PURDUE UNIVERSITY
International Education and Research
International Programs in Agriculture

PD-AAN-651

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IPIA

PORTUGAL UNIVERSITY INSTITUTES DEVELOPMENT PROJECT

(Contract AID/NE-C-1701)

REPORT ON
SHORT-TERM STAFF ASSIGNMENT

Submitted by
DR. CHARLES L. RHYKERD
Department of Agronomy
Purdue University

October 3 - December 19, 1982

PORTUGAL UNIVERSITY INSTITUTES DEVELOPMENT PROJECT

(AID Contract - AID/NE-C-1701)

REPORT ON

SHORT-TERM STAFF ASSIGNMENT

at the

Universidade de Evora
Evora, Portugal

and

Instituto Universitario de Tras-os-Montes e Alto Douro
Vila Real, Portugal

OCTOBER 3 - DECEMBER 19, 1982

Submitted by

DR. CHARLES L. RHYKERD
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PORTUGAL UNIVERSITY INSTITUTES DEVELOPMENT PROJECT
Report on
Short-Term Staff Assignment
Submitted by
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ITINERARY

I was in Portugal from October 3 to December 18, 1982. Essentially all my time except for the last 11 days was spent at the University of Evora where I was involved in research and teaching of forage production and utilization. Five days were spent at IUTAD in Vila Real consulting with their Agronomy and Animal Science staff. On December 14 I presented a paper at a seminar in Oeiras. The title of the paper was "Identifying Priorities to Increase Pasture and Forage Production in Portugal." The seminar was organized and sponsored by AID and PROCALFER. Nearly 150 forage and animal specialists attended the seminar.

Following is a detailed itinerary of my eleven weeks in Portugal.

SUMMARY OF ACTIVITIES

<u>October 4</u>

Arrived in Lisbon on TAP 311 at 6:30 am. Met by Dr. John Sanders.

10:30 am - Meeting with Mr. Charles Buchanan, AID

11:30 am - Meeting with Mr. Donald Finberg, AID

2:30 pm - Meeting with PROCALFER Project. Engº Almeida Alves, Dr. Glen Purnell, and Dr. James Black.

October 5

Holiday - Spend most of day visiting with Dr. John Sanders

October 6

10:00 am - Meeting with Reitor Ario Lobo Azevedo

1:00 pm - Lunch with Eng^{o} Afonso de Almeida and Animal Nutrition group followed by brief discussion of mineral data of samples I had taken to U.S. in 1981 for spectrographic analysis.

October 7

11:00 am - Meeting with Dr. Potes, Head of Animal Science Department, University of Evora.

2:30 pm - Meeting with Eng^{o} Rosario G. Oliveira concerning her research project or her doctorate.

October 8

All Day - at Mitra preparing for class, visiting with Eng^{o} Afonso de Almeida and others in Animal Science Department.

9:00 pm - Meeting with Prof. Carlos Portas at the home of Dr. John Sanders.

October 9

11:00 pm - Meeting at Mitra with Eng^{o} Afonso de Almeida and Dr. John Sanders to discuss preliminary plans for the Animal Nutrition Seminar on November 24 to 26, 1982 at the University of Evora.

October 10

Sunday - Studied documents and visited with Dr. John Sanders.

October 19

Went to Lisbon to visit:

Dr. Carlos Fontes - Director of Veterinary Extension; AID Office

October 21

Returned from Lisbon.

October 22

University of Evora - wrote letters and summarized notes.

October 25

8:00 am - visited University farms at Daroeira and Outeiro with Maria Helena Estudante, Eng^{o} Banza, Dr. Victor Dordio and Dr. Jose Ribeiro.

October 26

9:30 am - Meeting with Prof. Santos Junior (Vice-Reitor).

10:30 am - Meeting with Fitotecnia Department at Mitra concerning teaching assignments.

October 27

9:30 am - Eng^{o} Joaquim Dordio PCAA

11:30 am - Prof. Mariano Feio

2:30 pm - Eng^{o} Goncalves Ferreira

October 28

Prepared for classes at Mitra.

October 29

10:00 am - Meeting with Santos Junior

Prepared for classes.

October 30 & 31

(Sat. & Sun.) - Prepared class notes.

October 11

Spent the day at Mitra - Ag. campus and research farm of the University of Evora. Met with Pedro Silveira to observe area on farm for forage crops garden for use in teaching forage crops course.

October 12

Went to Lisbon for meeting with:
Eng^{o} Teodosio Salgueiro - Forage Extension
Eng^{o} Andre Dordio - Animal Nutritionist
Eng^{o} E. Menezes de Sequeira - Soil Micronutrients

Late p.m. went to visit research farm at Pegoes (near Lisbon).

October 13

Spent the day at Mitra getting acquainted with facilities including library.

October 14

Visited University of Evora research farm at Beja with John Sanders and Pedro Silveira.

October 15

a.m. - at University of Evora -- Sanders' Office

p.m. - at Mitra observing forage seeding equipment

October 16 & 17

(Sat. & Sun.) - prepared seminar to be presented at Elvas.

October 18

Was to start teaching but beginning of classes delayed 2 weeks. Visited National Plant Breeding Station at Elvas and Eng^{o} David Gomes Crespo. Presented seminar in afternoon: Problems in Forage Production and Utilization in Portugal.

November 1

(Holiday)

November 2

I was to have started teaching today but start of classes was delayed one week to resolve problem of busing students to Mitra. Visited Mario Carvalho's research plots involving the use of gypsum to increase permeability of B horizon.

November 3

Visited with Dr. Pires da Costa, Assistant Director of National Livestock Center at Fonte Boa. He will be teaching an animal science course at Mitra. Spent the p.m. visiting with Dra. Ofelia Pereira Benito relative to a two-month short-term training program at Purdue University.

November 4 & 5

Worked with Joao Manual Mota Barroso, my teaching assistant, to prepare for classes. Spent some time in library.

November 6

Meeting at Mitra with Dr. Afonso de Almeida and Dr. John Sanders to plan seminar on sheep production Nov. 24 & 25. Lunch with Dr. Nuno Potes, Afonso and Maria Jose.

November 7

(Sunday) - worked on manuscript "Identifying Priorities to Increase Pasture and Forage Production in Portugal."

November 8

Started teaching Forage Management course at University of Evora. My last class was Dec. 6. The majority of my time between Nov. 8 and Dec. 6 was devoted to teaching.

November 12

Visited with Mario Carvalho concerning his nitrogen fertilization of wheat experiments.

November 17

Visited with Dr. Fred Cook, USDA from Mississippi, an Ag. Economist on a consulting assignment with PROCALFER.

November 18

Nuno Moreira from IUTAD visited Mitra.

November 24

Presented a paper co-authored by Dr. Afonso de Almeida, "Some Results of analyses of Forages Relative to Nutritive Value," at the seminar on sheep production at Mitra.

November 25

Attended second day of sheep production seminar.

November 27

Visited several farms near Evora with Eng^{o} Pedro Silveira.

November 30

Visited several farms near Evora with Vacas de Carvalho and Pedro Silveira.

December 1

(Holiday) - Traveled to the southern part of the Alentejo to observe forage production problems with Dr. John Sanders, Eng^{o} Jose Goncalves Ferreira and Eng^{o} Francisco Garcia (Soils specialists from the University of Evora).

December 3

Meeting at Mitra with Eng^{o} Pedro Silveira, Eng^{o} Mario Carvalho, Dr. Afonso de Almeida and Dra. Ofelia Pereira Bento to discuss interdisciplinary research projects.

Visited quinta of Eng^{o} Francisco Garcia.

Meeting with Reitor Ario Lobo Azevedo.

December 4

Attended demonstration of cattle branding at Mitra.

December 5

Meeting with Eng^{o} Jose Goncalfes Ferreira and Eng^{o} Francisco Garcia.

December 7

Traveled by bus to Lisbon. Visited AID office.

December 8

Traveled to Vila Real by bus. Was met by Dr. James Ahirichs.

December 9

Visited with Prof. Nuno Moreira and Prof. Armand.

December 10

Visited with Prof. Ana Pires, Prof. Nuno Moreira & Prof. Fernando Martins.

December 11

Visited with Eng^{o} Balazar and Eng^{o} Afonso Martins.

December 12

(Sunday) - Prepared transparencies for seminar on Tuesday.

December 13

Traveled to Lisbon.

December 14

Presented paper "Identifying Priorities to Increase Pasture and Forage Production in Portugal" at the Forage and Animal Production Seminar at Oeiras.

December 15, 16 & 17

In Lisbon with AID, wrote letters, made phone calls and prepared to leave for U.S. next day.

December 18

Left for N.Y. and spent night in New York as flight was too late to make connections to Indianapolis.

December 19

Arrived in Indianapolis.

ACKNOWLEDGEMENTS

I feel inadequate in expressing my gratitude to the large number of Portuguese and USAID staff that made my eleven weeks in Portugal very productive and enjoyable. The AID/Lisbon Office, Don Finberg, Charles Buchanan, Jose Luis Pinheiro, and Ana Paula and the PROCALFER administrators, Dr. Almeida Alves, Dr. Glenn Purnell, and Dr. Jim Black, provided me with invaluable guidance, assistance, and cooperation.

It was especially enjoyable to return to the universities at Evora and Vila Real since I had spent 7 weeks at these two institutions in 1981. The administrators, faculty, and students were fantastic hosts

and always friendly and helpful. They truly made me feel as though I was a part of their staff and at no time did I feel I was a foreigner despite my deficiency in the Portuguese language and my Brazilian-Portuguese accent.

The funds for the mineral analyses of the forage samples obtained in Portugal and analyzed in the United States and reported in the Appendix were provided by Dr. D. Woods Thomas, Associate Dean and Director of International Programs in Agriculture at Purdue University.

OBSERVATIONS AND RECOMMENDATIONS

The major problems, or limitations, relative to forage production and utilization were outlined in my 1981 short-term staff report. In brief, the problem is low production and low quality forage resulting from the acid, low fertility soils and the climatic limitations of the Mediterranean climate. Animal performance is low as a result of the low quality forage and limited and expensive grain and protein supplement.

Three papers which I prepared while in Portugal are included in this report. The first paper, "Identifying Priorities to Increase Pasture and Forage Production in Portugal," was presented at the seminar at Oeiras on December 14, 1982. My recommendations for improving pasture, forage, and animal production in Portugal are summarized at the end of the paper. The need for interdisciplinary research in soils, plants, and animals cannot be over-emphasized.

A second paper concerning "Expanding Wheat Acreage in Portugal" discusses the traditional deficiency of wheat production in Portugal and possible solutions without disastrous exploitation of the limited soil resources.

The third paper outlines an experiment to study the influence of stocking rate of sheep on soil fertility. Several long-term sheep grazing trials have been conducted at Evora and Elvas which provide an unusual and excellent opportunity to study the effect of grazing animals on soil fertility.

I taught a portion of the forage management course offered at the University of Evora. Nearly 60 students were enrolled in the courses. The students were very intelligent and I enjoyed the opportunity of working with them although my teaching was reduced to five weeks due to a delay in the start of classes. Hopefully several of the students may be able to pursue graduate study in the United States. I am especially indebted to Eng^{o} Pedro Silveira, Eng^{o} Vacas de Carvalho and undergraduate teaching assistant Joao Manual Mota Barroso for their assistance and patience in helping me teach the forage management course. Copies of my class notes were left at Evora and Vila Real.

Mineral analyses of nearly 250 forage samples brought back to Purdue University appear in the Appendix. These samples were provided by Dr. Nuno Moreira and Dr. Armando M. Ferreira, IUTAD, Vila Real.

Approximately 200 forage samples from Portugal were brought back to Purdue University in 1981. The ranges in concentrations of the

various minerals are reported in Table 3 of the paper "Identifying Priorities to Increase Pasture and Forage Production in Portugal." Numerous deficiencies and possibly several toxicities appear in this table.

Very few mineral analyses of forage crops are available in Portugal. These analyses are extremely useful for identifying various soil mineral deficiencies and toxicities. In addition, these analyses are valuable in determining mineral supplements required by various classes of livestock and in preventing animal health problems such as grass tetany.

I presently have a graduate student summarizing these two years of mineral data relative to plant and animal deficiencies and toxicities. Analysis for crude protein will be conducted on samples where sufficient quantity of the sample is available. In addition, some funds have been identified to conduct molybdenum (Mo) analysis of the legume samples. Mo has often been assumed to be deficient for legume production on many soils in Portugal but very little data are presently available.

