH-1982	3	14	3193	3.56	0.224	2.25	113.671	7.15232	71.8425
939	NSA15	NES SOUTH-1982	3	15	3363	3.42	0.208	1.95	115.015	6.99504	65.5785
940	NSA15	NES SOUTH-1982	3	16	3074	3.51	0.175	2.02	107.897	5.37950	62.0948
941	NSA15	NES SOUTH-1982	3	17	1782	3.75	0.201	1.72	66.825	3.58182	30.6504
942	NSA15	NES SOUTH-1982	3	18	2517	3.73	0.194	2.22	93.884	4.88298	55.8774
943	NSA15	NES SOUTH-1982	3	19	1389	3.78	0.202	1.76	52.504	2.80578	24.4464
944	NSA15	NES SOUTH-1982	3	20	2184	3.59	0.211	1.67	78.406	4.60824	36.4728
945	NSA15	NES SOUTH-1982	3	21	2492	3.63	0.220	1.81	90.460	5.48240	45.1052
946	NSA15	NES SOUTH-1982	3	22	996	3.67	0.142	1.87	36.553	1.41432	18.6252
947	NSA15	NES SOUTH-1982	4	1	163	3.46	0.143	1.78	5.640	0.23309	2.9014
948	NSA15	NES SOUTH-1982	4	2	754	3.55	0.133	1.45	26.767	1.00282	10.9330
949	NSA15	NES SOUTH-1982	4	3	651	3.50	0.147	1.27	22.785	0.95697	8.2677
950	NSA15	NES SOUTH-1982	4	4	1342	3.50	0.167	2.04	46.970	2.24114	27.3768
951	NSA15	NES SOUTH-1982	4	5	1544	3.65	0.196	1.55	56.356	3.02624	23.9320
952	NSA15	NES SOUTH-1982	4	6	2502	3.61	0.212	1.58	90.322	5.30424	39.5316
953	NSA15	NES SOUTH-1982	4	7	1483	3.58	0.176	1.65	53.091	2.61008	24.4695
954	NSA15	NES SOUTH-1982	4	8	2804	3.75	0.220	1.91	105.150	6.16880	53.5564
955	NSA15	NES SOUTH-1982	4	9	.	.	.	.	.	.	.
956	NSA15	NES SOUTH-1982	4	10	2060	3.63	0.174	2.16	74.778	3.58440	44.4960
957	NSA15	NES SOUTH-1982	4	11	1863	3.64	0.215	2.15	67.813	4.00545	40.0545
958	NSA15	NES SOUTH-1982	4	12	1603	3.40	0.109	1.70	54.502	1.74727	27.2510
959	NSA15	NES SOUTH-1982	4	13	.	.	.	.	.	.	.
960	NSA15	NES SOUTH-1982	4	14	2853	3.62	0.207	1.97	103.279	5.90571	56.2041
961	NSA15	NES SOUTH-1982	4	15	2619	3.64	0.191	1.66	95.332	5.00229	43.4754
962	NSA15	NES SOUTH-1982	4	16	1297	3.80	0.171	1.64	49.286	2.21787	21.2708
963	NSA15	NES SOUTH-1982	4	17	2099	3.83	0.185	1.57	80.392	3.88315	32.9543
964	NSA15	NES SOUTH-1982	4	18	1469	3.82	0.179	1.18	56.116	2.62951	17.3342
965	NSA15	NES SOUTH-1982	4	19	2932	3.81	0.180	1.58	111.709	5.27760	46.3256
966	NSA15	NES SOUTH-1982	4	20	2631	3.90	0.180	1.82	102.609	4.73580	47.8842
967	NSA15	NES SOUTH-1982	4	21	2087	3.27	0.191	1.93	68.245	3.98617	40.2791
968	NSA15	NES SOUTH-1982	4	22	219	3.61	0.140	1.88	7.906	0.30660	4.1172
969	NSA16	NES SOUTH-1982	1	1	656	3.10	0.148	2.78	20.336	0.97088	18.2368
970	NSA16	NES SOUTH-1982	1	2	1165	2.54	0.150	2.71	29.591	1.74750	31.5715
971	NSA16	NES SOUTH-1982	1	3	689	3.18	0.168	2.70	21.910	1.15752	18.6030
972	NSA16	NES SOUTH-1982	1	4	2384	3.30	0.241	3.00	78.672	5.74544	71.5200

