

May 12, 1992

Ellen Malmquist  
6977 Marshall Drive  
Boulder, CO 80303

Dear Ellen:

I received the invoice for purchase of your tree seedlings yesterday, May 11th.

Before I can authorize payment, I need you to sign and return SIP-245, Page 2, that the ASCS sent you. This is a computer-printed form. You need to answer Items X and Y and sign and date it.

The photocopy of the seedling invoice shows a receipt for \$16.41 for peat moss. This is not a part of the plan and, as I mentioned before, will not be cost-shared.

On the back of the seedling invoice are some numbers, I assume are a list of costs associated with the planting. The following comments apply to these:

1. You show \$160.00 for back-hoe work. I need a copy of the invoice from the person who did the work. The invoice needs to show what was done, the amount due, the date and requires a signature of the person billing you for work.
2. You show irrigation pipe (\$110.00) and fittings (\$12.48). Irrigation systems and weed barrier are allowed on the same planting, but cannot both be cost-shared. As weed barrier is required (See RECOMMENDATIONS, Item 2, Paragraph 3 of your Stewardship Plan.), the irrigation system will not be cost-shared.
3. You show 28 hours of your own time. I need an invoice from you showing how much time was spent applying weed barrier and how much was spent doing other things. Use \$6.00 per hour as the value of your time. Show what you did, how long it took, the dollars for each item, the date and sign it.
4. You show "Mulch" (\$30.00) and "Weed Guard" (\$60.00). The woven plastic-fiber weed barrier (Six-foot width, except as noted under RECOMMENDATIONS, Item 2, Paragraph 3 of the Stewardship Plan), also known as plastic mulch, is required. I don't know for sure which of these is which, but they can't both be plastic weed barrier; only one will be cost-shared. To do this, I need an invoice showing what was applied, how much it cost, etc. (See

above.). For the five-foot width weed barrier which you already had on hand, show a value of \$0.06 per square foot.

5. You show "Additional Weed Guard" (\$16.41). Is this the peat moss shown above? If so, it will not be cost-shared. If it is the required plastic mulch, I need an invoice (See above.).
6. You do not show an invoice for the purchase of additional weed barrier. All the questionable charges listed (not counting the irrigation materials) add up to only \$106.41. It would take between 5100 square feet (5-foot width, individual squares, cost: about \$306) and 9792 square feet (6-foot width, continuous strip, cost: about \$588) of weed barrier to meet the specifications. IF YOU HAVE APPLIED THE WEED BARRIER, YOU ARE CHEATING YOURSELF OUT OF MONEY YOU ARE ENTITLED TO; IF YOU HAVE NOT APPLIED THE WEED BARRIER, THEN THE PLANTING DOES NOT MEET MINIMUM SPECIFICATIONS AND THE COST-SHARING WILL BE FORFEITED.

Before I take any action, I must make an on-site inspection to see that you have met all specifications listed in the plan. When you have completed the work, let me know and I will do that inspection.

In the mean-time, please send any other invoices that apply. At the moment, your receipts will support only \$142 out of the \$400 you can earn by completing the planting and presenting proper documentation (Note: when you reduced the planting size, you also reduced the amount of cost-sharing money you could earn.).

The practice expires June 30, 1992; please complete the work by that date.

If you have any questions, please call.

Sincerely,

Douglas J. Stevenson

512356

COOPERATIVE EXTENSION SERVICE  
AND EXPERIMENT STATION

Colorado State Forest Service

936 Lefthard Canyon

Boulder, CO 80302

SOIL TESTING LABORATORY  
COLORADO STATE UNIVERSITY  
FORT COLLINS, COLORADO 80523

SOIL TEST REPORT

NUMBER OF SAMPLES 1

DATE RECEIVED 6/8/92

DATE REPORTED 6/15/92

COUNTY Boulder

IDENTIFICATION		ROUTINE SOIL TEST RESULTS										ADDITIONAL RESULTS			
LAB. NO.	FIELD NUMBER	pH	SALTS mmhos / cm	ORGANIC MATTER %	NITRATE N ppm	PHOSPHORUS P ppm	POTASSIUM K ppm	ZINC Zn ppm	IRON Fe ppm	LIME %	TEXTURE	MANGANESE Mn ppm	COPPER Cu ppm	SAR	GYPSUM meq/100g
H1183	1	8.4	0.3	3.1	4	2.3	130	0.3	10.8	high	sandy clay	2.8	1.3		

SO4-S 4.3 ppm

IDENT.	FIELD INFORMATION					RECOMMENDED FERTILIZER LBS./A							OTHER		
LAB NO.	ACRES	IRRIGATION	LAST CROP	YIELD LAST CROP	MANURE T/A	PROPOSED CROP	YIELD GOAL	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Zn	FE (IRON)	Mn lbs / A	Cu lbs / A	GYPSUM T / A

H1183-1: This soil is low in nitrate nitrogen and phosphorus. Salt levels are low. The test for sulfates indicates low levels and not likely to be a problem. The sandy clay texture, however, may be a problem creating poor aeration, thus oxygen starvation to tree roots.