IDENTIFYING PRIORITIES TO INCREASE PASTURE AND FORAGE PRODUCTION IN PORTUGAL

C. L. RHYKERD

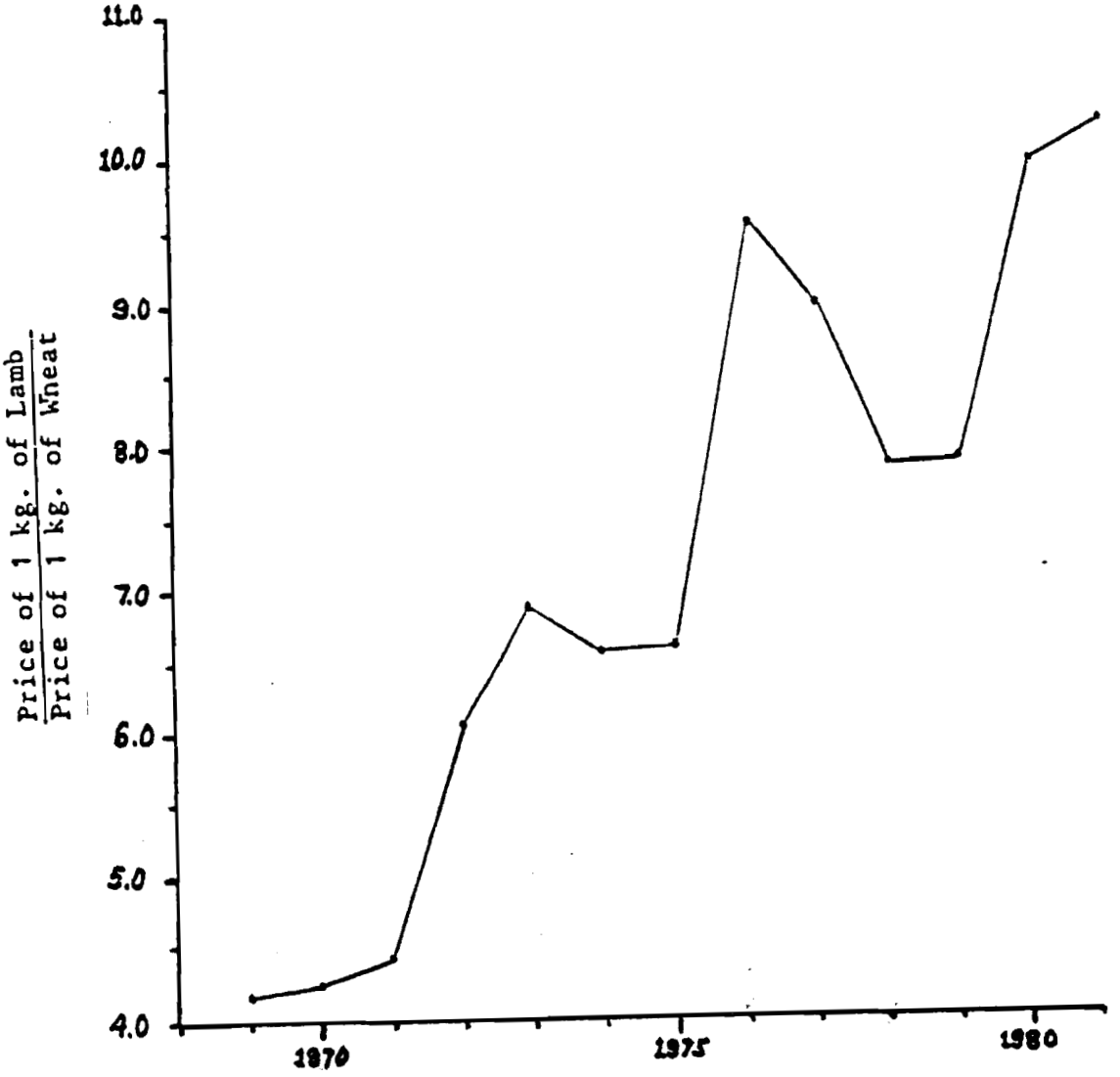
December 14, 1982

Productivities in pasture, forage, and animal production are low in Portugal, due principally to the very short growing season imposed by the Mediterranean climate characteristic of a major portion of Portugal. Moreover, most of the areas with pasture and forage production have acid, low fertility soils.

Since the growth of pastures and forage crops is highly seasonal, one principal problem is supplying good quality forage to ruminant animals throughout the year. The primary sources of forage during the dry season and winter are pastures with deferred grazing, straw, and hay. In some regions during the winter even leaves from trees are fed. All of these methods generally provide poor quality feed, including the hay, since it is cut at a very mature stage in the Alentejo.

More interest has developed in Portugal in recent years in increasing ruminant animal, especially lamb, production. As illustrated in Figure 1 (Casquinha), the price of lamb in relation to wheat has increased markedly over the past decade. There is considerable interest in exporting lamb since Portugal is about to enter the European Common Market. In addition, the subsidies on feed grains may cease in 1983. All of these factors necessitate the

Figure 1. THE LAMB - WHEAT PRICE RATIO IN PORTUGAL, 1969 - 1981 (Casquinha et. al.)



production of more, and better quality, pastures and forages to adequately and profitably feed an expanding ruminant animal industry in Portugal.

The following recommendations, listed in order of priority, are proposed to stimulate discussion and research directed towards resolving the problems of low pasture, forage, and animal productivities.

1. Since very little pasture and forage technology is available, there is an urgent need to train more forage specialists. Portugal has a serious shortage of forage specialists trained to conduct research to produce or adapt the required technology. Ruminant animals especially sheep traditionally have been fed by-products of the cereal crops rotation. The main objective of much of sheep and goat production has been to utilize the stubble, ("restolho"), the fallow pasture, ("pousio"), and the natural grazing and acorns in the poorer soil areas as below the oaks ("montado"). Stocking rates have generally been low (.8 to 1 sheep/ha) with loss of weight during the long dry season in Mediterranean Portugal. Only recently has interest developed in more intensive animal production such as seeding improved pastures and utilizing forages as hay and/or silage during the critical periods of little, or no, plant growth (Crespo). Consequently, there is a dearth of forage technology as well as trained forage research specialists.

II. Develop, by region and soil classification (concentrating on soil classes C and D), a 12-month pasture and forage calendar. In most of Portugal, pasture and forage production is highly seasonal, with the major portion of the production occurring in the spring. Technology must be developed through interdisciplinary research between soil, plant, and animal scientists, and agricultural economists to provide good quality forage throughout the year by employing some combination of the following:

A. Stockpiling (or deferred grazing) - utilizing ungrazed pastures during the summer, fall, and winter. Legumes generally are poorly adapted for this purpose since, upon drying, they tend to lose their leaves which contain the major portion of the protein, vitamins, and minerals. Stockpiling is the cheapest method of conservation <u>but provides the poorest quality forage and thus lower animal performance</u>.

B. Hay - a very practical method of conserving forage if weather permits cutting before becoming too mature. The tradition in the Alentejo is to cut the forage crop too late to produce a high quality hay in order to avoid the risk of rain during hay-making.

C. Silage - requires more capital and equipment but permits forage conservation during periods of inclement weather when hay-making is not possible. However, many soils have very poor internal drainage and therefore may present a problem in timely harvest of forage crops for silage. Possibly the use of later maturing forage crops, or cultivars, on these soils

may aid in the production of high-quality silage. It still should be easier to harvest better quality forage as silage, rather than hay, on these soils since it is generally necessary to reduce the moisture only a relatively small amount to make silage as compared to hay. The class of livestock being fed will be a major factor in determining the quality of forage required.

The availability of better quality forage throughout the year will permit the utilization of animal breeds of higher milk and meat production potential.

A clear example of the necessity of first improving nutrition before importing breeds of higher production potential is the common Portuguese treatment of twin lambs. If a ewe has twin lambs, the shepherd will often kill one of the lambs, since ewes in many regions are not capable of producing enough milk to raise two healthy lambs.

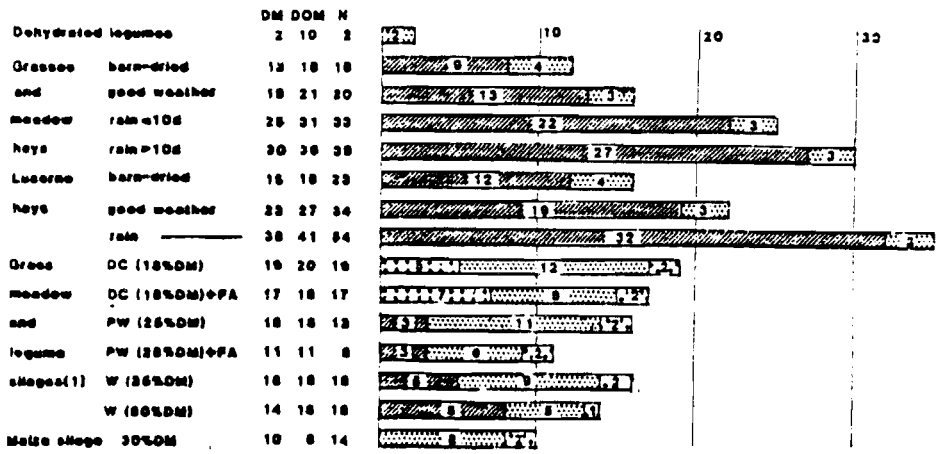
The problems associated with the seasonality of pasture and forage production in much of the temperate zone have been resolved in recent years through the increased use of conserved forages (Table 1). Improved animal nutrition over the 12-month period in these countries has resulted in a greatly increased use of milk and meat animals of much higher production potential.

Silage-making is generally considered to be the most efficient method of conserving forages since there is much less loss of dry matter than with hay-making (Figure 2). However, silage-making is expensive, since it requires capital and technology for proper

Table 1. Conserved forage production in some European countries and the U.S.A. for 1978 - 1980 (Jarrige, De Marquilly and Dulphy).

Country	Total Production 10^6 tons dry matter Forages	Conserved Forage Hay	Conserved Forage Silage
		%	
U.S.A.	110	95	5
France	40	70	30
Germany (F.D.)	19.6	55	45
Italy	15.2	60	40
U.K.	12.4	50	50
Netherlands	5.4	25	75
Belgium	4.0	35	65

Figure 2. Comparison of dry matter and nutrient losses from the field to the feed bunk under very favorable conditions in harvesting, storage, and unloading.[a]



field losses, effluent losses, gas losses, spoiled forages

[a] Forage ensiled in conventional silos except for W (Wilted 50% DM) in airtight silos: DC (Direct Cut), PW (Prewilted), W (Wilted % DM), FA (Formic acid). Adapted from Jarrige, De Marquilly, and Dulphy.

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harvesting and handling equipment as well as storage facilities, all of which are dependent upon fossil energy. High market prices for milk, and other dairy products, meat and wool are required to make this system profitable.

The economic conditions in Portugal will dictate whether there will be a continuation of the present system which involves the use of low-quality pasture and forages along with straw and stubble during the long dry season or whether farmers will be able to conserve high-quality forage, which will make it possible to utilize animals of higher genetic potential.

III. Develop a forage testing program (possibly through present soil testing laboratories to analyze for crude protein and *In Vitro* dry matter disappearance) -- The primary objective of the program would be to point out the very low quality of much of the forage, including straw, that is presently being utilized. This program could become indispensible in the future in assisting farmers to balance the rations of their animals.

This program should be given high priority since the technology required to implement the program is already available. In addition, by using present soil testing laboratories the cost of implementation will be relatively small.

Table 2 contains guidelines for establishing hay and silage grading standards for Portugal. Only three grades are proposed to keep the program simple and easy to implement. It may be necessary to raise or lower some of the proposed values depending upon the class of livestock utilizing the forage. The importance of obtaining a representative forage sample for laboratory analysis cannot be

Table 2. Proposed forage testing standards.

Lab Test	Hay or Silage Grade		
	Low	Medium	High
Crude Protein*	8	9-12	13+
Digestibility**	40	41-55	56+

* based on Kjeldahl N x 6.25

**_In Vitro_ dry matter disappearance can be used to estimate digestibility recognizing that _In Vitro_ DMD values may not always agree 100 percent with _In vitro_ values.

overemphasized. Visual ratings should be discouraged since they are often erroneous and farmers will be tempted to use them rather than paying for a reliable laboratory analysis.

IV. Study methods of establishing forage crops. Weeding failures, especially of legumes, are all too common as exemplified by the recent problems encountered by the World Bank program headquartered in Evora.

Two approaches should be used in attempting to improve pasture and forage production. One method involves the introduction of legumes, which requires additional technology and will be expensive due to the need for seedbed preparation, the cost of legume seed, inoculation, possibly liming, fertilizing, and herbicides. Sod seeding of legumes should be investigated since it may reduce the expense as well as soil erosion.

Band seeding has proven to be a superior seeding technique for small seeded forage legumes in the United States (Heath) where the soil tends to be low in phosphorus, which is a pervasive problem in Portugal. The band seeding technique places a band of phosphorus fertilizer directly below the legume seed so that the root goes directly through the band. This method stimulates legume seedlings to grow faster and reduces fixation of phosphorus in the soil thereby increasing its efficiency.

A second method involves the improvement of native pastures. These native pastures must be characterized relative to species and management practices which will improve their production with a minimum of expense. Native, as well as introduced, legumes must be evaluated so that high yields of high-quality forage can be

produced without the use of expensive commerical nitrogen. The technique of sod seeding legumes into these native pastures must be investigated using legumes with tolerance to acidity and low fertility (e.g., subterranean clover, serradella, and Medicago arabica). Competition from native grasses and weeds must be reduced by prior intensive grazing or the application of a herbicide such as paraquat.

Both of the above methods of establishing higher producing pastures and forages will require the identification of limiting soil factors by regions. This will include such factors as pH, macro and micronutrients (deficiencies and toxicities), impermeable subsoils, inoculation of legumes, and other factors. Table 3 contains mineral analysis of a number of forage samples collected near Evora and Vila Real (Rhykerd). These data show tremendous ranges in concentrations of the various minerals with obvious deficiencies and possibly toxicities exhibited. Additional analyses, including soil analyses, are required to properly identify these mineral problems by region and soil type.