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
973	NSA16	NES SOUTH-1982	1	5	2986	3.51	0.295	3.00	104.809	8.8087	89.580
974	NSA16	NES SOUTH-1982	1	6	3491	3.30	0.282	2.91	115.203	9.8446	101.588
975	NSA16	NES SOUTH-1982	1	7	2360	3.50	0.231	3.02	82.600	5.4516	71.272
976	NSA16	NES SOUTH-1982	1	8	3026	3.34	0.227	3.03	101.068	6.8690	91.688
977	NSA16	NES SOUTH-1982	1	9	3012	3.30	0.299	3.11	99.396	9.0059	93.673
978	NSA16	NES SOUTH-1982	1	10	2401	3.05	0.286	2.81	73.230	6.8669	67.468
979	NSA16	NES SOUTH-1982	1	11	3051	3.31	0.230	2.92	100.988	7.0173	89.089
980	NSA16	NES SOUTH-1982	1	12	3178	3.25	0.308	3.00	103.285	9.7882	95.340
981	NSA16	NES SOUTH-1982	1	13	3148	3.43	0.247	2.71	107.976	7.7756	85.311
982	NSA16	NES SOUTH-1982	1	14	3254	3.84	0.290	2.68	124.954	9.4366	87.207
983	NSA16	NES SOUTH-1982	1	15	2591	3.78	0.229	2.90	97.940	5.9334	75.139
984	NSA16	NES SOUTH-1982	1	16	2713	3.39	0.214	2.74	91.971	5.8058	74.336
985	NSA16	NES SOUTH-1982	1	17	2669	3.56	0.234	2.74	95.016	6.2455	73.131
986	NSA16	NES SOUTH-1982	1	18	3277	3.68	0.305	3.11	120.594	9.9948	101.915
987	NSA16	NES SOUTH-1982	1	19	3096	3.75	0.260	3.09	116.100	8.0496	95.666
988	NSA16	NES SOUTH-1982	1	20	3047	3.80	0.268	2.94	115.786	8.1660	89.582
989	NSA16	NES SOUTH-1982	1	21	3066	3.70	0.265	2.77	113.442	8.1249	84.928
990	NSA16	NES SOUTH-1982	1	22	355	3.39	0.149	2.40	12.034	0.5289	8.520
991	NSA16	NES SOUTH-1982	2	1	580	3.26	0.170	2.56	18.908	0.9860	14.848
992	NSA16	NES SOUTH-1982	2	2	1458	3.28	0.180	2.78	47.822	2.6244	40.532
993	NSA16	NES SOUTH-1982	2	3	692	3.38	0.186	2.72	23.390	1.2871	18.822
994	NSA16	NES SOUTH-1982	2	4	2831	3.45	0.265	2.82	97.669	7.5021	79.834
995	NSA16	NES SOUTH-1982	2	5	2736	3.86	0.324	3.18	105.610	8.8646	87.005
996	NSA16	NES SOUTH-1982	2	6	3564	3.42	0.326	3.08	121.889	11.6186	109.771
997	NSA16	NES SOUTH-1982	2	7	2270	3.61	0.260	2.72	81.947	5.9020	61.744
998	NSA16	NES SOUTH-1982	2	8	2711	3.59	0.280	2.91	97.325	7.5908	78.890
999	NSA16	NES SOUTH-1982	2	9	3198	3.42	0.257	2.91	109.372	8.2189	93.062
1000	NSA16	NES SOUTH-1982	2	10	2533	3.82	0.271	2.75	96.761	6.8644	69.657
1001	NSA16	NES SOUTH-1982	2	11	2996	3.73	0.300	2.84	111.751	8.9880	85.086
1002	NSA16	NES SOUTH-1982	2	12	2966	3.61	0.344	3.48	107.073	10.2030	103.217
1003	NSA16	NES SOUTH-1982	2	13	1750	3.83	0.205	2.88	67.025	3.5875	50.400
1004	NSA16	NES SOUTH-1982	2	14	3146	3.52	0.290	2.98	110.739	9.1234	93.751
1005	NSA16	NES SOUTH-1982	2	15	3289	3.75	0.312	2.98	123.337	10.2617	98.012
1006	NSA16	NES SOUTH-1982	2	16	2243	3.53	0.246	2.88	79.178	5.5178	64.598
1007	NSA16	NES SOUTH-1982	2	17	2991	3.61	0.256	2.70	107.975	7.6570	80.757
1008	NSA16	NES SOUTH-1982	2	18	2700	3.66	0.286	3.24	98.820	7.7220	87.480
1009	NSA16	NES SOUTH-1982	2	19	2112	3.70	0.213	2.84	78.144	4.4986	59.981
1010	NSA16	NES SOUTH-1982	2	20	3132	3.70	0.314	3.34	115.884	9.8345	104.609
1011	NSA16	NES SOUTH-1982	2	21	3148	3.53	0.288	3.16	111.124	9.0662	99.477
1012	NSA16	NES SOUTH-1982	2	22	1244	3.69	0.218	3.18	45.904	2.7119	39.559
1013	NSA16	NES SOUTH-1982	3	1	1415	3.39	0.173	2.38	47.968	2.4479	33.677
1014	NSA16	NES SOUTH-1982	3	2	719	3.78	0.172	2.94	27.178	1.2367	21.139
1015	NSA16	NES SOUTH-1982	3	3	1684	3.44	0.204	3.12	57.930	3.4354	52.541
1016	NSA16	NES SOUTH-1982	3	4	2749	3.79	0.268	3.46	104.187	7.3673	95.115
1017	NSA16	NES SOUTH-1982	3	5	3301	3.72	0.336	3.38	122.797	11.0914	111.574
1018	NSA16	NES SOUTH-1982	3	6	3107	3.73	0.332	3.46	115.891	10.3152	107.502
1019	NSA16	NES SOUTH-1982	3	7	2717	3.52	0.257	3.08	95.638	6.9827	83.684
1020	NSA16	NES SOUTH-1982	3	8	3208	2.79	0.296	3.08	89.503	9.4957	98.806
1021	NSA16	NES SOUTH-1982	3	9	3262	3.93	0.342	2.98	128.197	11.1560	97.208
1022	NSA16	NES SOUTH-1982	3	10	2291	3.81	0.260	3.00	87.287	5.9566	68.730
1023	NSA16	NES SOUTH-1982	3	11	2971	3.69	0.296	2.86	109.630	8.7942	84.971
1024	NSA16	NES SOUTH-1982	3	12	3299	3.57	0.335	3.22	117.774	11.0516	106.228
1025	NSA16	NES SOUTH-1982	3	13	2905	3.47	0.238	2.42	100.803	6.9139	70.301
1026	NSA16	NES SOUTH-1982	3	14	3083	4.03	0.319	2.78	124.245	9.8348	85.707

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1027	NSA16	NES SOUTH-1982	3	15	3521	3.40	0.291	2.84	119.714	10.2461	99.996
1028	NSA16	NES SOUTH-1982	3	16	2761	3.86	0.245	3.12	106.575	6.7644	86.143
1029	NSA16	NES SOUTH-1982	3	17	2275	3.20	0.200	3.26	72.800	4.5500	74.165
1030	NSA16	NES SOUTH-1982	3	18	3586	3.94	0.327	3.18	141.288	11.7262	114.035
1031	NSA16	NES SOUTH-1982	3	19	2498	4.14	0.244	2.54	103.417	6.0951	63.449
1032	NSA16	NES SOUTH-1982	3	20	3439	3.71	0.302	3.06	127.587	10.3858	105.233
1033	NSA16	NES SOUTH-1982	3	21	2670	3.91	0.303	3.04	104.397	8.0901	81.168
1034	NSA16	NES SOUTH-1982	3	22	1569	3.55	0.175	2.84	55.699	2.7457	44.560
1035	NSA16	NES SOUTH-1982	4	1	536	3.83	0.175	2.68	20.529	0.9380	14.365
1036	NSA16	NES SOUTH-1982	4	2	1021	3.44	0.162	2.78	35.122	1.6540	28.384
1037	NSA16	NES SOUTH-1982	4	3	1244	3.69	0.178	2.84	45.904	2.2143	35.330
1038	NSA16	NES SOUTH-1982	4	4	1928	3.67	0.194	3.18	70.758	3.7403	61.310
1039	NSA16	NES SOUTH-1982	4	5	3047	3.69	0.340	3.14	112.434	10.3598	95.676
1040	NSA16	NES SOUTH-1982	4	6	3403	3.93	0.327	3.22	133.738	11.1278	109.577
1041	NSA16	NES SOUTH-1982	4	7	2838	4.25	0.269	2.90	120.615	7.6342	82.302
1042	NSA16	NES SOUTH-1982	4	8	3002	3.65	0.246	3.36	109.573	7.3849	100.867
1043	NSA16	NES SOUTH-1982	4	9	.	.	.	.	.	.	.
1044	NSA16	NES SOUTH-1982	4	10	3098	3.74	0.271	3.60	115.865	8.3956	111.528
1045	NSA16	NES SOUTH-1982	4	11	2843	3.28	0.284	3.20	93.250	8.0741	90.976
1046	NSA16	NES SOUTH-1982	4	12	3031	4.06	0.339	2.86	123.059	10.2751	86.687
1047	NSA16	NES SOUTH-1982	4	13	.	.	.	.	.	.	.
1048	NSA16	NES SOUTH-1982	4	14	3479	3.62	0.289	2.92	125.940	10.0543	101.587
1049	NSA16	NES SOUTH-1982	4	15	4209	3.63	0.336	2.98	152.787	14.1422	125.428
1050	NSA16	NES SOUTH-1982	4	16	1654	3.46	0.240	3.10	57.228	3.9696	51.274
1051	NSA16	NES SOUTH-1982	4	17	2832	3.91	0.255	3.20	110.731	7.2216	90.624
1052	NSA16	NES SOUTH-1982	4	18	3366	3.59	0.224	3.10	120.839	7.5398	104.346
1053	NSA16	NES SOUTH-1982	4	19	2905	3.89	0.248	3.24	113.004	7.2044	94.122
1054	NSA16	NES SOUTH-1982	4	20	3037	4.17	0.311	2.88	126.643	9.4451	87.466
1055	NSA16	NES SOUTH-1982	4	21	3109	4.14	0.292	3.06	128.713	9.0783	95.135
1056	NSA16	NES SOUTH-1982	4	22	985	3.55	0.177	3.00	34.967	1.7434	29.550
1057	NSA17	NES SOUTH-1982	1	1	1153	3.09	0.106	2.34	35.628	1.2222	26.980
1058	NSA17	NES SOUTH-1982	1	2	1325	2.85	0.124	2.42	37.762	1.6430	32.065
1059	NSA17	NES SOUTH-1982	1	3	1134	3.14	0.127	2.50	35.608	1.4402	28.350
1060	NSA17	NES SOUTH-1982	1	4	3584	3.12	0.156	2.52	111.821	5.5910	90.317
1061	NSA17	NES SOUTH-1982	1	5	3753	3.30	0.185	2.38	123.849	6.9430	89.321
1062	NSA17	NES SOUTH-1982	1	6	4074	3.04	0.217	2.12	123.850	8.8406	86.369
1063	NSA17	NES SOUTH-1982	1	7	2523	3.00	0.148	2.40	75.690	3.7340	60.552
1064	NSA17	NES SOUTH-1982	1	8	3261	2.96	0.158	2.56	96.526	5.1524	83.482
1065	NSA17	NES SOUTH-1982	1	9	2992	3.13	0.198	2.22	93.650	5.9242	66.422
1066	NSA17	NES SOUTH-1982	1	10	2323	3.17	0.146	2.30	73.639	3.3916	53.429
1067	NSA17	NES SOUTH-1982	1	11	3407	3.14	0.171	2.26	106.980	5.8260	76.998
1068	NSA17	NES SOUTH-1982	1	12	3522	3.44	0.212	2.07	121.157	7.4666	72.905
1069	NSA17	NES SOUTH-1982	1	13	4361	2.81	0.205	2.20	122.544	8.9400	95.942
1070	NSA17	NES SOUTH-1982	1	14	3995	3.02	0.173	1.95	120.649	6.9113	77.902
1071	NSA17	NES SOUTH-1982	1	15	2962	2.87	0.141	2.18	85.009	4.1764	64.572
1072	NSA17	NES SOUTH-1982	1	16	2645	3.14	0.148	2.16	83.053	3.9146	57.132
1073	NSA17	NES SOUTH-1982	1	17	2906	2.83	0.164	2.20	82.240	4.7658	63.932
1074	NSA17	NES SOUTH-1982	1	18	3679	3.16	0.224	2.57	116.256	8.2410	94.550
1075	NSA17	NES SOUTH-1982	1	19	2967	3.15	0.164	2.66	93.460	4.8659	78.922
1076	NSA17	NES SOUTH-1982	1	20	3009	2.97	0.165	2.72	89.367	4.9648	81.845
1077	NSA17	NES SOUTH-1982	1	21	4119	3.09	0.195	2.07	127.277	8.0320	85.263
1078	NSA17	NES SOUTH-1982	1	22	878	3.00	0.114	2.20	26.340	1.0009	19.316
1079	NSA17	NES SOUTH-1982	2	1	774	2.93	0.111	2.34	22.678	0.8591	18.112
1080	NSA17	NES SOUTH-1982	2	2	1512	3.00	0.127	2.16	45.360	1.9202	32.659