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IMPORTANT INFORMATION PRINTED ON REVERSE SIDE

COOPERATING WITH U.S.D.A.

APPROVED James B. Stewart  
TITLE Extension Prof. Horticulture

## ATTENTION GROWERS

The recommendations provided are based on the soil analysis results of our laboratory and the information you supplied on the Information Sheet. They are guides to obtaining your desired yield developed from the research of CSU scientists and extension personnel and may require some modification for your specific situation.

The fertilizer recommendations are given in pounds/acre on the oxide basis for phosphorus (P<sub>2</sub>O<sub>5</sub>) and potassium (K<sub>2</sub>O). All other nutrients are recommended on the elemental basis (N, Zn, etc.) In the case of correcting sodium affected soils, gypsum (or other corrective materials) is recommended in tons/acre of material as a soil amendment (not a plant nutrient).

It is the policy of the CSU Soil Testing Laboratory to recommend only those nutrients that offer a reasonable possibility of increasing the yield of your crop and in those amounts as closely as we can determine that are necessary to achieve your yield goal. Remember, however, that a high yield goal can be obtained only when proper fertilization is used in combination with a level of overall crop production management consistent with that yield goal.

### Note 1 NITROGEN

Fertilizer nitrogen can easily be lost to the intended crop through leaching. Therefore, its management is of special importance. In cases of high N rates, sandy soils, or long-season crops, split applications will increase plant utilization of the fertilizer N, avoid late season deficiency, and reduce leaching loss.

a. Sugar Beets - Split nitrogen applications offer the opportunity to adjust the rate during the season in accordance with the yield prospect. This is especially **important** when fertilizing for a high yield since excessive nitrogen will reduce sugar yield. If the in-season yield prospect changes from the original goal, alter the nitrogen recommendation by 10lbs N/ton yield difference expected. Apply all nitrogen before July 1 on medium and heavy textured soils and before July 10 on coarse textured soils.

**IMPORTANT:** Much of the nitrogen from manure is released in the latter part of the season which tends to retard sugar accumulation. Therefore, manure would be best used on other crops in your rotation such as corn.

b. Corn and Sorghum (Irrigated) - Split nitrogen applications prevent late season deficiency and offer the opportunity to adjust the rate of application in accordance with the yield prospect. If the in-season yield prospect changes from the original goal, alter the nitrogen rate by 40 lbs N/25 bu grain or 10 T silage.

c. Small Grains-

Winter Wheat (Dryland) - The recommendation is based on an "average" rainfall year. In years of exceptionally good soil moisture an additional 20 to 30 lbs nitrogen applied in early spring over the recommended amount may increase yield and grain protein.

Malting Barley - The nitrogen recommendation is based on avoiding unacceptably high grain protein yet obtaining a good yield.

d. Pasture and Meadows-Split nitrogen applications are necessary to maintain yield and protein content throughout the growing season. Applications should be split according to the number of harvests and yield potential of each harvest.

e. Legume Crops (Beans, Alfalfa, etc.)-These crops can utilize nitrogen from the air. When the roots are properly nodulated nitrogen fertilization will not be beneficial.

### Note 2 PHOSPHORUS AND POTASSIUM

Phosphorus is a non-mobile nutrient, staying where it is placed in all but the sandiest soils. Therefore, plowdown or band applications which place it in the most active root-feeding zone are consistently superior to topdressing. In the case of established perennial crops such as alfalfa and pasture, topdressing has proven to be a satisfactory method of application. For most rapid benefit, topdress at the earliest possible date (fall application will give better first season response than spring application).

**IMPORTANT:** Excessive rates of phosphorus fertilization will reduce the availability of zinc and iron, which in the case of sensitive crops (Note 3) could cause an actual yield reduction.

Potassium is more mobile in soil than phosphorus. However, there is little danger of leaching loss in all but the sandiest soils.