Soil factors such as pH, fertility and drainage often limit the production of legumes to a greater extent that grasses. Thus, more attention must be directed towards these factors when trying to increase the production of legumes. However, considerable variation exists within the legumes relative to tolerance to soil pH, fertility and palatable and require a minimum of inputs for improved production and quality of pastures and forages.

A very pertinent question has been raised as to whether the soils of Portugal are typical Mediterranean soils as in Australia,

Table 3. Ranges in mineral concentrations of 120 forage samples obtained at Évora (Mitra) and 47 forage samples obtained at Vila Real (IUTAD). Samples at both locations include separate analyses for grasses and legumes (Rhykerd).

MINERAL RANGES IN FORAGE CROPS

Mineral	Évora - Mitra[a]	Vila Real - IUTAD[a]
	%	
P	0.16 - 0.48	0.09 - 0.35
K	0.57 - 3.75	0.90 - 3.03
Ca	0.14 - 2.14	0.18 - 4.09
Mg	0.08 - 0.37	0.08 - 0.45
	ppm	
Mn	56 - 673	62 - 222
Fe	25 - 709	33 - 1960
Cu	1 - 11	2 - 39
Zn	7 - 400	11 - 217
B	1 - 34	1 - 30
Al	6 - 1310	12 - 5890

a. The samples were obtained from Dr. Afonso Almeida (Évora) and Dr. Nuno Moreira (Vila Real).

Africa, and California (excluding the alluvial soils). This question needs to be answered before attempting to adopt forage technology directly from these countries. Some scientists have indicated that generally the soils of Portugal are more acid and of lower fertility. The lack of success in Portugal with the medics and other legumes suggest that acidity and low fertility problems may be more serious in Portugal. Moreover, Table 3 indicates deficiencies of nearly all essential plant elements as well as possible toxicities of several elements.

V. Evaluation by region of the various species and varieties of grasses and legumes, including cereals, which show the greatest potential as pasture and forage species. The palatability of the forage species must not be overlooked since rate of intake is an extremely important consideration in determining the rate of growth and level of production of meat, milk and wool.

VI. Development of the forage seed industry. The technology for the production of the various forage crops, especially legumes, must be developed before entering into seed production. Presently there is not a large demand for seed for many of the forage legumes, thus it may be more practical and economical to import those legumes especially if high technology is needed to produce the seed. Efforts should be concentrated on the production of seed of forage crops that are used in large quantities and also that can be produced profitably in Portugal (Henry). For example, if improved varieties of vetch and/or lupine were developed for production in association with oats,

a widespread crop combination in the rotation in class C and D soils in the Alentejo, then there would be a demand for improved varieties of these species.

CONCLUSIONS

Productivities in pasture, forage, and animal production are low in Portugal due to severe climatic and soil limitations. The production of pastures and forages is highly seasonal resulting in a lack of quantity and quality of feed during a considerable portion of the year. Following is a list of recommendations to improve pasture, forage, and animal production:

1. An urgent need to train forage specialists to conduct research to develop the technology for a profitable forage - animal industry.
2. Develop a 12-month pasture and forage calendar utilizing conserved forages.
3. Initiate a forage testing program to educate producers relative to the relationship of forage quality and increased animal performance as well as an aid in balancing rations.
4. Develop technology to assure the establishment of forages including resolving soil acidity and fertility problems.
5. Evaluation of forage species, including cereals, and varieties for pasture and conserved forage.
6. Development of the forage seed industry recognizing that the technology for successful establishment and production of many of the forage legumes must first be developed. If there

is not a large demand for certain legumes, especially those requiring high technology for seed production as is the case with subterranean clover, it would be expected to be more economical to continue to import the seed.

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EXPANDING WHEAT ACREAGE IN PORTUGAL

Portugal imports very large quantities of wheat, often in the range of 50 to 75 percent of their needs. The Alentejo Region is the major wheat producing area in Portugal accounting for nearly 70 percent of the total production.

Tremendous pressure is developing presently in Portugal relative to greatly expanding the acreage of wheat especially in the Alentejo Region. However, there is grave concern by some scientists that expanding the acreage of wheat would cause very serious soil losses due to erosion. This is due to the fact that any increase in wheat acreage has to come from more marginal soils which are much more subject to erosion. The present cultural practices for wheat can result in very serious soil erosion on sloping soils since the traditional method of soil preparation is deep plowing (1/2 meter) followed by several diskings to break up very large clods resulting from poor soil structure due to very low soil organic matter.

It appears to me that with the implementation of research on tillage systems that it would be possible to greatly expand wheat acreage with reduced tillage, or no-till, systems and also greatly increase legume production through interseeding legumes in wheat. these improved tillage and cultural practices would reduce soil erosion, increase soil nitrogen, maintain or possibly increase wheat yields, and provide better quality forage for grazing after harvesting the wheat.

Experiments in Vila Real this past year based on my recommendation in 1981 showed the legumes would produce excellent growth when interseeded in wheat. However, grain yields were suppressed by the

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legumes supposedly due to competition for moisture with the wheat when the wheat grain was filling and maturing. In much of Portugal, the rains cease before the wheat is mature. The use of very early maturing varieties of legumes should reduce, or eliminate, this competition for soil moisture at heading of wheat and still take advantage of the benefits of the legume in keeping soil erosion to a minimum, fix nitrogren and provide better quality forage for grazing after wheat harvest.

In the United States, the application of reduced tillage, no-till, and sod planting have permitted us to plant grain crops on very rolling land with a very minimum of soil erosion.

Research on the above cultural practices will permit Portugal to greatly expand wheat acreage which is so desperately needed and at the same time keep soil losses to a minimum. To me, our soils are definitely one of our most valuable natural resources and it is imperative that we do all we can to preserve, and hopefully improve, these soils for present and future generations.

A <u>second approach</u> to increasing wheat production in Portugal would be the intensification of wheat production in the present rotations. It is my understanding that grain yields are considerably less the second consecutive year of wheat in the rotation. No one knows the reason for this reduction in grain yield. However, it would appear to me that research concentrated on this problem would soon identify the limiting factors in the second year of production. Disease, insect and soil fertility problems should certainly be investigated.

EXPERIMENT TO STUDY THE INFLUENCE OF STOCKING RATE FOR SHEEP ON SOIL FERTILITY

A grazing experiment was initiated at Elvas and Evora in 1976 to study stocking rates of sheep grazing on improved pastures. The stocking rates imposed 3, 6, 9, and 12 ewes per hectare. Experimental methods and results have been reported by Casquinha.

These two experimental sites provide a rare opportunity to measure the increase in soil fertility resulting from 6 years of grazing by sheep and 4 stocking rates along with supplemental feeding on the pastures. Detailed soil analysis were obtained from the experimental sites at the beginning of the experiment. Petersen (reprint follows this paper) has reported that grazing animals generally do not increase soil fertility unless considerable supplement is fed to the animals. The reason for this is that the animal excreta is deposited on only a small percentage of the area and in the remaining portions of the pasture the nutrients are actually being depleted. When animals on pasture are supplemented with hay, silage, or grain, nutrients are being added to the soil in direct proportion to the supplement being fed.

Soil samples are to be obtained from all the experimental pastures for analysis. Due to the large variability resulting from the distribution of animal excreta, especially at low stocking rates, careful attention must be given to the soil sampling technique. I would suggest taking a large number of samples from each pasture and sampling to only a depth of 7-1/2 cm rather than the normal depth. This will provide a more sensitive measure of changes in soil

fertility at the surface where the greatest changes are anticipated.

Another soil sampling problem results from the fact that animal excreta is most likely to be found concentrated in the vicinity of the water and feed bunks. Therefore, it may be desirable to stratify each pasture and sample it in thirds or fourths in order to get a measure of any difference in soil fertility caused by the location of the water and feed bunks. Normally animals spend a greater portion of their time in the vicinity of the water and feed bunks which results in a greater deposition of animal excreta in these areas of the pastures. Obviously this effect would be expected to be much smaller at the lowest stocking rate.

I would suggest the usual soil analysis -- pH, P, and K. A laboratory analysis for N will be difficult. The best method to get an estimation of the N status of the soils from the various pastures may be a greenhouse experiment. Soil from each pasture should be collected from the top 7-1/2 cm and used in an experiment to study the total dry matter production and N concentration of a grass grown on each soil. The relative quantities of N removed from the soils of the various stocking rates could easily be calculated.

Ryegrass (Lolium), a cool-season grass, and sorghum, a warm-season grass, are excellent grasses to use for this purpose because of their rapid germination and vegetative growth. The choice of species will depend on the season of the year in which the pot experiment is conducted. In fact, since this is such a simple experiment it may be advisable to conduct an experiment in the spring with ryegrass and again in the summer with sorghum.

The results of this study will provide valuable data to aid soil analysis laboratories in making more accurate fertilizer recommendations for pastures in the future.

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The Distribution of Excreta by Freely Grazing Cattle and Its Effect on Pasture Fertility: II. Effect of Returned Excreta on the Residual Concentration of Some Fertilizer Elements[1]

R. G. Petersen, W. W. Woodhouse, Jr., and H. L. Lucas[2]

SYNOPSIS

Data indicate that freely grazing animals distribute fertilizers inefficiently, the degree varying with size of the area effectively fertilized by each excretion and with the rate of loss of each element after application. The greatest benefit from excretal return of such elements as P and K appear to be under conditions of high stocking rate and long periods of grazing time. Reliable values for such factors as effective area fertilizer per excretion and rate of nutrient loss are needed to estimate the effect of grazing animals on the fertility status of a pasture.

THE value of animal excreta in maintaining soil fertility is well known and many studies on the effects of mechanically applying the various types to the soil as fertilizer supplements have been reported. Since around 75% of the nitrogen and phosphorus and from 80 to 90% of the potassium consumed by grazing cattle normally passes through the animal, the amount of fertilizer elements returned in the excreta of cattle grazing productive pastures is considerable. Little work has been reported on the effect of the fertilizer so applied upon the fertility of pastures, although some work has been done on the overall effect of the grazing animal on the pasture sod. (4, 2)

Bearing more directly on this problem, Sears and his co-workers in New Zealand (11) found in one experiment that yields were materially increased by excreta returned by grazing sheep. However, in another trial, at another location, (12) excretal return failed to increase total yields although seasonal distribution and botanical composition were changed. The yield of wheat following the sod was not affected. Watkin, in Great Britain, (15) in a similar trial, found increased growth from returned excreta where liberal nitrogen fertilization was practiced, but failed to show any material benefit from excreta where nitrogen fertilizer was omitted. The effect of the excreta returned by grazing cattle has apparently not been examined.

The study reported in this and the preceding paper (8) was designed to provide quantitative information on the distribution of the fertilizer elements by grazing cattle and to predict the probable effect of this return upon the fertility status of the pasture. In order to characterize quantitatively the effect of any soil amendment upon residual fertility, one must know the quantity of the amendment applied, its chemical composition, and the rate at which the applied elements are dissipated from the root zone. It is also necessary to characterize the manner of application of the amendment in both space and time.

The literature dealing with barnyard manure as a soil amendment indicates that mature cattle produce an average of 56 pounds of feces and 20 pounds of urine per animal daily (10, 5, 1, 7). The chemical composition of fresh excreta may vary with the composition of the feed and with the age, condition, and size of the animal (10, 3). On the average, however, fresh cattle feces contain 0.38% N, 0.18% P_2O_5, and 0.22% K_2O, while fresh cattle urine contains approximately 1.10% N, 0.01% P_2O_5 and 1.15% K_2O.

In the preceding paper (8) it was estimated that cattle produce an average of 12 defecations and 8 urinations per animal daily, and that each defecation covers an area of 1 square foot while each urination covers an area of 3 square feet. With these estimates and with the preceding estimates of quantity and chemical composition, the rates of application per excretion of the major fertilizer elements may be computed. (see table 1).

The manner in which excreta are distributed, in space and time, by freely grazing cattle was described in the first paper of this series (8). The empirical excretal frequency distribution derived therein will be used in the present paper to describe the application of fertilizer elements in the excreta of grazing cattle.

The relationship between residual concentration in the root zone and time after application of fertilizer elements has received the attention of several investigators. Salter and Green (9), for example, found that the loss per unit time of nitrogen and organic

[1] Contribution from the Departments of Agronomy and Experimental Statistics, North Carolina Agr. Exp. Sta., Raleigh, N. C. Published with the approval of the Director as Paper No. 715 of the Journal Series. The results reported in this paper are part of a thesis submitted by the senior author in partial fulfillment of the requirements for the Ph.D. degree at North Carolina State College, Raleigh. Presented at the 1954 meetings of the American Society of Agronomy, St. Paul, Minn. Received Feb. 13, 1956.

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Table 1.—Rate of application (pounds per acre per excretion on the area covered) of the major fertilizer elements in the individual excreta of grazing cattle.

Element	Type of excretion	
	Feces	Urine
N	760	400
P_2O_5	350	15
K_2O	440	420

carbon is proportional to the concentration of these elements in the root zone of the soil. Data presented by Krantz et al. (6) indicate a similar ratio between nitrogen loss and nitrogen concentration. Although no direct evidence is available, there are indications that the instantaneous loss of potassium from the root zone is also proportional to concentration (14). It would appear, therefore, that the assumption of an exponential relationship between residual fertilizer concentration and time after application may be adequate for purposes of this investigation.