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1081	NSA17	NES SOUTH-1982	2	3	1104	3.15	0.145	2.22	34.776	1.60080	24.509
1082	NSA17	NES SOUTH-1982	2	4	3817	3.06	0.171	2.44	116.800	6.52707	93.135
1083	NSA17	NES SOUTH-1982	2	5	3934	2.92	0.196	2.40	114.873	7.71064	94.416
1084	NSA17	NES SOUTH-1982	2	6	3999	3.06	0.195	2.08	122.369	7.79805	83.179
1085	NSA17	NES SOUTH-1982	2	7	3449	2.93	0.158	2.22	101.056	5.44942	76.568
1086	NSA17	NES SOUTH-1982	2	8	3338	3.27	0.169	2.06	109.153	5.64122	68.763
1087	NSA17	NES SOUTH-1982	2	9	3885	2.94	0.203	2.52	114.219	7.88655	97.902
1088	NSA17	NES SOUTH-1982	2	10	2427	3.26	0.177	2.10	79.120	4.29579	50.967
1089	NSA17	NES SOUTH-1982	2	11	3661	3.05	0.198	2.10	111.660	7.24878	76.881
1090	NSA17	NES SOUTH-1982	2	12	3747	2.79	0.220	2.58	104.541	8.24340	96.673
1091	NSA17	NES SOUTH-1982	2	13	1795	3.08	0.137	2.04	55.286	2.45915	36.618
1092	NSA17	NES SOUTH-1982	2	14	3215	2.97	0.202	2.20	95.485	6.49430	70.730
1093	NSA17	NES SOUTH-1982	2	15	3394	3.30	0.245	2.22	112.002	8.31530	75.347
1094	NSA17	NES SOUTH-1982	2	16	2339	3.26	0.165	2.18	76.251	3.85935	50.990
1095	NSA17	NES SOUTH-1982	2	17	4334	2.79	0.171	2.52	120.919	7.41114	109.217
1096	NSA17	NES SOUTH-1982	2	18	4377	3.27	0.194	2.64	143.128	8.49138	115.553
1097	NSA17	NES SOUTH-1982	2	19	2689	3.24	0.153	2.34	87.124	4.11417	62.923
1098	NSA17	NES SOUTH-1982	2	20	3069	3.12	0.183	2.04	95.753	5.61627	62.608
1099	NSA17	NES SOUTH-1982	2	21	3169	3.64	0.202	2.10	115.352	6.40138	66.549
1100	NSA17	NES SOUTH-1982	2	22	969	2.82	0.143	2.23	27.326	1.38567	21.609
1101	NSA17	NES SOUTH-1982	3	1	1239	2.60	0.114	2.43	32.214	1.41246	30.108
1102	NSA17	NES SOUTH-1982	3	2	1302	3.03	0.134	2.36	39.451	1.74468	30.727
1103	NSA17	NES SOUTH-1982	3	3	1665	2.64	0.154	2.45	43.956	2.56410	40.792
1104	NSA17	NES SOUTH-1982	3	4	2629	2.70	0.185	2.20	70.983	4.86365	57.838
1105	NSA17	NES SOUTH-1982	3	5	3914	2.72	0.206	2.40	106.461	8.06284	93.936
1106	NSA17	NES SOUTH-1982	3	6	3553	2.68	0.199	2.54	95.220	7.07047	90.246
1107	NSA17	NES SOUTH-1982	3	7	2678	2.55	0.166	2.27	68.289	4.44548	60.791
1108	NSA17	NES SOUTH-1982	3	8	3305	3.37	0.209	2.30	111.378	6.90745	76.015
1109	NSA17	NES SOUTH-1982	3	9	2804	3.52	0.226	2.22	98.701	6.33704	62.249
1110	NSA17	NES SOUTH-1982	3	10	2290	3.05	0.178	2.28	69.845	4.07620	52.212
1111	NSA17	NES SOUTH-1982	3	11	3559	3.14	0.199	2.28	111.753	7.08241	81.145
1112	NSA17	NES SOUTH-1982	3	12	2864	2.62	0.241	2.17	75.037	6.90224	62.149
1113	NSA17	NES SOUTH-1982	3	13	3122	3.12	0.168	2.40	97.406	5.24496	74.928
1114	NSA17	NES SOUTH-1982	3	14	3473	2.61	0.190	2.30	90.645	6.59870	79.879
1115	NSA17	NES SOUTH-1982	3	15	3743	2.97	0.230	2.09	111.167	8.60890	78.229
1116	NSA17	NES SOUTH-1982	3	16	2528	2.97	0.132	2.32	75.082	3.33696	58.650
1117	NSA17	NES SOUTH-1982	3	17	3022	3.15	0.155	2.20	95.193	4.68410	66.484
1118	NSA17	NES SOUTH-1982	3	18	2617	3.24	0.197	2.24	84.791	5.15549	58.621
1119	NSA17	NES SOUTH-1982	3	19	2478	2.91	0.135	2.35	72.110	3.34530	58.233
1120	NSA17	NES SOUTH-1982	3	20	3353	2.78	0.187	2.18	93.213	6.27011	73.095
1121	NSA17	NES SOUTH-1982	3	21	3120	3.08	0.190	2.08	96.096	5.92800	64.896
1122	NSA17	NES SOUTH-1982	3	22	792	3.27	0.146	2.26	25.898	1.15632	17.899
1123	NSA17	NES SOUTH-1982	4	1	769	2.94	0.119	2.27	22.609	0.91511	17.456
1124	NSA17	NES SOUTH-1982	4	2	977	2.94	0.122	2.32	28.724	1.19194	22.666
1125	NSA17	NES SOUTH-1982	4	3	1182	2.87	0.125	2.36	33.923	1.47750	27.895
1126	NSA17	NES SOUTH-1982	4	4	3181	3.04	0.152	2.40	96.702	4.83512	76.344
1127	NSA17	NES SOUTH-1982	4	5	2664	3.23	0.194	2.11	86.047	5.16816	56.210
1128	NSA17	NES SOUTH-1982	4	6	2564	3.25	0.215	2.34	83.330	5.51260	59.998
1129	NSA17	NES SOUTH-1982	4	7	2330	3.35	0.153	2.32	78.055	3.56490	54.056
1130	NSA17	NES SOUTH-1982	4	8	4010	3.02	0.165	2.32	121.102	6.61650	93.032
1131	NSA17	NES SOUTH-1982	4	9	.	.	.	.	.	.	
1132	NSA17	NES SOUTH-1982	4	10	1762	3.49	0.212	2.13	61.494	3.73544	37.531
1133	NSA17	NES SOUTH-1982	4	11	2925	3.18	0.225	2.13	93.015	6.58125	62.302
1134	NSA17	NES SOUTH-1982	4	12	3475	3.30	0.236	2.11	114.675	8.20100	73.322