### Note 3 MICRONUTRIENTS

Only zinc and iron deficiencies are common in Colorado. Crops grown in our state that are both zinc and iron sensitive (most likely to respond to fertilization with these nutrients) are corn, sorghum, beans, potatoes, and most fruit trees. Turfgrass and many ornamental shrubs and trees are iron (but not zinc) sensitive.

a. Zinc - The most effective application method for inorganic products, such as zinc sulfate, is generally broadcast-plowdown in which the zinc is mixed thoroughly in the plant rooting zone. Banding is also effective and may be preferred in situations of shallow or minimum tillage. One application of 5 to 10 lbs zinc/A (15 to 30 lbs/A of zinc sulfate - 36% Zn) should be sufficient for 2 to 4 years production.

Effective zinc chelates may be used at about 1/3 the rate of inorganic products. They may be banded or mixed. Application should be repeated for each subsequent zinc sensitive crop.

b. Iron - Soil application of iron generally is not effective in Colorado. Deficiency is best corrected by spraying the crop with a 2% ferrous (iron) sulfate solution (1% solution for potatoes) at the rate of 20 to 30 gallons/A 10-15 days after crop emergence. Repeat application at 10-day intervals if yellowing of foliage persists. A 2% solution is prepared by adding 16 lbs iron sulfate (20% iron) to 100 gallons of water; include a surfactant (wetting agent).

c. Manganese - The most effective application method for inorganic products, such as manganese sulfate, is banding with an acid-forming fertilizer. Broadcast applications will likely require at least twice the recommended bonded rate to be effective. Do not reapply without a valid soil test.

D. Copper - Copper may be broadcast and plowed down or band applied with good results. Do not reapply without a valid soil test.

### Note 4 DRYLAND PRODUCTION

Response to fertilizer applications under dryland production situations is highly dependent on the annual available moisture. In regions that average less than 15 inches rainfall per year, it is doubtful that fertilization is an economical practice, regardless of the soil fertility level. Greater responses are usually obtained from the sandylands in comparison with the hardlands due to greater water utilization efficiency.

### Note 5 SALT AND SODIUM

Saline soils contain an excess of soluble salts which inhibits seed germination and plant growth. The only way to correct this condition and those cited below in your soil is to leach the salts from the plant root zone. Chemical amendments, conditioners, or fertilizers will not correct a salt problem. In order to leach the salts the soil must have adequate internal drainage to allow water to pass through it. The amount of good quality irrigation water passing through a foot of soil will decrease the salt concentration by the approximate percentages listed below.

Acre-feet of water/acre	% salt reduction expected
1/2	50
1	80
2	90

Our tests cannot determine if your field has adequate internal drainage or what steps are most practical in your specific situation. For this information we suggest that you visit your local Soil Conservation Service office.

When it is not practical or possible to correct a salt problem, the only alternative is to plant a relatively salt tolerant crop such as tall wheatgrass or barley.

Sodic soils (black alkali) contain an excess of sodium which causes them to be hard and cloddy when dry, to crust badly, and take water very slowly. These soils must have a source of soluble calcium to correct the situation. This calcium may naturally occur in your soil or irrigation water or must be added as an amendment Gypsum is the amendment most frequently used. In some cases the soil already contains sufficient lime, then an acid or acid-forming amendment may be used to solubilize the calcium in the lime. Such amendments include sulfuric acid, elemental sulfur and lime-sulfur.

Saline-sodic soils contain large amounts of salt including sodium. This results in poor plant growth, although the physical condition of the soil and water intake may not be greatly impaired. Addition of a calcium furnishing amendment may or may not be necessary. Excess salts, including sodium, must be leached from the root zone as with saline soils.

6/8/92

DATE 6/5 19 92

YOU ARE MAKING FOUR COPIES  
READ THE INSTRUCTIONS ON THE BACK

DO NOT SEPARATE FORMS  
SUBMIT ALL COPIES

NAME ATN: Doug Stevenson, Colo. St. For. Ser.