EXPERIMENTAL PROCEDURE

Estimates were computed for the proportions of the pasture expected to be at various levels of residual nitrogen and potash fertility as a result of excretal return. This required joint consideration of the rate of application per excretion of nitrogen and potash, the quantitative characteristics of the time-space distribution of excreta by freely grazing cattle, and a function describing the rate of loss of applied nitrogen and potash from the root zone of the soil.

To compute these estimates, it was necessary to make several assumptions. It was assumed, first, that the rates of application of the fertilizer elements in the individual excreta are those given in table 1. To describe the application of the excreta by the grazing cattle it was assumed that each animal produces a defecation, covering an area of 1 square foot, every 2 hours, and a urination, covering an area of 3 square feet, every 3 hours. It was also assumed that the change in the proportion of the pasture covered by 0, 1, 2, . . . excretions with increasing length of grazing period may be described by the empirical excretal frequency distribution derived in a previous paper (8). The grazing intensity was taken to be one cow per acre from April 1 to Nov. 1, with no grazing occurring during the winter period between Nov. 1 and April 1.

The residual concentration, C_t, of a fertilizer element in the root zone of the soil beneath an excretion at any time, t, was obtained from the relationship

$$C_t = C_0 e^{-k(T-t)} \qquad [1]$$

in which C_0 is the quantity of the element initially applied in the excretion, k is a constant proportional to the rate of loss of the element from the root zone of the soil, T is the time at which the excretion was deposited, and e is the base of the natural logarithm.

The "Steady State"

Theoretically, if the rate of loss of a given nutrient from the root zone is proportional to its concentration, the residual fertility of the soil underneath an excretion is affected for an infinite period of time following deposition. Actually, however, a point is reached, sooner or later, at which the concentration of each element beneath an excretion will have become so low as to have no further practical significance. Utilizing this fact, the concept of a "steady state" was adopted in this study to obviate the necessity of considering extremely long and meaningless periods of time and insignificant concentrations of nutrients. For the purposes of this study a "steady state" with respect to a given element is said to exist when the concentration of that element in the root zone of the soil under the first excretion deposited in the pasture falls below a level which can be expected to effectively contribute to the fertility of the pasture. This condition is called a "steady state" since after this point is reached, for each new excretion deposited in the pasture there will be an old excretion beneath which the fertilizer concentration has become negligible. Consequently, although the deposition of new excreta continues, the number of effective excreta becomes constant. In other words an equilibrium condition for that element with respect to residual fertility produced by excretal return will have been reached and will be maintained as long as stocking rate and excretal return remain constant.

In this paper, a "steady state" for nitrogen is assumed to have been reached when the residual concentration beneath the first excretion has reached 10 pounds per acre and for potassium when the concentration of this element falls to 20 pounds per acre.

Loss Rates of Nutrients Applied in Excreta

Data presented by Krantz et al. (6) indicate that in Indiana applied nitrogen is lost from the root zone through leaching, absorption by plants, volatilization, etc., at the rate of about 40% per month. At this loss rate, the soil under a urine spot receiving nitrogen at the rate of 400 pounds per acre would still contain over 80 pounds of nitrogen per acre at the end of the third month. Observations of numerous pasture experiments in North Carolina lead to the conclusion that under the soil and climatic conditions in this area, the loss rate is probably at least 40% per month. Even with rates of nitrogen of this order, single applications of soluble nitrogen do not appear to be effective beyond about 3 months. Sears (13) also, states that urine spots in New Zealand pastures are evident for periods of only 2 to 3 months.

There appears to be little in the literature that would suggest any specific figure for the loss rate of potash. Consequently, the rate used was arrived at through the consideration of the general knowledge available on the behavior of this element, together with data on rate of K removal and duration of response to applied K from several pasture experiments in North Carolina. These seem to indicate that around 10% per month is a realistic assumption for the loss of potash in this area.

RESULTS

Expected Proportions of a Pasture at Various Levels of Residual N and K Fertility as a Result of Excretal Return

Using the "steady state" concept, the above assumptions as to loss rate, and the assumptions previously given for stocking rate, excretal return, etc., the proportions of a pasture expected to contain in excess of various levels of residual nitrogen and potash as a result of excretal return have been computed. These are presented in table 2.

It is important to remember that the fertilizer concentrations given in table 2 represent only that fertilizer added as excreta. They do not include fertilizer elements already present in the soil at the time grazing began, supplemental fertilizer applications, or N fixed by legumes. It should also be noted that table 2 includes values for the end of the grazing season, the beginning of the next grazing season, and the average areas in excess of the indicated fertility level. Since grazing is assumed to have been discontinued from Nov. 1 to April 1, no excreta are added during the winter while the loss of fertilizer elements may continue through the winter.[3] Thus the relative area at a given level of fertility will fluctuate from a maximum at the time the cattle are removed in the fall to a minimum at the time they are replaced in the spring. The average represents a value midway between these extremes.

It is apparent that, under the assumptions made in this study, excreta returned by the grazing animal are very ineffective in supplying nitrogen to the pasture as a whole. The "steady state" for this element is reached in such a

[3] It was assumed, for simplicity and for lack of adequate data on this point, that the loss rate is the same in winter as in summer. Admittedly this may be incorrect. However, changing this to a rate of 5% in winter, for example, does not cause a major change in the end-result.

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Table 2.—"Steady state"* proportions of a pasture (% of total area) expected to be in excess of various levels of N and K_2O fertility as a result of excretal return.

Fertility level (Lbs. per acre)	Nitrogen			Potash		
	End of grazing season	At beginning next season	Average	End of grazing season	At beginning next season	Average
	%	%	%	%	%	%
10	15.93	6.48	11.21			
20	14.43	3.34	8.89	37.17	30.03	33.60
40	11.57	.91	6.24	30.39	27.00	28.70
60	9.87	.31	5.09	29.12	20.25	24.08
80	8.61	.31	4.46	24.58	17.31	20.95
100	7.71	.04	3.88	20.65	16.57	18.61
125	6.60	—	3.30	17.87	14.13	16.00
150	5.79	—	2.90	16.92	12.48	14.70
175	5.08	—	2.54	16.70	9.95	13.33
200	4.57	—	2.29	16.00	6.79	11.40
250	3.42	—	1.71	12.44	2.54	7.47
300	2.51	—	1.26	9.38	1.32	5.35
350	—	—	—	6.55	1.01	3.78
400	—	—	—	4.57	.49	2.53
450	—	—	—	1.86	.13	1.00
500	—	—	—	1.28	.13	.71

* Time required to reach "steady state" is 8.5 months for N and 30 months for potassium.

Table 3.—The relation of changes in stocking rate to changes in proportion of pasture area affected at "steady state."

No. of mature animals per acre	Area above 20 pounds residual K_2O per acre from excretal return
1/3	12.87%
1	33.77%
3	71.07%

short time, 8.5 months, that a maximum of only about 16% of the pasture can be expected to be affected to any significant degree at any one time. Even with potassium, which is lost much more slowly, a maximum of about 37% of the area can be expected to be at a residual level of 20 pounds of K_2O per acre, or above, at the "steady state", i.e., after 30 or more months of grazing.

It should be emphasized at this point that:

(a) The results of this study apply directly only to areas where these assumptions hold, i.e., for cattle on pastures in soil and climatic areas similar to those in the humid eastern United States.

(b) The same procedure could be used for any type animal, in any soil and climatic region, provided that suitable information is available regarding the amount, composition, and distribution pattern of excreta and concerning such things as effective area covered per excretion and loss rates.[4]

(c) This procedure was designed to study the effect of excretal return upon fertility status. It has been pointed out by Sears (11) and a number of others that excretal return, under some conditions, may have a profound effect upon such things as natural reseeding, botanical composition and grazing habit which may in turn materially affect productivity. Thus, the grazing animal may affect the productivity of the pasture either favorably or adversely without having made any direct change in the fertility status of the pasture as a whole.

DISCUSSION

Stocking Rate

A major factor in determining the fraction of the pasture area that will be affected by excretal return is the mean excretal density reached at the "steady state" point. This in turn is largely determined by the rate of stocking.

The point in time required to reach a "steady state" for a given element is fixed by the loss rate for that element, but the mean excretal density can vary widely depending upon the number of animals grazing the pasture during that period. Some idea of the effect of varying this factor may be obtained from examining figure 1; that is, doubling the grazing intensity would have essentially the same effect as halving the loss rate. A specific example is shown in table 3.

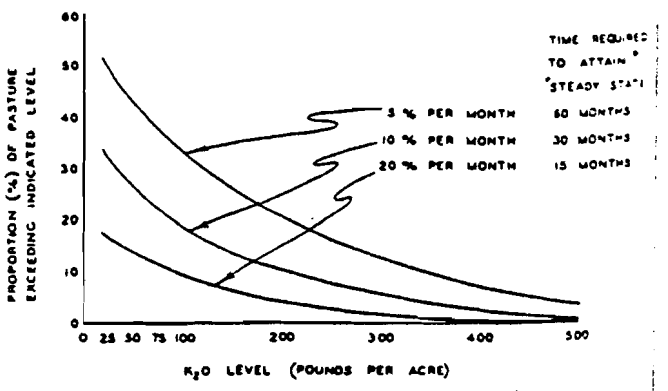

FIG. 1.—"Steady state" proportion of pasture expected to be in excess of various levels of residual K_2O fertility assuming various rates of loss (% per month) of K_2O from root zone of soil.

[4] One of the hypothetical distributions studied in the previous paper might be used instead of the empirical distribution. This is because the several distributions tend to give the same results as the time required to reach "steady state" decreases. In some trial computations, the "non-over lap" function gave essentially the same results as did the empirical distribution for nitrogen but not for potassium. The Poisson distribution, however, gave essentially the same results as the empirical distribution for both nitrogen and potassium.

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Thus from the standpoint of the pasture as a whole, a very low stocking rate will essentially prohibit excretal return from having any material effect upon the residual fertility of the pasture. On the other hand, where the productivity of the sod would afford a very high carrying capacity, excretal return could, in time, have an important effect upon pasture fertility. This is in agreement with the finding of Watkin (15) that with heavy N fertilization and, in turn, a heavy stocking rate, fecal return appeared to increase productivity, while with no N fertilization and a lower stocking rate fecal return was ineffective.

Loss Rate

Since the time required to reach a "steady state" for any given element is determined by the loss rate for that element, this value has considerable significance. In order to show the effect of changing this assumption, the residual potassium levels to be expected using three loss rates have been computed and are presented in figure 1. All other assumptions are as previously stated.

As might be expected, cutting the loss rate in half (from 10 to 5%) materially improves the expected fertilizer efficiency of the element returned in the excreta, with a major change coming from the increased proportion of the area having moderate to low levels of residual fertility. In turn, doubling the assumed loss rate (from 10% to 20%) sharply decreases the expected efficiency by decreasing the area of pasture under which the residual fertility is affected.

Obviously if the loss rate on potassium or any other fertilizer element can be assumed to be 5% per month, or even less, the picture in regard to excretal return by the grazing animal as a factor in maintaining pasture fertility becomes more optimistic. Examination of the limited evidence at hand has led the writers to conclude that for the conditions existing in North Carolina it would be unrealistic to assume a rate much lower than 10% for potassium or 40% for nitrogen. This probably will not hold for other soil and climatic regions, and this factor is certainly one that should be taken into account in considering the applications of this study to conditions in other areas.

Effective Area per Excretion

The area actually covered by an average excretion can be determined with a fair degree of accuracy. The figures used here are believed to be quite adequate for this purpose. However, it is recognized that the area effectively fertilized by a single excretion is likely to be larger than that actually covered, particularly with certain types of sods. The extension of roots, rhizomes, or stolons from plants external to the excreta-covered area into that zone would have the effect of increasing the area fertilized by a given excretion. Also any lateral movement of fertilizer in the soil would have the same effect. This would, at the same time, reduce the concentration of fertilizer under the area affected by each excretion. An estimate of the effect of increasing the effective area per excretion may be obtained from figure 2. The distribution of residual K_2O is shown, for the effective areas of 1 and 3 square feet for feces and urine, respectively, and for areas 3 times as large, using a 5% loss rate.

It is evident that such a three-fold increase in effective area per excretion does change the expected efficiency of the excreta in fertilizing the pasture as a whole. The proportion of the area that remains unaffected at the "steady

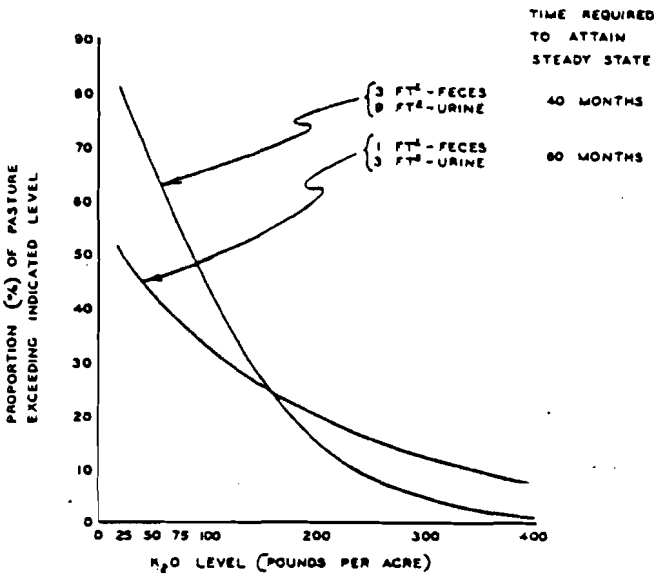

FIG. 2.—"Steady state" proportion of pasture expected to be in excess of various levels of residual K_2O fertility assuming different areas covered by individual excretions.

state" is decreased materially and at the same time the relative area at wastefully high levels of fertility is also decreased. The net result would appear to be a very substantial overall increase in the efficiency of the excretal material as a pasture fertilizer.