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1135	NSA17	NES SOUTH-1982	4	13	.	.	.	.	.	.	.
1136	NSA17	NES SOUTH-1982	4	14	2921	3.47	0.233	1.84	101.359	6.80593	53.7464
1137	NSA17	NES SOUTH-1982	4	15	3499	3.29	0.240	1.70	115.117	8.39760	59.4830
1138	NSA17	NES SOUTH-1982	4	16	1665	2.77	0.164	1.86	46.120	2.73060	30.9690
1139	NSA17	NES SOUTH-1982	4	17	2061	3.44	0.207	2.11	70.898	4.26627	43.4871
1140	NSA17	NES SOUTH-1982	4	18	3289	3.24	0.217	1.79	106.564	7.13713	58.8731
1141	NSA17	NES SOUTH-1982	4	19	3305	3.15	0.172	2.38	104.107	5.68460	78.6590
1142	NSA17	NES SOUTH-1982	4	20	3105	2.95	0.165	2.42	91.597	5.12325	75.1410
1143	NSA17	NES SOUTH-1982	4	21	3289	3.17	0.197	1.92	104.261	6.47933	63.1488
1144	NSA17	NES SOUTH-1982	4	22	1532	3.21	0.153	2.13	49.177	2.34396	32.6316
1145	NSA18	NES SOUTH-1982	1	1	102	3.40	0.151	2.14	3.468	0.15402	2.1828
1146	NSA18	NES SOUTH-1982	1	2	220	3.08	0.131	2.46	6.776	0.28820	5.4120
1147	NSA18	NES SOUTH-1982	1	3	296	3.03	0.132	2.27	8.969	0.39072	6.7192
1148	NSA18	NES SOUTH-1982	1	4	1396	3.51	0.162	2.11	49.000	2.26152	29.4556
1149	NSA18	NES SOUTH-1982	1	5	1674	3.34	0.168	2.24	55.912	2.81232	37.4976
1150	NSA18	NES SOUTH-1982	1	6	1848	3.34	0.204	1.66	61.723	3.76992	30.6768
1151	NSA18	NES SOUTH-1982	1	7	1304	3.28	0.161	2.19	42.771	2.09944	28.5576
1152	NSA18	NES SOUTH-1982	1	8	1793	3.39	0.162	2.33	60.783	2.90466	41.7769
1153	NSA18	NES SOUTH-1982	1	9	1480	3.27	0.174	2.33	48.396	2.57520	34.4840
1154	NSA18	NES SOUTH-1982	1	10	1399	3.43	0.152	2.23	47.986	2.12648	31.1977
1155	NSA18	NES SOUTH-1982	1	11	1467	3.62	0.173	2.16	53.105	2.53791	31.6872
1156	NSA18	NES SOUTH-1982	1	12	1868	3.29	0.201	1.80	61.457	3.75468	33.6240
1157	NSA18	NES SOUTH-1982	1	13	985	3.34	0.191	1.70	32.899	1.88135	16.7450
1158	NSA18	NES SOUTH-1982	1	14	1656	3.44	0.206	1.72	56.966	3.41136	28.4832
1159	NSA18	NES SOUTH-1982	1	15	941	3.46	0.170	2.26	32.559	1.59970	21.2666
1160	NSA18	NES SOUTH-1982	1	16	971	3.45	0.154	2.43	33.499	1.49534	23.5953
1161	NSA18	NES SOUTH-1982	1	17	807	3.60	0.178	2.54	29.052	1.43646	20.4978
1162	NSA18	NES SOUTH-1982	1	18	1808	3.49	0.216	2.38	63.099	3.90528	43.0304
1163	NSA18	NES SOUTH-1982	1	19	1522	3.48	0.186	2.07	52.966	2.83092	31.5054
1164	NSA18	NES SOUTH-1982	1	20	1065	3.47	0.191	2.31	36.955	2.03415	24.6015
1165	NSA18	NES SOUTH-1982	1	21	1548	3.32	0.203	2.26	51.394	3.14244	34.9848
1166	NSA18	NES SOUTH-1982	1	22	38	3.37	0.127	2.16	1.281	0.04826	0.8208
1167	NSA18	NES SOUTH-1982	2	1	87	2.84	0.164	2.54	2.471	0.14268	2.2098
1168	NSA18	NES SOUTH-1982	2	2	359	3.05	0.157	2.30	10.949	0.56363	8.2570
1169	NSA18	NES SOUTH-1982	2	3	239	3.67	0.159	2.24	8.771	0.38001	5.3536
1170	NSA18	NES SOUTH-1982	2	4	1251	3.05	0.188	2.19	38.155	2.35188	27.3969
1171	NSA18	NES SOUTH-1982	2	5	1305	3.66	0.199	2.08	47.763	2.59695	27.1440
1172	NSA18	NES SOUTH-1982	2	6	1421	3.32	0.211	1.97	47.177	2.99831	27.9937
1173	NSA18	NES SOUTH-1982	2	7	1182	3.26	0.170	2.12	38.533	2.00940	25.0584
1174	NSA18	NES SOUTH-1982	2	8	1125	3.41	0.186	2.16	38.362	2.09250	24.3000
1175	NSA18	NES SOUTH-1982	2	9	2007	3.59	0.228	2.35	72.051	4.57596	47.1645
1176	NSA18	NES SOUTH-1982	2	10	923	3.45	0.192	1.90	31.843	1.77216	17.5370
1177	NSA18	NES SOUTH-1982	2	11	1975	3.67	0.216	1.88	72.482	4.26600	37.1300
1178	NSA18	NES SOUTH-1982	2	12	1533	3.40	0.226	2.10	52.122	3.46458	32.1930
1179	NSA18	NES SOUTH-1982	2	13	424	3.18	0.157	2.18	13.483	0.66568	9.2432
1180	NSA18	NES SOUTH-1982	2	14	1855	3.37	0.212	1.81	62.513	3.93260	33.5755
1181	NSA18	NES SOUTH-1982	2	15	1622	3.77	0.253	1.60	61.149	4.10366	25.9520
1182	NSA18	NES SOUTH-1982	2	16	848	3.22	0.164	2.13	27.306	1.39072	18.0624
1183	NSA18	NES SOUTH-1982	2	17	1484	3.61	0.188	2.15	53.572	2.78992	31.9060
1184	NSA18	NES SOUTH-1982	2	18	1537	3.53	0.204	2.51	54.256	3.13548	38.5787
1185	NSA18	NES SOUTH-1982	2	19	729	3.76	0.170	2.12	27.410	1.23930	15.4548
1186	NSA18	NES SOUTH-1982	2	20	1321	3.82	0.195	2.02	50.462	2.57595	26.6842
1187	NSA18	NES SOUTH-1982	2	21	1421	3.73	0.208	1.82	53.003	2.95568	25.8622
1188	NSA18	NES SOUTH-1982	2	22	293	3.46	0.155	2.18	10.138	0.45415	6.3874