Unfortunately, the evidence in support of assuming the effective area to be as much as 3 times that of the area covered is not very strong. Observations made in connection with this study suggest that, in this region, the effective area is much nearer to the 1 and 3 square feet actually covered by feces and urine than the 3 and 9 feet assumed for this example.

Sears (12) and others feel that earthworms are a major factor in increasing the effective area per excretion. No measurements of this kind were made in connection with this study but continued observations led the authors to conclude that earthworm activity in most pastures in this region is so limited as to be of doubtful significance in this respect. It is recognized that, under soil and climatic conditions which are conducive to a large earthworm population, these might conceivably effect a material improvement in the distribution of fertilizers deposited in excreta.

Implications

On the basis of this study it appears that the grazing animal is much less effective in maintaining the fertility status of the average pasture, especially during the first few years of grazing, than might be hoped for and perhaps less than has often been assumed. On the other hand, with pastures of high carrying capacity after grazing has continued for some time, the excretal return of such elements as P and K, which are not too rapidly lost from the root zone, may provide a substantial contribution to the total fertility of the pasture. A disconcerting thought in this regard is that it appears to be inevitable that in order to take advantage of this contribution, it will be necessary to accept a less than maximum yield from a considerable part of the pasture. For example, if a certain pasture field is known to require the addition of 100 pounds of K_2O per year to maintain optimum production, it can be calculated

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under the assumptions used here that the average level of added K_2O during the 7-month growing season is around 60 pounds per acre. Thus adding 100 pounds of K_2O once a year is roughly equivalent to adding, at frequent intervals, an amount just sufficient to maintain the level of added K_2O at about 60 pounds per acre. Table 2 indicates that excretal return maintains about 25% of the area at this level or above. Therefore, where no fertilizer potash is added, 75% of the pasture area will be below the optimum level and about 66% at a zero applied (below 20 pounds) potash level. If, on the other hand, one chose to supplement excretal return by applying potash, something over 25% of the area would be over-fertilized and if the application were less than 100 pounds, at least 63% of the area would still be underfertilized.

It does appear that the best possibility of cashing in on the fertility value of excreta returned by the grazing animal is on very high producing pastures. Then, if the sod could be composed of plants with a reduced tendency toward "luxury consumption" of fertilizer elements, and if natural rainfall or irrigation practices could be such as to minimize leaching losses, thus further lowering the loss rate, the situation, envisioned by some, might be reached where a considerable portion of the fertilizer constituents applied to a pasture would function in a partially "closed cycle", being used over and over again. This situation may well exist on pastures in some regions now, but evidently not in the southeastern U.S.A.

In view of this maldistribution of fertilizer by grazing cattle some of the attention that has been devoted to mechanical scattering of feces spots is understandable from a fertility standpoint. Unfortunately, this operation, to be effective, would have to be performed at rather frequent intervals (every few days or prior to rains or irrigation) and could only be partially effective in the case of nitrogen and potassium since about 55% of the former and 70% of the latter are contained in the urine. With most of the phosphorus being in the feces, frequent breaking up of manure spots might conceivably improve the distribution of this element. Of course, this practice has other possible advantages not directly dependent upon fertility status of the pasture as a whole.

The findings in this study would suggest that some of the advantage of alternating pastures with crops, sometimes referred to as "ley farming", may involve a redistribution, through plowing and cultivating, of nutrients applied by the grazing animal. This would, in essence, increase the effective area covered per excretion.

This study also tends to substantiate the belief, generally held in many heavily populated areas of the world, that soiling, together with careful conservation of the excretal material, is a far more efficient method of handling green forage than is grazing. That is, there is less waste of the forage grown and much less waste of the fertility passing through the animal, when the pasture is cut and fed to the animal and the excreta returned to the soil mechanically, than where the whole process is left up to the animal. Naturally, the efficiency of utilization of the fertilizer nutrients not retained by the animal is very much dependent upon the methods used to conserve and return them to the soil. It would appear to merit consideration in any region where fertilizers are very deficient or excessively costly.

CONCLUSIONS AND SUMMARY

The purpose of this study was to evaluate the effect of excretal return by the freely grazing animal upon the fertility status of the pasture, utilizing data and procedures developed in the preceding paper. The conclusions reached are as follows:

It is evident from this study that freely grazing cattle are inefficient distributors of fertilizers, applying wastefully high rates on relatively small areas. The degree of this inefficiency does vary with the size of the area effectively fertilized by each excretion and with the rate of loss of each element after it is applied to the soil. However, as long as the assumptions as to the proper values for these two factors are kept within a reasonable range, the above general conclusion appears to hold.

At high stocking rates, where grazing continues long enough, and where an element (e.g., phosphorus) is lost slowly enough, it would appear that maintenance fertilization with that element might be adjusted downward, after grazing has continued for several seasons, to allow for that added by the grazing animal. This point seems to merit further study.

At normal stocking rates, a mature cow per acre or less, and with elements that are rapidly dissipated, such as nitrogen, almost identical fertilization for a given level of growth would appear to be required whether the sod is grazed or mowed.

For nutrients, such as potassium, that are intermediate as far as rate of loss is concerned, any allowance for that returned under grazing should certainly be postponed until grazing has continued for several seasons. Whether, or to what extent, adjustments should then be made in maintenance application of this element should be determined by what the optimum level of production is believed to be and with further clarification of the loss rate for this element under the particular soil and climatic conditions prevailing.

The procedure described in this paper is believed to offer a means of pointing up the factors which determine the effect of the grazing animal on pasture fertility. Where reliable values are available for such factors as effective area fertilized per excretion, and rate of loss of a particular nutrient, this method can be used to estimate the effect of the grazing animal on the fertility status of a given pasture.

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APPENDIX

Mineral Analyses of Plant Samples

Samples 1A through 24C -- Corn Plants from Dr. Armando M. Ferreira, IUTAD, Vila Real

Samples 1 through 823 -- Forage Crops from Dr. Nuno Moreira, IUTAD, Vila Real

WHOLE CORN PLANT SAMPLES
Provided by
Armando M. Ferreira
IUTAD -- Vila Real
4 Replications

1981

Location A

Sample Number	Plants/M^2	Days After Silking
1A	5	20
2A	5	20
3A	5	20
4A	5	20
5A	5	40
6A	5	40
7A	5	40
8A	5	40
9A	10	20
10A	10	20
11A	10	20
12A	10	20
13A	10	40
14A	10	40
15A	10	40
16A	10	40
17A	15	20
18A	15	20
19A	15	20
20A	15	20
21A	15	40
22A	15	40
23A	15	40
24A	15	40
25A	20	20
26A	20	20
27A	20	20
28A	20	20
29A	20	40
30A	20	40
31A	20	40
32A	20	40

Location B		3 Replications
1B	5	20
2B	5	20
3B	5	20
4B	5	40
5B	5	40
6B	5	40
7B	10	20
8B	10	20
9B	10	20
10B	10	40
11B	10	40
12B	10	40
13B	15	20
14B	15	20
15B	15	20
16B	15	40
17B	15	40
18B	15	40
19B	20	20
20B	20	20
21B	20	20
22B	20	40
---	20	40
24B	20	40
Location C	1982	
1C	5	20
2C	5	20
3C	5	20
4C	5	40
5C	5	40
6C	5	40
7C	10	20
8C	10	20
9C	10	20
10C	10	40
11C	10	40
12C	10	40

Location C	1982	
13C	15	20
14C	15	20
15C	15	20
16C	15	40
17C	15	40
18C	15	40
19C	20	20
20C	20	20
21C	20	20
22C	20	40
23C	20	40
24C	20	40

IMC PLANT TISSUE ANALYSIS REPORT
02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 1A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.42	0.33	0.15	39	74	10	.71	0.00	10	0.00	93	4*	1.00

LAB ID 83-5071-02
LOG-IN 01/18/83
COMPLETED 02/14/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

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02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 2A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.07	0.37	0.15	75	72	9	84	0.00	9	0.00	82	7	1.00

LAB ID 83-5071-03
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 3A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.00	0.30	0.15	66	67	9	70	0.00	8	0.00	86	3*	1.00

LAB ID 83-5071-04
LOG-IN 01/18/83
COMPLETED 02/14/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 4A

LAB ID 83-5071-05
LOG-IN 01/18/83
COMPLETED 02/14/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	0.95	0.33	0.17	55	58	7	62	0.00	6	0.00	69	4*	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA SA

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.89	0.30	0.12	49	147	6	58	0.00	6	0.00	118	4*	1.00

LAB ID 83-5071-06
LOG-IN 01/18/83
COMPLETED 02/14/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 6A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.14	0.29	0.14	60	99	7	78	0.00	7	0.00	96	4*	1.00

LAB ID 83-5071-07
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 7A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	0.81	0.34	0.13	56	132	6	59	0.00	6	0.00	101	3*	1.00

LAB ID 83-5071-08
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 8A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.96	0.28	0.15	62	102	7	58	0.00	6	0.00	100	3*	1.00

LAB ID 83-5071-10
LOG-IN 01/18/83
COMPLETED 02/14/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 9A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.07	0.34	0.15	62	67	8	75	0.00	8	0.00	83	4*	1.00

LAB ID 83-5071-11
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 10A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	0.86	0.36	0.15	63	57	6	72	0.00	8	0.00	69	5	1.00

LAB ID 83-5071-12
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA IIA

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	0.86	0.31	0.17	50	56	7	63	0.00	6	0.00	73	4*	1.00

LAB ID 83-5071-13
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 12A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.08	0.29	0.16	57	69	5	43	0.00	6	0.00	80	3*	1.00

LAB ID 83-5071-14
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 13A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	0.79	0.29	0.14	35	79	6	43	0.00	5	0.00	105	3*	1.00

LAB ID 83-5071-15
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 14A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	0.79	0.31	0.15	53	86	8	66	0.00	6	0.00	148	4*	1.00

LAB ID 83-5071-16
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 15A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.88	0.43	0.19	60	113	7	59	0.00	7	0.00	151	5	1.00

LAB ID 83-5071-18
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 16A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.83	0.30	0.14	47	73	5	43	0.00	5	0.00	116	3*	1.00

LAB ID 83-5071-19
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 17A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.09	0.40	0.18	63	86	8	78	0.00	10	0.00	149	6	1.00

LAB ID 83-5071-20
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 18A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.77	0.36	0.19	65	71	7	68	0.00	7	0.00	119	4*	1.00

LAB ID 83-5071-21
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 19A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.43	0.34	0.16	85	99	8	69	0.00	8	0.00	155	4*	1.00

LAB ID 83-5071-22
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 20A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.81	0.43	0.22	66	109	5	61	0.00	7	0.00	147	4*	1.00

LAB ID 83-5071-23
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/14/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 21A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.73	0.29	0.13	42	71	6	46	0.00	6	0.00	119	4*	1.00

LAB ID 83-5071-24
LOG-IN 01/18/83
COMPLETED 02/14/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 22A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.08	0.31	0.22	48	124	3*	29	0.00	8	0.01	150	12	1.00

LAB ID 83-5072-02
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE ' CUSTOMER A M TERREIRA 23A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.02	0.26	0.22	44	95	3*	27	0.00	6	0.01	116	10	1.00

LAB ID 83-5072-03
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 24A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.18	0.35	0.24	44	96	38	19	0.00	9	0.01	111	12	1.00

LAB ID 83-5072-04
LOG-IN 01/18/83
COMPLETED 02/25/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 25A

LAB ID 83-5072-05
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.11	0.30	0.22	58	90	4*	24	0.00	8	0.01	107	8	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE , CUSTOMER A M FERREIRA 26A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5072-06 LOG-IN 01/18/83 COMPLETED 02/25/83
	0.00	0.16	1.39	0.29	0.18	73	91	4*	24	0.00	8	0.01	106	7	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 27A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.98	0.32	0.24	48	221	4*	24	0.00	7	0.01	169	9	1.00

LAB ID 83-5072-07
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 28A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.91	0.26	0.20	43	182	4*	27	0.00	6	0.01	141	8	1.00

LAB ID 83-5072-08
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 29A

LAB ID 83-5072-10
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	0.86	0.26	0.21	43	205	4*	27	0.00	6	0.01	163	7	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 30A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.02	0.31	0.22	51	107	3*	22	0.00	9	0.01	144	9	1.00

LAB ID 83-5072-11
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 31A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.13	0.34	0.22	58	96	4÷	28	0.00	10	0.01	130	12	1.00

LAB ID 83-5072-12
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 32A

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.41	0.32	0.20	72	104	4*	28	0.00	10	0.01	139	8	1.00

LAB ID 83-5072-13
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 1B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	0.66	0.23	0.17	39	210	3*	111*	0.00	5	0.01	293	8	1.00

LAB ID 83-5072-14
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 28

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	0.95	0.27	0.21	57	149	3*	29	0.00	5	0.06	209	13	1.00

LAB ID 83-5072-15
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 38

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.27	1.56	0.35	0.17	70	225	7	50	0.00	10	0.01	132	9	1.00

LAB ID 83-5072-16
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 48

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.26	1.39	0.33	0.18	64	211	7	56	0.00	9	0.01	158	9	1.00

LAB ID 83-5072-18
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 5B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.27	1.48	0.33	0.17	68	230	7	53	0.00	9	0.01	147	9	1.00

LAB ID 83-5072-19
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 68

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.23	1.20	0.30	0.16	58	75	5	31	0.00	6	0.01	90	9	1.00

LAB ID 83-5072-20
LOG-IN 01/18/83
COMPLETED 02/25/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 7B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.30	1.12	0.27	0.16	53	62	5	34	0.00	6	0.01	80	7	1.00

LAB ID 83-5072-21
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 88

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.23	1.13	0.28	0.16	52	74	5	30	0.00	6	0.01	100	8	1.00

LAB ID 83-5072-22
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 98

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.23	1.76	0.30	0.16	58	137	6	30	0.00	9	0.01	129	9	1.00

LAB ID 83-5072-23
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 108

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.24	1.85	0.30	0.15	67	76	5	33	0.00	9	0.01	77	9	1.00

LAB ID 83-5072-24
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 11B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	0.61	0.28	0.12	55	55	5	52	0.00	5	0.01	91	4*	1.00

LAB ID 83-5073-02
LUG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 12B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	0.68	0.30	0.15	46	71	6	49	0.00	5	0.01	120	3*	1.00

LAB ID 83-5073-03
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 13B

LAB ID 83-5073-04
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	0.62	0.38	0.16	44	77	5	40	0.00	5	0.01	153	4*	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 14B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.90	0.44	0.16	64	94	8	52	0.00	7	0.01	132	4*	1.00

LAB ID 83-5073-05
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 158

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.85	0.54	0.18	72	90	7	66	0.00	7	0.01	133	6	1.00

LAB ID 83-5073-06
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 168

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	0.90	0.40	0.15	60	84	6	51	0.00	8	0.01	114	5	1.00

LAB ID 83-5073-07
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 17B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	0.99	0.48	0.16	75	94	8	76	0.00	9	0.01	122	5	1.00

LAB ID 83-5073-08
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 18B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	0.91	0.30	0.11	54	74	6	51	0.00	4*	0.01	116	3*	1.00

LAB ID 83-5073-10
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 198

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.74	0.27	0.11	55	81	6	48	0.00	5	0.01	147	3*	1.00

LAB ID 83-5073-11
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 20B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.79	0.30	0.13	55	73	7	57	0.00	4*	0.01	144	4*	1.00

LAB ID 83-5073-12
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 218

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	0.71	0.36	0.12	74	85	6	96	0.00	4*	0.01	166	5	1.00

LAB ID 83-5073-13
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 22B

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.23	1.16	0.29	0.21	54	70	4*	31	0.00	10	0.01	71	11	1.00

LAB ID 83-5073-14
LOG-IN 01/18/83
COMPLETED 02/25/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 238

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.34	0.32	0.23	55	77	6	49	0.00	10	0.01	82	8	1.00

LAB ID 83-5073-15
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA IC

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.22	1.33	0.26	0.22	58	61	5	33	0.00	8	0.01	69	15	1.00

LAB ID 83-5073-16
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER A M FERREIRA 2C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.06	0.24	0.17	56	179	7	31	0.00	9	0.01	115	5	1.00

LAB ID 83-5073-18
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 3C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	0.97	0.27	0.18	58	93	5	31	0.00	9	0.01	119	7	1.00

LAB ID 83-5073-19
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 4C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	0.89	0.24	0.22	49	144	5	29	0.00	7	0.01	102	12	1.00

LAB ID 83-5073-20
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA SC

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.16	0.27	0.18	44	102	4*	19	0.00	9	0.01	135	9	1.00

LAB ID 83-5073-21
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
03/08/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 6C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.44	0.30	0.20	56	175	6	31	0.00	9	0.01	167	8	1.00

LAB ID 83-5073-22
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY ¢ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 7C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.27	0.32	0.21	49	89	4*	26	0.00	9	0.01	122	10	1.00

LAB ID 83-5073-23
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 8C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.10	0.28	0.19	53	119	5	23	0.00	9	0.01	176	7	1.00

LAB ID 83-5073-24
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 9C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLIUN--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.22	0.32	0.21	58	86	7	29	0.00	9	0.01	101	10	1.00

LAB ID 83-5074-02
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA IOC

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.22	1.06	0.24	0.19	47	119	5	30	0.00	5	0.01	226	9	1.00

LAB ID 83-5074-03
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 11C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.01	0.22	0.17	44	113	4*	28	0.00	5	0.01	211	9	1.00

LAB ID 83-5074-04
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 12C

LAB ID 83-5074-05
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.24	1.10	0.26	0.19	51	148	5	30	0.00	6	0.01	265	10	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 13C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.10	0.35	0.27	68	163	5	33	0.00	10	0.01	170	12	1.00

LAB ID 83-5074-06
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 14C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.31	0.31	0.20	59	141	6	29	0.00	9	0.01	245	8	1.00

LAB ID 83-5074-07
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 15C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.42	0.32	0.20	64	176	7	30	0.00	10	0.01	223	8	1.00

LAB ID 83-5074-08
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 16C

LAB ID 83-5074-10
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.00	0.26	0.20	49	102	5	29	0.00	6	0.01	189	9	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 17C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.03	0.27	0.20	51	104	5	30	0.00	6	0.01	196	9	1.00

LAB ID 83-5074-11
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 18C

LAB ID 83-5074-12
LOG-IN 01/18/83
COMPLETED 02/25/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.06	0.31	0.22	58	113	6	30	0.00	7	0.01	215	11	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 19C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	0.94	0.32	0.26	60	77	6	33	0.00	8	0.01	124	10	1.00

LAB ID 83-5074-13
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 20C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.04	0.36	0.30	68	96	7	34	0.00	9	0.01	153	10	1.00

LAB ID 83-5074-14
LOG-IN 01/18/83
COMPLETED 02/25/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 21C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.73	0.28	0.16	53	91	6	28	0.00	10	0.01	134	10	1.00

LAB ID 83-5074-15
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 22C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.40	0.24	0.15	54	85	5	26	0.00	6	0.01	131	7	1.00

LAB ID 83-5074-16
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 23C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	0.88	0.31	0.26	61	143	5	31	0.00	6	0.01	240	10	1.00

LAB ID 83-5074-18
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
02/25/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER A M FERREIRA 24C

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.47	0.30	0.17	51	145	5	26	0.00	7	0.01	233	10	1.00

LAB ID 83-5074-19
LOG-IN 01/18/83
COMPLETED 02/25/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

AMOSTROS ENVIADAS PARA ANALISE PELO DR. C. RHYKERD

Sample	Experiment	Treatment	Plant	Stage of Development
1	Nitrogen Fertilization	0 KgN + 0 KgN	Oat	Milk Stage
2	in Oat for Forage	" "	(Alone)	"
5	on Good Fertility Soil	0 KgN + 40 KgN	"	"
6	"	" "	"	"
9	"	0 KgN + 80 KgN	"	"
10	"	" "	"	"
13	"	0 KgN + 120 KgN	"	"
14	"	" "	"	"
17	"	30 KgN + 0 KgN	"	"
18	"	" "	"	"
21	"	30 KgN + 40 KgN	"	"
22	"	" "	"	"
25	"	30 KgN + 80 KgN	"	"
26	"	" "	"	"
29	"	30 KgN + 120 KgN	"	"
30	"	" "	"	"
33	"	60 KgN + 0 KgN	"	"
34	"	" "	"	"
37	"	60 KgN + 40 KgN	"	"
38	"	" "	"	"
41	"	60 KgN + 80 KgN	"	"
42	"	" "	"	"
45	"	60 KgN + 120 KgN	"	"
46	"	" "	"	"
49	Nitrogen Fertilization	0 KgN + 0 KgN	Oat	Late Milk
50	in Oat for Forage on	" "	(Alone)	Stage
53	Low Fertility Soil	0 KgN + 40 KgN	"	"
54	"	" "	"	"
57	"	0 KgN + 80 KgN	"	"
58	"	" "	"	"
61	"	0 KgN + 120 KgN	"	"
62	"	" "	"	"
65	"	30 KgN + 0 KgN	"	"
66	"	" "	"	"
69	"	30 KgN + 40 KgN	"	"
70	"	" "	"	"
73	"	30 KgN + 80 KgN	"	"
74	"	" "	"	"
77	"	30 KgN + 120 KgN	"	"
78	"	" "	"	"
81	"	60 KgN + 0 KgN	"	"
82	"	" "	"	"
85	"	60 KgN + 40 KgN	"	"
86	"	" "	"	"
89	"	60 KgN + 80 KgN	"	"
90	"	" "	"	"
93	"	60 KgN + 120 KgN	"	"
94	"	" "	"	"

Sample	Experiment	Treatment	Plant	Stage of Development
97	Nitrogen Fertilization	0 KgN + 0 KgN	Oat	"
98	In Oat for Forage on	" "	(From the	"
101	Low Fertility Soil	0 KgN + 40 KgN	Mixture)	"
102	and Mixture Oat and	" "	"	"
105	Vetch	0 KgN + 80 KgN	"	"
106	"	" "	"	"
109	"	0 KgN + 120 KgN	"	"
110	"	" "	"	"
113	"	30 KgN + 0 KgN	"	"
114	"	" "	"	"
117	"	30 KgN + 40 KgN	"	"
118	"	" "	"	"
121	"	30 KgN + 80 KgN	"	"
122	"	" "	"	"
125	"	30 KgN + 120 KgN	"	"
126	"	" "	"	"
129	"	60 KgN + 0 KgN	"	"
130	"	" "	"	"
133	"	60 KgN + 40 KgN	"	"
134	"	" "	"	"
137	"	60 KgN + 80 KgN	"	"
138	"	" "	"	"
141	"	60 KgN + 120 KgN	"	"
142	"	" "	"	"
145	"	0 KgN + 0 KgN	Vetch	Flowering
146	"	" "	(From the	"
149	"	0 KgN + 40 KgN	Mixture)	"
150	"	" "	"	"
153	"	0 KgN + 80 KgN	"	"
154	"	" "	"	"
157	"	0 KgN + 120 KgN	"	"
158	"	" "	"	"
161	"	30 KgN + 0 KgN	"	"
162	"	" "	"	"
165	"	30 KgN + 40 KgN	"	"
166	"	" "	"	"
169	"	30 KgN + 80 KgN	"	"
170	"	" "	"	"
173	"	30 KgN + 120 KgN	"	"
174	"	" "	"	"
177	"	60 KgN + 0 KgN	"	"
178	"	" "	"	"
181	"	60 KgN + 40 KgN	"	"
182	"	" "	"	"
185	"	60 KgN + 80 KgN	"	"
186	"	" "	"	"
189	"	60 KgN + 120 KgN	"	"
190	"	" "	"	"

Sample	Experiment	Treatment	Plant	Stage of Development
193	Seeding Dates and	1st Seed + 1st Cut	Oat	Tillering -
197	Number of Cuts in	2nd " " "	"	Beginning of
198	Oats for Forage	" " " "	"	Stem Elonga-
201	(5 Seeding Dates	3rd " " "	"	tion
202	+ 2 Cuts or 1 Cut	" " " "	"	"
205	Only)	4th Seed + 1st Cut	"	"
206	"	" " " "	"	"
209	"	5th " " "	"	"
210	"	" " " "	"	"
216	"	1st Seed + 1st Cut	Weeds	Vegetative
220	"	2nd Seed + " "	"	"
224	"	3rd Seed + " "	"	"
228	"	4th Seed + " "	"	"
232	"	5th Seed + " "	"	"
233	"	1st Seed + 1 Cut Only	Oat	Milk Stage
234	"	" " " "	"	"
237	"	2nd Seed + " "	"	"
238	"	" " " "	"	"
241	"	3rd Seed + " "	"	"
242	"	" " " "	"	"
245	"	4th Seed + " "	"	"
246	"	" " " "	"	"
249	"	5th Seed + " "	"	"
250	"	" " " "	"	"
253	"	1st Seed + 1 Cut Only	Weeds	Late
254	"	" " " "	"	Maturity
257	"	2nd Seed + " "	"	"
258	"	" " " "	"	"
264	"	3rd Seed + " "	"	"
265	"	4th Seed + " "	"	"
266	"	" " " "	"	"
269	"	5th Seed + " "	"	"
270	"	" " " "	"	"
273	"	1st Seed + 2nd Cut	Oat	Milk Stage
274	"	" " " "	"	"
277	"	2nd Seed + " "	"	"
278	"	" " " "	"	"
281	"	3rd Seed + " "	"	"
282	"	" " " "	"	"
285	"	4th Seed + " "	"	"
286	"	" " " "	"	"
289	"	5th Seed + " "	"	"
290	"	" " " "	"	"

Sample	Experiment	Treatment	Plant	Stage of Development
293	"	1st Seed + 2nd Cut	Weeds	Late
294	"	" " " "	"	Maturity
297	"	2nd Seed + " "	"	"
298	"	" " " "	"	"
301	"	3rd Seed + " "	"	"
302	"	" " " "	"	"
305	"	4th Seed + " "	"	"
306	"	" " " "	"	"
307	"	5th Seed + " "	"	"
310	"	" " " "	"	"
793	Mediterranean	Box 4	Sub Cl	Vegetative
794	Seeded Pasture	Box 5	White Cl	Early Spring
795	Dry/Graz. Sheep	Box 6	" "	" "
816	Adaptation and	Sub Clover Vinhais		" "
817	Production of Species	" " Trikalla		" "
818	and Cultivars for the	" " Seaton Park		" "
819	Dry Mediterranean	" " Howard		" "
820	Conditions for	" " Woogenewp		" "
821	Grazing	" " Clare		" "
822	"	White Clover G. Hula		" "
823	"	Ladino White Clover		" "