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1189	NSA18	NES SOUTH-1982	3	1	205	3.09	0.136	2.20	6.334	0.2788	4.5100
1190	NSA18	NES SOUTH-1982	3	2	234	3.65	0.181	2.30	8.541	0.4235	5.3820
1191	NSA18	NES SOUTH-1982	3	3	478	3.70	0.154	2.13	17.686	0.7361	10.1814
1192	NSA18	NES SOUTH-1982	3	4	1315	3.71	0.176	1.96	48.786	2.3144	25.7740
1193	NSA18	NES SOUTH-1982	3	5	1342	3.38	0.186	1.88	45.360	2.4961	25.2296
1194	NSA18	NES SOUTH-1982	3	6	1108	3.69	0.201	2.20	40.885	2.2271	24.3760
1195	NSA18	NES SOUTH-1982	3	7	896	3.49	0.153	2.06	31.270	1.3709	18.4576
1196	NSA18	NES SOUTH-1982	3	8	1192	3.87	0.212	1.60	46.130	2.5270	19.0720
1197	NSA18	NES SOUTH-1982	3	9	1187	3.71	0.207	1.84	44.038	2.4571	21.8408
1198	NSA18	NES SOUTH-1982	3	10	973	3.91	0.198	2.24	38.044	1.9265	21.7952
1199	NSA18	NES SOUTH-1982	3	11	1072	3.78	0.221	1.66	40.522	2.3691	17.7952
1200	NSA18	NES SOUTH-1982	3	12	866	3.49	0.197	1.88	30.223	1.7060	16.2808
1201	NSA18	NES SOUTH-1982	3	13	951	3.73	0.202	2.06	35.472	1.9210	19.5906
1202	NSA18	NES SOUTH-1982	3	14	1306	3.60	0.227	1.90	47.016	2.9646	24.8140
1203	NSA18	NES SOUTH-1982	3	15	2017	3.64	0.228	1.74	73.419	4.5988	35.0958
1204	NSA18	NES SOUTH-1982	3	16	803	3.65	0.181	2.06	29.309	1.4534	16.5418
1205	NSA18	NES SOUTH-1982	3	17	1285	3.86	0.196	1.94	49.601	2.5186	24.9290
1206	NSA18	NES SOUTH-1982	3	18	924	3.91	0.216	2.29	36.128	1.9958	21.1596
1207	NSA18	NES SOUTH-1982	3	19	431	3.88	0.171	2.30	16.723	0.7370	9.9130
1208	NSA18	NES SOUTH-1982	3	20	1338	3.57	0.218	1.86	47.767	2.9168	24.8868
1209	NSA18	NES SOUTH-1982	3	21	1411	3.60	0.242	1.65	50.796	3.4146	23.2815
1210	NSA18	NES SOUTH-1982	3	22	195	3.75	0.190	2.19	7.312	0.3705	4.2705
1211	NSA18	NES SOUTH-1982	4	1	59	3.67	0.168	2.27	2.165	0.0991	1.3393
1212	NSA18	NES SOUTH-1982	4	2	332	3.64	0.170	2.15	12.085	0.5644	7.1380
1213	NSA18	NES SOUTH-1982	4	3	393	3.79	0.163	2.01	14.895	0.6406	7.8993
1214	NSA18	NES SOUTH-1982	4	4	859	3.84	0.214	2.29	32.986	1.8383	19.6711
1215	NSA18	NES SOUTH-1982	4	5	935	3.81	0.249	1.98	35.623	2.3281	18.5130
1216	NSA18	NES SOUTH-1982	4	6	1179	3.91	0.244	2.12	46.099	2.8768	24.9948
1217	NSA18	NES SOUTH-1982	4	7	808	3.78	0.199	2.26	30.542	1.6079	18.2608
1218	NSA18	NES SOUTH-1982	4	8	802	3.92	0.260	2.22	31.438	2.0852	17.8044
1219	NSA18	NES SOUTH-1982	4	9	.	.	.	.	.	.	.
1220	NSA18	NES SOUTH-1982	4	10	874	3.89	0.205	2.19	33.999	1.7917	19.1406
1221	NSA18	NES SOUTH-1982	4	11	850	3.82	0.211	2.11	32.470	1.7935	17.9350
1222	NSA18	NES SOUTH-1982	4	12	1895	3.79	0.228	1.70	71.820	4.3206	32.2150
1223	NSA18	NES SOUTH-1982	4	13	.	.	.	.	.	.	.
1224	NSA18	NES SOUTH-1982	4	14	1708	3.94	0.231	1.62	67.295	3.9455	27.6696
1225	NSA18	NES SOUTH-1982	4	15	1798	3.81	0.256	1.51	68.504	4.6029	27.1498
1226	NSA18	NES SOUTH-1982	4	16	983	3.90	0.204	1.86	38.337	2.0053	18.2838
1227	NSA18	NES SOUTH-1982	4	17	1237	3.94	0.212	1.80	48.738	2.6224	22.2660
1228	NSA18	NES SOUTH-1982	4	18	1463	4.03	0.220	1.62	58.959	3.2186	23.7006
1229	NSA18	NES SOUTH-1982	4	19	1020	3.86	0.215	2.21	39.372	2.1930	22.5420
1230	NSA18	NES SOUTH-1982	4	20	915	3.76	0.221	2.13	34.404	2.0221	19.4895
1231	NSA18	NES SOUTH-1982	4	21	1474	3.77	0.224	1.85	55.570	3.3018	27.2690
1232	NSA18	NES SOUTH-1982	4	22	467	3.92	0.207	2.30	18.306	0.9667	10.7410
1233	WA15	WADE - 1981	1	1	2069	3.54	0.326	2.35	73.243	6.7449	48.6215
1234	WA15	WADE - 1981	1	2	2333	3.51	0.356	2.69	81.888	8.3055	62.7577
1235	WA15	WADE - 1981	1	3	2072	3.77	0.316	2.01	78.114	6.5475	41.6472
1236	WA15	WADE - 1981	1	4	2711	3.88	0.370	2.30	105.187	10.0307	62.3530
1237	WA15	WADE - 1981	1	5	2306	4.07	0.344	2.32	93.854	7.9326	53.4992
1238	WA15	WADE - 1981	1	6	2131	3.96	0.392	1.96	84.388	8.3535	41.7676
1239	WA15	WADE - 1981	1	7	1806	3.82	0.340	2.37	68.989	6.1404	42.8022
1240	WA15	WADE - 1981	1	8	2386	3.76	0.410	2.32	89.714	9.7826	55.3552
1241	WA15	WADE - 1981	1	9	3043	3.89	0.352	2.48	118.373	10.7114	75.4664
1242	WA15	WADE - 1981	1	10	2201	4.13	0.402	1.46	90.901	8.8480	32.1346

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1243	WA15	WADE - 1981	1	11	2545	3.78	0.362	2.12	96.201	9.2129	53.9540
1244	WA15	WADE - 1981	1	12	2987	4.34	0.386	2.42	129.636	11.5298	72.2854
1245	WA15	WADE - 1981	1	13	2240	3.84	0.354	2.10	86.016	7.9296	47.0400
1246	WA15	WADE - 1981	1	14	2159	4.14	0.396	1.20	89.383	8.5496	25.9080
1247	WA15	WADE - 1981	1	15	2519	3.83	0.408	2.32	96.478	10.2775	58.4408
1248	WA15	WADE - 1981	1	16	2356	3.76	0.320	2.21	88.586	7.5392	52.0676
1249	WA15	WADE - 1981	1	17	2451	3.95	0.330	2.04	96.814	8.0883	50.0004
1250	WA15	WADE - 1981	1	18	3121	3.80	0.388	1.83	118.598	12.1095	57.1143
1251	WA15	WADE - 1981	1	19	3074	4.19	0.330	1.37	128.801	10.1442	42.1138
1252	WA15	WADE - 1981	1	20	2545	3.39	0.318	1.52	86.275	8.0931	38.6840
1253	WA15	WADE - 1981	1	21	2686	3.72	0.364	2.31	99.919	9.7770	62.0466
1254	WA15	WADE - 1981	1	22	1906	3.66	0.320	2.28	69.760	6.0992	43.4568
1255	WA15	WADE - 1981	2	1	1789	3.78	0.300	2.28	67.624	5.3670	40.7892
1256	WA15	WADE - 1981	2	2	2378	4.02	0.318	2.21	95.596	7.5620	52.5538
1257	WA15	WADE - 1981	2	3	2052	4.09	0.336	2.17	83.927	6.8947	44.5284
1258	WA15	WADE - 1981	2	4	1952	4.11	0.340	2.46	80.227	6.6368	48.0192
1259	WA15	WADE - 1981	2	5	2306	4.21	0.352	2.29	97.083	8.1171	52.8074
1260	WA15	WADE - 1981	2	6	2087	3.78	0.326	2.37	78.889	6.8036	49.4619
1261	WA15	WADE - 1981	2	7	2159	3.77	0.323	2.30	81.394	6.9736	49.6570
1262	WA15	WADE - 1981	2	8	2310	4.06	0.333	2.45	93.786	7.6923	56.5950
1263	WA15	WADE - 1981	2	9	2503	4.07	0.364	2.40	101.872	9.1109	60.0720
1264	WA15	WADE - 1981	2	10	2497	3.58	0.318	2.24	89.393	7.9405	55.9328
1265	WA15	WADE - 1981	2	11	2238	4.00	0.322	2.38	89.520	7.2064	53.2644
1266	WA15	WADE - 1981	2	12	3242	3.86	0.362	2.57	125.141	11.7360	83.3194
1267	WA15	WADE - 1981	2	13	3193	4.23	0.386	2.42	135.064	12.3250	77.2706
1268	WA15	WADE - 1981	2	14	3160	4.07	0.366	2.44	128.612	11.5656	77.1040
1269	WA15	WADE - 1981	2	15	2087	4.42	0.400	2.20	92.245	8.3480	45.9140
1270	WA15	WADE - 1981	2	16	2277	3.08	0.354	2.45	70.132	8.0606	55.7865
1271	WA15	WADE - 1981	2	17	2671	4.07	0.340	2.21	108.710	9.0814	59.0291
1272	WA15	WADE - 1981	2	18	2270	3.83	0.384	2.98	86.941	8.7168	67.6460
1273	WA15	WADE - 1981	2	19	2219	3.87	0.350	2.58	85.875	7.7665	57.2502
1274	WA15	WADE - 1981	2	20	2960	3.99	0.346	2.49	118.104	10.2416	73.7040
1275	WA15	WADE - 1981	2	21	2031	4.08	0.344	2.33	82.865	6.9866	47.3223
1276	WA15	WADE - 1981	2	22	2402	4.02	0.326	2.30	96.560	7.8305	55.2460
1277	WA15	WADE - 1981	3	1	2979	4.39	0.354	2.33	130.778	10.5457	69.4107
1278	WA15	WADE - 1981	3	2	2090	3.71	0.306	2.15	77.539	6.3954	44.9350
1279	WA15	WADE - 1981	3	3	2234	4.26	0.344	2.19	95.168	7.6850	48.9246
1280	WA15	WADE - 1981	3	4	2001	4.08	0.340	2.33	81.641	6.8034	46.6233
1281	WA15	WADE - 1981	3	5	2564	3.99	0.348	2.28	102.304	8.9227	58.4592
1282	WA15	WADE - 1981	3	6	2102	3.92	0.342	2.32	82.398	7.1888	48.7664
1283	WA15	WADE - 1981	3	7	3403	3.71	0.320	2.39	126.251	10.8896	81.3317
1284	WA15	WADE - 1981	3	8	2169	4.20	0.324	2.44	91.098	7.0276	52.9236
1285	WA15	WADE - 1981	3	9	2220	3.83	0.348	2.61	85.026	7.7256	57.9420
1286	WA15	WADE - 1981	3	10	2045	4.10	0.332	2.52	83.845	6.7894	51.5340
1287	WA15	WADE - 1981	3	11	2270	4.10	0.358	2.31	93.070	8.1266	52.4370
1288	WA15	WADE - 1981	3	12	2301	4.25	0.352	2.31	97.792	8.0995	53.1531
1289	WA15	WADE - 1981	3	13	2531	3.89	0.336	2.43	98.456	8.5042	61.5033
1290	WA15	WADE - 1981	3	14	2329	4.01	0.348	2.55	93.393	8.1049	59.3895
1291	WA15	WADE - 1981	3	15	2929	4.09	0.408	2.46	119.796	11.9503	72.0534
1292	WA15	WADE - 1981	3	16	2173	3.54	0.342	2.55	76.924	7.4317	55.4115
1293	WA15	WADE - 1981	3	17	2718	3.29	0.340	2.39	89.422	9.2412	64.9602
1294	WA15	WADE - 1981	3	18	2562	3.33	0.328	2.83	85.315	8.4034	72.5046
1295	WA15	WADE - 1981	3	19	2227	3.74	0.322	2.20	83.290	7.1709	48.9940
1296	WA15	WADE - 1981	3	20	2430	4.18	0.354	2.27	101.574	8.6022	55.1610