TOTAL NUMBER OF SAMPLES -- 160
VILA REAL, 13 DE DEZEMBRO DE 1982
NUNO MOREIRA

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 1

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.34	0.13	0.07	96	22*	2*	14	0.00	2*	0.00	25*	11	1.00

LAB ID 83-5075-02
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMB 2

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.43	0.15	0.08	104	34	2*	16	0.00	2*	0.00	35	10	1.00

LAB ID 83-5075-03
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 5

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.51	0.14	0.08	73	40	2*	17	0.00	2*	0.00	34	9	1.00

LAB ID 83-5075-04
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUMB 6

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.65	0.15	0.09	78	30	3*	21	0.00	3*	0.00	38	11	1.00

LAB ID 83-5075-05
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNU 9

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.83	0.16	0.09	80	38	2*	19	0.00	2*	0.00	30	9	1.00

LAB ID 83-5075-06
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 10

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.02	0.15	0.09	66	39	2*	18	0.00	2*	0.00	50	7	1.00

LAB ID 83-5075-07
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 13

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	1.77	0.15	0.08	65	36	3*	23	0.00	2*	0.00	41	6	1.00

LAB ID 83-5075-08
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 14

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.73	0.17	0.10	79	32	2*	24	0.00	3*	0.00	31	9	1.00

LAB ID 83-5075-10
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 17

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.31	0.11	0.07	89	30	2*	18	0.00	2*	0.00	33	8	1.00

LAB ID 83-5075-11
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE. INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 18

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.52	0.15	0.08	83	26	2*	14	0.00	2*	0.00	34	13	1.00

LAB ID 83-5075-12
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 21

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.35	0.11	0.08	91	24*	2*	20	0.00	2*	0.00	23*	8	1.00

LAB ID 83-5075-13
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 22

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.76	0.15	0.09	69	31	2*	22	0.00	2*	0.00	42	8	1.00

LAB ID 83-5075-14
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 25

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.60	0.18	0.11	68	34	2*	18	0.00	2*	0.00	39	10	1.00

LAB ID 83-5075-15
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 26

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.30	0.13	0.08	60	48	2*	19	0.00	2*	0.00	68	7	1.00

LAB ID 83-5075-16
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 29

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	1.75	0.20	0.12	91	53	2*	25	0.00	3*	0.00	81	6	1.00

LAB ID 83-5075-18
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 30

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	MN (PPM)	FE (PPM)	CU (PPM)	ZN (PPM)	%S	B (PPM)	%NA	AL (PPM)	BA (PPM)	SAMPLE WT
	0.00	0.20	1.68	0.17	0.11	78	46	3*	26	0.00	3*	0.00	64	8	1.00

LAB ID 83-5075-19
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 33

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.18	0.12	0.07	64	27	2*	13	0.00	2*	0.00	36	8	1.00

LAB ID 83-5075-20
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 34

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5075-21 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.18	1.38	0.14	0.09	85	32	2*	21	0.00	2*	0.00	41	9	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 37

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.21	0.14	0.08	85	38	2*	16	0.00	2*	0.00	46	12	1.00

LAB ID 83-5075-22
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 38

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.46	0.14	0.08	62	66	2*	18	0.00	2*	0.00	74	8	1.00

LAB ID 83-5075-23
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 41

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.10	0.13	0.08	78	37	2*	23	0.00	2*	0.00	39	7	1.00

LAB ID 83-5075-24
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUMO 42

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.76	0.20	0.11	76	56	3*	24	0.00	3*	0.00	65	6	1.00

LAB ID 83-5076-02
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 45

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.91	0.20	0.12	91	61	3*	36	0.00	3*	0.00	90	6	1.00

LAB ID 83-5076-03
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 46

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.26	0.14	0.08	60	30	2*	15	0.00	2*	0.00	35	8	1.00

LAB ID 83-5076-04
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 49

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-05 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.12	1.21	0.12	0.04	151	41	4*	16	0.00	2*	0.00	92	14	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 50

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.20	0.10	0.05	137	28	4*	15	0.00	2*	0.00	48	22	1.00

LAB ID 83-5076-06
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 53

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.04	0.10	0.05	124	57	5	19	0.00	2*	0.00	128	14	1.00

LAB ID 83-5076-07
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 54

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.00	0.10	0.06	107	40	4*	18	0.00	2*	0.00	50	14	1.00

LAB ID 83-5076-08
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 57

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.07	0.11	0.05	119	38	4*	18	0.00	2*	0.00	46	11	1.00

LAB ID 83-5076-10
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUMD 58

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-11 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.08	1.08	0.11	0.05	139	31	5	18	0.00	2*	0.00	52	11	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 61

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.15	0.09	0.05	143	31	4*	21	0.00	2*	0.00	48	13	1.00

LAB ID 83-5076-12
LOG-IN 01/19/83
COMPLETED 03/01/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUMO 62

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.16	0.14	0.05	105	67	6	23	0.00	2*	0.00	77	7	1.00

LAB ID 83-5076-13
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 65

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.11	0.11	0.05	161	42	4*	15	0.00	2*	0.00	53	13	1.00

LAB ID 83-5076-14
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 66

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.04	0.12	0.06	120	27	4*	16	0.00	2*	0.00	41	20	1.00

LAB ID 83-5076-15
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 69

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	0.98	0.09	0.05	116	42	4*	15	0.00	2*	0.00	51	12	1.00

LAB ID 83-5076-16
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 70

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	0.98	0.11	0.06	86	32	5	17	0.00	2*	0.00	42	14	1.00

LAB ID 83-5076-18
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 73

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-19 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.10	1.03	0.10	0.05	121	48	5	18	0.00	2*	0.00	61	11	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 74

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.14	0.10	0.06	121	39	6	22	0.00	2*	0.00	54	14	1.00

LAB ID 83-5076-20
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 77

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	0.96	0.13	0.06	127	52	5	22	0.00	2*	0.00	64	7	1.00

LAB ID 83-5076-21
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 78

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-22 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.14	1.23	0.11	0.06	123	84	6	26	0.00	2*	0.00	129	11	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 81

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-23 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.09	0.95	0.11	0.05	133	52	4*	19	0.00	2*	0.00	91	15	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUMO 82

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5076-24 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.13	0.95	0.10	0.06	174	48	4*	20	0.00	2*	0.00	64	20	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 85

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.28	0.10	0.04	130	32	4*	15	0.00	2*	0.00	64	10	1.00

LAB ID 83-5077-02
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 86

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.07	1.22	0.11	0.06	131	20*	3*	16	0.00	2*	0.00	28*	15	1.00

LAB ID 83-5077-03
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 89

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5077-04 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.08	1.07	0.12	0.05	119	30	3*	15	0.00	2*	0.00	48	11	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 90

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.29	0.11	0.07	104	25	3*	17	0.00	2*	0.00	36	8	1.00

LAB ID 83-5077-05
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 93

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.55	0.15	0.07	148	55	6	30	0.00	2*	0.00	78	8	1.00

LAB ID 83-5077-06
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 94

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.19	0.14	0.07	135	36	5	23	0.00	2*	0.00	45	13	1.00

LAB ID 83-5077-07
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 97

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5077-08 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.13	1.51	0.14	0.05	164	33	5	19	0.00	2*	0.00	45	16	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 98

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5077-10 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.18	1.49	0.11	0.07	149	26	4*	20	0.00	2*	0.00	31	18	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 101

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.38	0.11	0.05	139	28	5	18	0.00	2*	0.00	45	10	1.00

LAB ID 83-5077-11
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 102

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.41	0.11	0.07	133	33	4*	21	0.00	2*	0.00	28*	20	1.00

LAB ID 83-5077-12
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 105

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.38	0.11	0.06	149	23*	5	21	0.00	2*	0.00	33	15	1.00

LAB ID 83-5077-13
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 106

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.18	0.11	0.06	139	42	6	26	0.00	2÷	0.00	42	14	1.00

LAB ID 83-5077-14
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 109

SAMPLE NUMBER.	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.63	0.14	0.05	153	36	5	18	0.00	2*	0.00	38	8	1.00

LAB ID 83-5077-15
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 110

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.33	0.15	0.06	128	32	6	26	0.00	2*	0.00	48	10	1.00

LAB ID 83-5077-16
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 113

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.44	0.10	0.04	184	21*	4*	15	0.00	2*	0.00	33	15	1.00

LAB ID 83-5077-18
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 114

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.24	0.12	0.06	131	19*	3*	17	0.00	2*	0.00	28*	16	1.00

LAB ID 83-5077-19
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 117

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5077-20 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.12	1.51	0.10	0.05	150	20*	4*	16	0.00	1*	0.00	30	14	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 118

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.02	0.13	0.06	143	28	4*	21	0.00	2*	0.00	38	17	1.00

LAB ID 83-5077-21
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 121

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.49	0.17	0.07	165	35	6	26	0.00	2*	0.00	45	12	1.00

LAB ID 83-5077-22
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 122

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.17	0.12	0.06	158	41	5	22	0.00	2*	0.00	43	13	1.00

LAB ID 83-5077-23
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUND 125

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.08	1.42	0.13	0.06	132	27	6	25	0.00	2*	0.00	38	9	1.00

LAB ID 83-5077-24
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 126

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.35	0.15	0.08	124	55	4*	22	0.00	2*	0.00	50	9	1.00

LAB ID 83-5078-02
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUND 129

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.52	0.12	0.05	180	24*	4*	16	0.00	2*	0.00	36	19	1.00

LAB ID 83-5078-03
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 130

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.08	1.26	0.11	0.05	111	20*	3*	14	0.00	2*	0.00	33	11	1.00

LAB ID 83-5078-04
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 133

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.30	0.12	0.05	125	22*	5	20	0.00	2*	0.00	26*	13	1.00

LAB ID 83-5078-05
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 134

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.35	0.12	0.07	137	30	4*	20	0.00	2*	0.00	49	17	1.00

LAB ID 83-5078-06
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 137

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.58	0.12	0.04	134	31	6	20	0.00	2*	0.00	40	8	1.00

LAB ID 83-5078-07
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 138

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.38	0.12	0.06	120	41	4*	20	0.00	2*	0.00	82	9	1.00

LAB ID 83-5078-08
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 141

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.26	0.17	0.06	130	39	5	22	0.00	2*	0.00	50	7	1.00

LAB ID 83-5078-10
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 142

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.40	0.13	0.06	118	31	5	22	0.00	2*	0.00	44	7	1.00

LAB ID 83-5078-11
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 145

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5078-12 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.20	2.95	0.67	0.12	117	112	26	112≠	0.00	15	0.00	255	21	1.00	

NOTE VALUES NOTED BY ≠ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 146

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	2.79	0.73	0.11	82	79	16	76	0.00	15	0.00	195	19	1.00

LAB ID 83-5078-13
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 149

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	2.75	0.67	0.09	111	85	29	104*	0.00	13	0.00	214	15	1.00

LAB ID 83-5078-14
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 150

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.56	0.69	0.11	112	82	19	88	0.00	14	0.00	213	21	1.00

LAB ID 83-5078-15
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 153

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	2.54	0.86	0.12	101	107	22	103*	0.00	14	0.00	278	17	1.00

LAB ID 83-5078-16
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 154

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	2.26	0.89	0.11	94	106	17	96	0.00	14	0.00	288	15	1.00

LAB ID 83-5078-18
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 157

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.25	2.84	0.76	0.12	119	97	26	95	0.00	12	0.00	223	15	1.00

LAB ID 83-5078-19
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 158

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.76	0.83	0.13	96	139	15	85	0.00	12	0.00	348	18	1.00

LAB ID 83-5078-20
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 161

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	2.58	0.73	0.11	116	115	21	102*	0.00	14	0.00	222	16	1.00

LAB ID 83-5078-21
LOG-IN 01/19/83
COMPLETED 03/01/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 162

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	2.49	0.77	0.12	86	126	17	96	0.00	15	0.00	254	16	1.00

LAB ID 83-5078-22
LOG-IN 01/19/83
COMPLETED 03/01/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 165

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5078-23 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.19	2.48	0.77	0.11	110	148	20	90	0.00	14	0.00	322	20	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 166

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5078-24 LOG-IN 01/19/83 COMPLETED 03/01/83
	0.00	0.16	1.91	0.91	0.13	120	97	15	92	0.00	14	0.00	246	21	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 169

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.10	0.94	0.13	83	134	16	85	0.00	18	0.01	247	16	1.00

LAB ID 83-5079-02
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 170

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.66	0.85	0.14	103	104	14	71	0.00	14	0.01	214	16	1.00

LAB ID 83-5079-03
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 173

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.90	0.81	0.13	94	117	18	94	0.00	14	0.01	246	17	1.00

LAB ID 83-5079-04
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 174

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.17	1.58	0.95	0.17	80	162	12	63	0.00	14	0.01	314	15	1.00

LAB ID 83-5079-05
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 177

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.22	2.87	0.79	0.11	99	129	21	83	0.00	15	0.01	242	15	1.00

LAB ID 83-5079-06
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 178

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.21	1.68	1.16	0.17	104	174	17	88	0.00	20	0.01	357	15	1.00