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OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1297	WA15	WADE - 1981	3	21	2063	3.54	0.332	2.23	73.030	6.8492	46.005
1298	WA15	WADE - 1981	3	22	2002	3.63	0.328	2.08	72.673	6.5666	41.642
1299	WA15	WADE - 1981	4	1	2051	3.61	0.330	2.19	74.041	6.7683	44.917
1300	WA15	WADE - 1981	4	2	2393	4.10	0.354	2.48	98.113	8.4712	59.346
1301	WA15	WADE - 1981	4	3	2101	3.55	0.330	2.47	74.585	6.9333	51.895
1302	WA15	WADE - 1981	4	4	2039	3.51	0.346	2.55	71.569	7.0549	51.994
1303	WA15	WADE - 1981	4	5	2549	3.54	0.346	2.42	90.235	8.8195	61.686
1304	WA15	WADE - 1981	4	6	2444	3.96	0.366	2.42	96.782	8.9450	59.145
1305	WA15	WADE - 1981	4	7	2362	3.70	0.324	2.49	87.394	7.6529	58.814
1306	WA15	WADE - 1981	4	8	2201	4.03	0.332	2.46	88.700	7.3073	54.145
1307	WA15	WADE - 1981	4	9	2905	3.91	0.332	2.27	113.585	9.6446	65.943
1308	WA15	WADE - 1981	4	10	2220	3.68	0.362	2.23	81.696	8.0364	49.506
1309	WA15	WADE - 1981	4	11	2300	3.74	0.354	2.47	86.020	8.1420	56.810
1310	WA15	WADE - 1981	4	12	2647	4.01	0.328	2.23	106.145	8.6822	59.028
1311	WA15	WADE - 1981	4	13	2308	3.85	0.340	2.36	88.858	7.8472	54.469
1312	WA15	WADE - 1981	4	14	2399	4.10	0.362	2.59	98.359	8.6844	62.134
1313	WA15	WADE - 1981	4	15	3254	3.89	0.396	2.31	126.581	12.8858	75.167
1314	WA15	WADE - 1981	4	16	2613	3.67	0.318	2.25	95.897	8.3093	58.792
1315	WA15	WADE - 1981	4	17	2214	4.02	0.342	2.42	89.003	7.5719	53.579
1316	WA15	WADE - 1981	4	18	3170	4.10	0.344	2.09	129.970	10.9048	66.253
1317	WA15	WADE - 1981	4	19	2061	3.66	0.322	2.37	75.433	6.6364	48.846
1318	WA15	WADE - 1981	4	20	2614	3.76	0.358	2.24	98.286	9.3581	58.554
1319	WA15	WADE - 1981	4	21	2576	3.81	0.386	2.38	98.146	9.9434	61.309
1320	WA15	WADE - 1981	4	22	1342	3.41	0.304	2.07	45.762	4.0797	27.779
1321	WA16	WADE - 1981	1	1	2193	3.18	0.304	2.76	69.737	6.6667	60.527
1322	WA16	WADE - 1981	1	2	3059	3.81	0.328	2.33	116.548	10.0335	71.275
1323	WA16	WADE - 1981	1	3	2483	3.77	0.350	2.24	93.609	8.6905	55.619
1324	WA16	WADE - 1981	1	4	3400	3.45	0.372	2.54	117.300	12.6480	86.360
1325	WA16	WADE - 1981	1	5	2313	3.38	0.410	2.33	78.179	9.4833	53.893
1326	WA16	WADE - 1981	1	6	2742	3.49	0.366	2.78	95.696	10.0357	76.228
1327	WA16	WADE - 1981	1	7	2619	3.31	0.326	2.94	86.689	8.5379	76.999
1328	WA16	WADE - 1981	1	8	2895	3.75	0.342	2.75	108.562	9.9009	79.612
1329	WA16	WADE - 1981	1	9	3080	3.46	0.356	2.68	106.568	10.9648	82.544
1330	WA16	WADE - 1981	1	10	3528	3.34	0.312	2.52	117.835	11.0074	88.906
1331	WA16	WADE - 1981	1	11	3380	3.71	0.360	2.58	125.398	12.1680	87.204
1332	WA16	WADE - 1981	1	12	3899	3.66	0.382	2.35	142.703	14.8942	91.626
1333	WA16	WADE - 1981	1	13	2072	3.79	0.350	2.90	78.529	7.2520	60.088
1334	WA16	WADE - 1981	1	14	2165	3.74	0.326	3.01	80.971	7.0579	65.166
1335	WA16	WADE - 1981	1	15	3231	3.55	0.382	2.60	114.700	12.3424	84.006
1336	WA16	WADE - 1981	1	16	2920	3.76	0.308	2.96	109.792	8.9936	86.432
1337	WA16	WADE - 1981	1	17	2239	4.00	0.388	3.08	89.560	8.6873	68.961
1338	WA16	WADE - 1981	1	18	3328	3.82	0.318	2.80	127.130	10.5830	93.184
1339	WA16	WADE - 1981	1	19	3424	3.32	0.352	3.01	113.677	12.0525	103.062
1340	WA16	WADE - 1981	1	20	1794	3.54	0.350	2.88	63.508	6.2790	51.667
1341	WA16	WADE - 1981	1	21	3041	3.67	0.310	2.77	111.605	9.4271	84.236
1342	WA16	WADE - 1981	1	22	2356	4.13	0.372	2.80	97.303	8.7643	65.968
1343	WA16	WADE - 1981	2	1	2208	4.09	0.334	2.69	90.307	7.3747	59.395
1344	WA16	WADE - 1981	2	2	3345	3.80	0.358	2.54	127.110	11.9751	84.963
1345	WA16	WADE - 1981	2	3	3254	3.72	0.302	2.87	121.049	9.8271	93.390
1346	WA16	WADE - 1981	2	4	3083	4.30	0.368	2.51	132.569	11.3454	77.383
1347	WA16	WADE - 1981	2	5	3997	3.69	0.326	2.27	147.489	13.0302	90.732
1348	WA16	WADE - 1981	2	6	2562	3.89	0.354	2.20	99.662	9.0695	56.364
1349	WA16	WADE - 1981	2	7	2733	4.06	0.334	3.22	110.960	9.1282	88.003
1350	WA16	WADE - 1981	2	8	2194	3.79	0.324	3.03	83.153	7.1086	66.478

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1351	WA16	WADE - 1981	2	9	2531	4.19	0.364	2.84	106.049	9.2128	71.880
1352	WA16	WADE - 1981	2	10	2694	4.00	0.356	2.84	107.760	9.5906	76.510
1353	WA16	WADE - 1981	2	11	2509	4.17	0.380	2.86	104.625	9.5342	71.757
1354	WA16	WADE - 1981	2	12	3447	3.81	0.392	2.80	131.331	13.5122	96.516
1355	WA16	WADE - 1981	2	13	3293	3.99	0.372	3.01	131.391	12.2500	99.119
1356	WA16	WADE - 1981	2	14	3890	3.64	0.360	2.93	141.596	14.0040	113.977
1357	WA16	WADE - 1981	2	15	2725	3.70	0.378	2.95	100.825	10.3005	80.387
1358	WA16	WADE - 1981	2	16	2942	3.63	0.298	2.81	106.795	8.7672	82.670
1359	WA16	WADE - 1981	2	17	2887	3.94	0.326	2.91	113.748	9.4116	84.012
1360	WA16	WADE - 1981	2	18	2342	4.16	0.330	3.00	97.427	7.7286	70.260
1361	WA16	WADE - 1981	2	19	1702	3.32	0.324	2.95	56.506	5.5145	50.209
1362	WA16	WADE - 1981	2	20	3419	3.69	0.326	3.20	126.161	11.1459	109.408
1363	WA16	WADE - 1981	2	21	2771	3.72	0.372	3.60	103.081	10.3081	99.756
1364	WA16	WADE - 1981	2	22	3363	3.59	0.342	2.97	120.732	11.5015	99.881
1365	WA16	WADE - 1981	3	1	4168	3.74	0.318	2.77	155.883	13.2542	115.454
1366	WA16	WADE - 1981	3	2	2462	3.98	0.340	3.20	97.988	8.3708	78.784
1367	WA16	WADE - 1981	3	3	2849	3.81	0.340	3.01	108.547	9.6866	85.755
1368	WA16	WADE - 1981	3	4	2749	3.86	0.346	2.78	106.111	9.5115	76.422
1369	WA16	WADE - 1981	3	5	3742	3.56	0.386	3.08	133.215	14.4441	115.254
1370	WA16	WADE - 1981	3	6	2646	3.47	0.364	2.99	91.816	9.6314	79.115
1371	WA16	WADE - 1981	3	7	3779	3.82	0.330	2.42	144.358	12.4707	91.452
1372	WA16	WADE - 1981	3	8	3250	3.70	0.360	2.83	120.250	11.7000	91.975
1373	WA16	WADE - 1981	3	9	2660	3.84	0.322	3.23	102.144	8.5652	85.918
1374	WA16	WADE - 1981	3	10	2849	3.72	0.346	2.98	105.983	9.8575	84.900
1375	WA16	WADE - 1981	3	11	3577	3.98	0.310	2.75	142.365	11.0887	98.367
1376	WA16	WADE - 1981	3	12	2840	3.76	0.322	2.88	106.784	9.1448	81.792
1377	WA16	WADE - 1981	3	13	2762	3.65	0.324	2.67	100.813	8.9489	73.745
1378	WA16	WADE - 1981	3	14	2448	3.45	0.314	3.01	84.456	7.6867	73.685
1379	WA16	WADE - 1981	3	15	3480	3.53	0.344	2.65	122.844	11.9712	92.220
1380	WA16	WADE - 1981	3	16	2817	3.53	0.322	2.88	99.440	9.0707	81.130
1381	WA16	WADE - 1981	3	17	3480	3.58	0.324	2.60	124.584	11.2752	90.480
1382	WA16	WADE - 1981	3	18	2735	3.56	0.348	2.98	97.366	9.5178	81.503
1383	WA16	WADE - 1981	3	19	2989	3.60	0.320	2.77	107.604	9.5648	82.795
1384	WA16	WADE - 1981	3	20	3426	3.18	0.314	2.64	108.947	10.7576	90.446
1385	WA16	WADE - 1981	3	21	2678	3.88	0.356	2.80	103.906	9.5337	74.984
1386	WA16	WADE - 1981	3	22	2608	4.03	0.328	2.98	105.102	8.5542	77.718
1387	WA16	WADE - 1981	4	1	2854	3.85	0.328	2.97	109.879	9.3611	84.764
1388	WA16	WADE - 1981	4	2	3814	3.80	0.346	3.03	144.932	13.1964	115.564
1389	WA16	WADE - 1981	4	3	2625	3.67	0.330	2.98	96.337	8.6625	78.225
1390	WA16	WADE - 1981	4	4	2941	3.33	0.340	3.22	97.935	9.9994	94.700
1391	WA16	WADE - 1981	4	5	3885	3.22	0.306	2.79	125.097	11.8881	108.391
1392	WA16	WADE - 1981	4	6	3359	3.43	0.346	2.74	115.214	11.6221	92.037
1393	WA16	WADE - 1981	4	7	2637	3.33	0.356	2.80	87.812	9.3877	73.836
1394	WA16	WADE - 1981	4	8	2786	3.06	0.376	3.12	85.252	10.4754	86.923
1395	WA16	WADE - 1981	4	9	3184	3.33	0.300	2.48	106.027	9.5520	78.963
1396	WA16	WADE - 1981	4	10	4223	3.60	0.366	3.20	152.028	15.4562	135.136
1397	WA16	WADE - 1981	4	11	4389	3.83	0.364	2.79	168.099	15.9760	122.453
1398	WA16	WADE - 1981	4	12	4026	3.65	0.346	2.71	146.949	13.9300	109.105
1399	WA16	WADE - 1981	4	13	2757	3.70	0.382	2.92	102.009	10.5317	80.504
1400	WA16	WADE - 1981	4	14	4196	3.18	0.340	3.63	133.433	14.2664	152.315
1401	WA16	WADE - 1981	4	15	3324	3.06	0.358	2.65	101.714	11.8999	88.086
1402	WA16	WADE - 1981	4	16	3164	4.19	0.330	2.73	132.572	10.4412	86.377
1403	WA16	WADE - 1981	4	17	2817	3.76	0.358	2.74	105.919	10.0849	77.186
1404	WA16	WADE - 1981	4	18	4570	3.58	0.348	2.51	163.606	15.9036	114.707

PRINTOUT OF CALCULATED DATA

OBS	REF_NO	LOCATION	REP	TRT	KG_HA	PCT_N	PCT_P	PCT_K	KGNUP	KGPUP	KGKUP
1405	WA16	WADE - 1981	4	19	2593	3.27	0.340	3.23	84.791	8.8162	83.754
1406	WA16	WADE - 1981	4	20	2878	3.82	0.356	2.97	109.940	10.2457	85.477
1407	WA16	WADE - 1981	4	21	4274	3.71	0.342	2.87	158.565	14.6171	122.664
1408	WA16	WADE - 1981	4	22	3170	4.02	0.332	3.06	127.434	10.5244	97.002

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VITA

Jimmy Don Stein

Candidate for the Degree of

MASTER OF SCIENCE

Thesis: SUBSURFACE AND BROADCAST PHOSPHORUS EFFECTS ON YIELD AND COMPOSITION OF ESTABLISHED ALFALFA

Major Field: Agronomy

Biographical:

Personal Data: Born in Cherokee, Oklahoma, June 9, 1959, the youngest son of Mr. and Mrs. Don R. Stein.

Education: Graduated from Cherokee High School, Cherokee, Oklahoma, in May of 1977; received Bachelor of Science in Agriculture degree from Oklahoma State University, Stillwater, Oklahoma in May of 1981; completed requirements for the Master of Science degree with a major in Agronomy at Oklahoma State University, Stillwater, Oklahoma, in July, 1983.

Professional Experience: Graduate Student Teaching Assistantship for an introductory Plant Science course and graduate student Soil Fertility Research Assistantship, both at Oklahoma State University, Agronomy Department, Stillwater, Oklahoma, 1981-83.

Member: American Society of Agronomy, Soil Science Society of America, Phi Kappa Phi National Honor Fraternity.