LAB ID 83-5079-07
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 181

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.20	0.72	0.12	92	129	20	99	0.00	15	0.01	243	14	1.00

LAB ID 83-5079-08
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 182

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.23	2.95	0.88	0.15	97	123	17	92	0.00	18	0.01	221	16	1.00

LAB ID 83-5079-10
LOG-IN 01/19/83
COMPLETED 04/06/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 185

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.80	0.84	0.12	92	130	22	91	0.00	12	0.01	275	16	1.00

LAB ID 83-5079-11
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD OR C L - PURDUE

CUSTOMER NUNO 186

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	2.00	1.22	0.15	75	128	20	93	0.00	17	0.01	236	16	1.00

LAB ID 83-5079-12
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 189

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5079-13 LOG-IN 01/19/83 COMPLETED 04/06/83
	0.00	0.18	1.56	0.95	0.16	82	132	16	79	0.00	13	0.01	271	14	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 190

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	2.20	0.78	0.15	91	124	20	89	0.00	14	0.01	235	42	1.00

LAB ID 83-5079-14
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 193

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.20	3.16	0.39	0.13	368	223	9	29	0.00	5	0.05	128	22	1.00

LAB ID 83-5079-15
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

ACCOUNT 061 RHYKERD OR C L - PURDUE

CUSTOMER NUNO 197

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	2.19	0.42	0.11	299	368	15	28	0.00	5	0.03	427	32	1.00

LAB ID 83-5079-16
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 198

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.16	0.41	0.11	321	219	15	25	0.00	5	0.02	432	3*	1.00

LAB ID 83-5079-18
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 201

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.61	0.50	0.13	367	649*	13	29	0.00	5	0.02	1040*	21	1.00

LAB ID 83-5079-19
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 202

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	MN	FE	CU	ZN	%S	B	%NA	AL	BA	WT
						--PARTS PER MILLION---					PPM		PPM	PPM	SAMPLE
	0.00	0.19	2.64	0.55	0.12	391	396	20	32	0.00	5	0.02	814*	18	1.00

LAB ID 83-5079-20
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 205

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	MN	FE	CU	ZN	%S	B	%NA	AL	BA	WT
						--PARTS PER MILLION---					PPM		PPM	PPM	SAMPLE
	0.00	0.16	1.88	0.57	0.12	407	194	15	32	0.00	6	0.03	339	31	1.00

LAB ID 83-5079-21
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 206

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	2.09	0.71	0.11	349	181	12	25	0.00	7	0.02	351	12	1.00

LAB ID 83-5079-22
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 209

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.16	1.85	0.47	0.12	351	349	16	26	0.00	5	0.01	669*	20	1.00

LAB ID 83-5079-23
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 210

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.19	2.10	0.62	0.11	307	366	15	29	0.00	6	0.02	791≠	12	1.00

LAB ID 83-5079-24
LOG-IN 01/19/83
COMPLETED 04/06/83

NOTE VALUES NOTED BY ≠ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
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IMC PLANT TISSUE ANALYSIS REPORT
04/11/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 216

LAB ID 83-5080-02
LOG-IN 01/19/83
COMPLETED 03/31/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.42	5.16	1.53	0.23	351	1190*	22	82	0.00	34	0.21	2000*	35	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 220

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.34	2.78	1.42	0.16	249	1620*	13	38	0.00	19	0.20	4380*	40	1.00

LAB ID 83-5080-03
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 224

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.91	0.51	0.10	168	1650*	17	34	0.00	12	0.03	4380*	16	1.00

LAB ID 83-5080-04
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 228

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.27	2.35	0.56	0.12	271	892*	15	52	0.00	12	0.02	2670*	21	1.00

LAB ID 83-5080-05
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 229

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.22	1.85	0.50	0.10	232	684*	16	64	0.00	11	0.02	2140*	22	1.00

LAB ID 83-5080-06
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 230

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.24	1.64	0.45	0.10	232	1010*	15	48	0.00	11	0.02	3560*	24	1.00

LAB ID 83-5080-07
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 233

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.05	0.10	0.06	96	45	4*	18	0.00	2*	0.01	53	16	1.00

LAB ID 83-5080-08
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 234

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.13	0.09	0.05	93	30	4*	14	0.00	2*	0.01	21*	12	1.00

LAB ID 83-5080-10
LOG-IN 01/19/83
COMPLETED 03/31/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 237

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.08	0.86	0.10	0.06	102	39	3*	14	0.00	2*	0.01	42	15	1.00

LAB ID 83-5080-11
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 238

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.08	0.09	0.04	105	36	5	16	0.00	2*	0.01	31	14	1.00

LAB ID 83-5080-12
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 241

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	0.88	0.12	0.07	123	39	5	23	0.00	3*	0.01	38	14	1.00

LAB ID 83-5080-13
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 242

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.05	0.12	0.06	118	37	4*	19	0.00	2*	0.01	29*	15	1.00

LAB ID 83-5080-14
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 245

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.06	0.11	0.07	120	37	4*	20	0.00	2*	0.01	34	16	1.00

LAB ID 83-5080-15
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUND 246

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.15	0.14	0.07	137	37	5	22	0.00	2*	0.01	34	17	1.00

LAB ID 83-5080-16
LOG-IN 01/19/83
COMPLETED 03/31/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 249

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.02	0.13	0.08	124	37	5	22	0.00	3*	0.01	30	15	1.00

LAB ID 83-5080-18
LOG-IN 01/19/83
COMPLETED 03/31/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 250

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.22	0.11	0.06	117	36	6	25	0.00	2*	0.01	29*	16	1.00

LAB ID 83-5080-19
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 253

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.70	0.72	0.10	148	96	7	41	0.00	13	0.03	146	28	1.00

LAB ID 83-5080-20
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 254

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.63	0.67	0.10	142	79	10	42	0.00	10	0.01	121	23	1.00

LAB ID 83-5080-21
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 257

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.61	0.55	0.11	128	90	6	33	0.00	11	0.05	154	22	1.00

LAB ID 83-5080-22
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 258

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5080-23 LOG-IN 01/19/83 COMPLETED 03/31/83
	0.00	0.11	1.55	0.54	0.09	144	63	9	35	0.00	8	0.02	88	31	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 261

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.08	1.31	0.30	0.06	148	98	10	30	0.00	5	0.02	91	22	1.00

LAB ID 83-5080-24
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 262

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.27	0.33	0.07	139	39	8	29	0.00	5	0.01	48	18	1.00

LAB ID 83-5081-02
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 265

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.47	0.57	0.12	152	63	9	35	0.00	9	0.01	99	26	1.00

LAB ID 83-5081-03
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 266

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.64	0.76	0.10	182	51	8	35	0.00	9	0.01	82	26	1.00

LAB ID 83-5081-04
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 269

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	2.12	0.95	0.17	178	82	10	47	0.00	14	0.05	149	31	1.00

LAB ID 83-5081-05
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 270

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.51	0.65	0.11	185	88	14	60	0.00	7	0.01	172	31	1.00

LAB ID 83-5081-06
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 273

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.03	0.10	0.06	104	32	3*	14	0.00	2*	0.01	32	15	1.00

LAB ID 83-5081-07
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 274

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.09	0.10	0.06	108	27	3*	13	0.00	2*	0.01	24*	15	1.00

LAB ID 83-5081-08
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 277

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.09	1.09	0.11	0.06	95	35	5	19	0.00	2*	0.01	28*	12	1.00

LAB ID 83-5081-10
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 278

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.10	0.11	0.07	114	31	4*	20	0.00	2*	0.01	20*	15	1.00

LAB ID 83-5081-11
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 281

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	0.98	0.11	0.08	117	33	4*	19	0.00	2*	0.01	28*	17	1.00

LAB ID 83-5081-12
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 282

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.16	0.11	0.05	129	29	4*	17	0.00	2*	0.01	26*	18	1.00

LAB ID 83-5081-13
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 285

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.13	0.10	0.06	102	31	5	23	0.00	2*	0.01	22*	15	1.00

LAB ID 83-5081-14
LOG-IN 01/19/83
COMPLETED 03/31/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 286

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.11	1.24	0.12	0.06	115	35	4*	21	0.00	2*	0.01	27*	16	1.00

LAB ID 83-5081-15
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 289

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.28	0.12	0.08	135	44	6	33	0.00	3*	0.01	33	16	1.00

LAB ID 83-5081-16
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 290

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.15	1.38	0.11	0.06	122	41	6	28	0.00	3*	0.01	28*	13	1.00

LAB ID 83-5081-18
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 293

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.27	0.78	0.13	130	84	7	32	0.00	13	0.02	157	22	1.00

LAB ID 83-5081-19
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 294

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.18	1.25	0.92	0.14	185	81	11	46	0.00	14	0.01	119	23	1.00

LAB ID 83-5081-20
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 297

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.23	0.56	0.11	147	74	10	46	0.00	11	0.03	130	38	1.00

LAB ID 83-5081-21
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 298

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.29	0.64	0.10	163	60	9	38	0.00	9	0.01	109	29	1.00

LAB ID 83-5081-22
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUND 301

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.12	1.30	0.63	0.12	159	71	9	35	0.00	10	0.03	128	24	1.00

LAB ID 83-5081-23
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 302

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.10	1.17	0.39	0.08	132	48	12	46	0.00	5	0.02	64	20	1.00

LAB ID 83-5081-24
LOG-IN 01/19/83
COMPLETED 03/31/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 305

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.13	1.44	0.70	0.11	202	64	10	44	0.00	12	0.01	104	0	1.00

LAB ID 83-5082-02
LOG-IN 01/19/83
COMPLETED 04/04/83

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 306

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.94	0.73	0.13	199	69	11	41	0.00	10	0.01	128	0	1.00

LAB ID 83-5082-03
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 309

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5082-04 LOG-IN 01/19/83 COMPLETED 04/04/83
	0.00	0.14	1.89	0.78	0.14	248	69	15	72	0.00	13	0.01	113	0	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 310

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.14	1.57	0.50	0.10	189	61	11	51	0.00	7	0.02	66	0	1.00

LAB ID 83-5082-05
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY ÷ ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 793

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.29	2.47	1.17	0.15	181	353	10	196*	0.00	13	0.14	955*	0	1.00

LAB ID 83-5082-06
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 794

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.40	3.71	1.29	0.23	92	337	11	81	0.00	22	0.11	676*	0	1.00

LAB ID 83-5082-07
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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CUSTOMER NUNO 795

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.45	3.99	1.41	0.22	88	319	11	80	0.00	22	0.05	606*	0	1.00

LAB ID 83-5082-08
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUND 816

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.28	3.16	1.39	0.23	197	388	23	72	0.00	13	0.06	816*	0	1.00

LAB ID 83-5082-10
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

IMC AGRONOMIC SERVICES LABORATORY
TERRE HAUTE, INDIANA 47808

IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 817

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.30	2.98	1.18	0.21	116	342	17	54	0.00	16	0.06	621*	0	1.00

LAB ID 83-5082-11
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 818

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.24	2.66	1.04	0.18	179	990*	20	58	0.00	14	0.05	3350*	0	1.00

LAB ID 83-5082-12
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 819

LAB ID 83-5082-13
LOG-IN 01/19/83
COMPLETED 04/04/83

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.26	2.91	1.02	0.16	156	383	18	60	0.00	14	0.08	945*	0	1.00

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERD DR C L - PURDUE

CUSTOMER NUNO 820

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.33	2.55	1.26	0.19	104	304	17	48	0.00	16	0.07	510*	0	1.00

LAB ID 83-5082-14
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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IMC PLANT TISSUE ANALYSIS REPORT
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ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUNO 821

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5082-15 LOG-IN 01/19/83 COMPLETED 04/04/83
	0.00	0.24	2.08	0.97	0.23	236	1170*	19	63	0.00	17	0.08	3280*	0	1.00	

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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ACCOUNT 061 RHYKERO DR C L - PURDUE

CUSTOMER NUNO 822

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION--- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT	LAB ID 83-5082-16 LOG-IN 01/19/83 COMPLETED 04/04/83
	0.00	0.40	3.13	1.52	0.20	105	389	14	32	0.00	19	0.06	650*	0	1.00	

---------- NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED. ----------

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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04/06/83

ACCOUNT 061 RHYKERD DR C L - PURDUE CUSTOMER NUND 823

SAMPLE NUMBER	%N	%P	%K	%CA	%MG	--PARTS PER MILLION-- MN	FE	CU	ZN	%S	PPM B	%NA	PPM AL	PPM BA	SAMPLE WT
	0.00	0.35	3.10	1.30	0.20	132	1150*	17	39	0.00	19	0.06	2480*	0	1.00

LAB ID 83-5082-18
LOG-IN 01/19/83
COMPLETED 04/04/83

NOTE VALUES NOTED BY * ARE OUTSIDE THE ACCURACY LIMITS FOR THE SAMPLE WEIGHT INDICATED.

ACCURACY LIMITS FOR THE STANDARD ONE GRAM SAMPLE ARE AS FOLLOWS

ELEMENT	P	CA	MG	MN	FE	CU	ZN	B	NA	AL	BA
MINIMUM	0.05%	0.08%	0.04%	10PPM	25PP	5 PPM	10PPM	5PPM	0.01%	30PPM	5PPM
MAXIMUM	1.00%	4.00%	2.00%	500PPM	500PP	100 PPM	100PPM	100PPM	0.50%	500PPM	100PPM

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