ADDRESS 936 Lefthand Canyon  
Boulder CO 80302  
CITY ZIP CODE

# SOIL SAMPLE INFORMATION

COUNTY Boulder

SEND EXTRA COPY TO: \_\_\_\_\_

Please circle analysis desired

442-0428

Routine pH, conductivity, organic matter, NO <sub>3</sub> , P, K, Zn, Fe, Cu, Mn, lime estimate, texture estimate	\$ 15.00
Routine + Sodium Evaluation (SAR)	18.00
Sodium Evaluation (pH, Cond and SAR)	10.00
Routine + Hydrometer	20.00
Routine + Boron, Molybdenum, Cadmium, Lead	20.00
<u>Routine + Sulfate</u>	20.00
Routine + Subsoil Salinity or Subsoil Nitrate	17.50
Routine + Subsoil Salinity and Subsoil Nitrate	20.00

LABORATORY NUMBER (DO NOT WRITE BELOW)	FIELD NUMBER	ACRES	IRRIGATION (CHECK ONE)					LAST YEAR'S CROP	YIELD PER ACRE	FERTILIZER USED FOR LAST YEAR'S CROP					
			ROW	FLOOD	SPRINKLER	SUB	DRYLAND			N LB./A	P <sub>2</sub> O <sub>5</sub> LB./A	K <sub>2</sub> O LB./A	Zn LB./A	OTHER	MANURE TONS/A
<u>H1183A</u>	①														
	②														

FIELD NUMBER	MANURE FOR CROP TO BE GROWN TONS/A	CROP TO BE GROWN	VARIETY (REQUIRED FOR POTATOES AND BARLEY)	YIELD GOAL	HAY AND PASTURE CROPS (CHECK APPROPRIATE BOXES)							
					STAND IS:			COMPOSITION IS: GRASS-LEGUME MIX				
					TO BE SEEDED	PRESENTLY ESTABLISHED	NATIVE SPECIES	ALFALFA	GRASS	UP TO 25% LEG.	25 - 75% LEGUME	MORE THAN 75% LEGUME

COMMENTS: NOTE SPECIAL PROBLEMS, FERTILIZER APPLIED SINCE LAST CROP.

Need to know CaSO<sub>4</sub> content. We believe CaSO<sub>4</sub> is poisoning a windbreak planting. (Ponderosa pine, Rocky Mountain juniper, American plum, Russian-olive) Site is an outwash plain (Verdos alluvium, Valmont soil type). Never been plowed

SEND TO SOIL TESTING LABORATORY, VOCATIONAL EDUCATION BUILDING, before  
COLORADO STATE UNIVERSITY, FT. COLLINS, COLORADO 80523. DO NOT PREPAY.  
YOU WILL BE BILLED AFTER TESTS HAVE BEEN COMPLETED.

C.S.U. EXTENSION AGENT \_\_\_\_\_

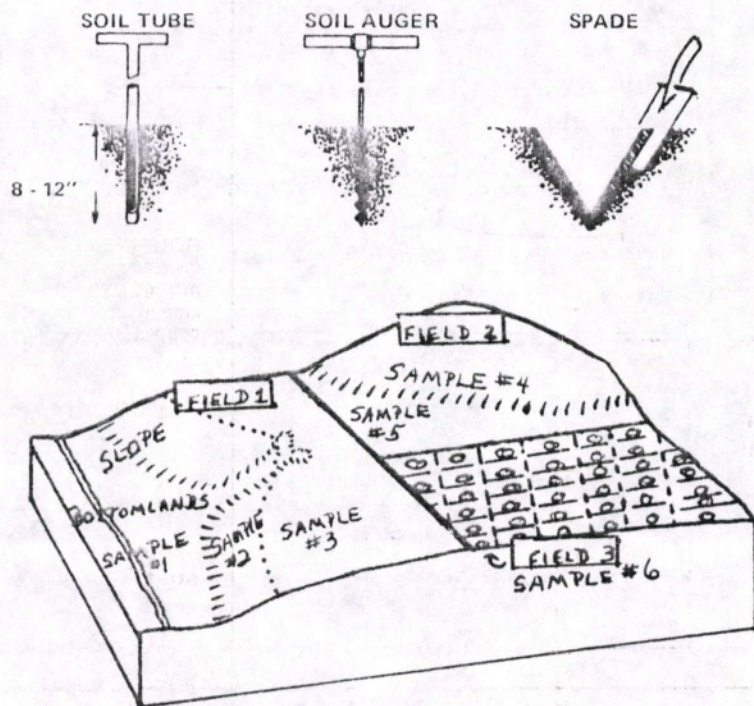
COOPERATING WITH U.S.D.A.

GROWER'S COPY

## SAMPLING PROCEDURE

### SOIL TESTS CAN BE NO BETTER THAN THE SAMPLE ITSELF

- USE ANY OF THE TOOLS SHOWN BELOW TO TAKE SAMPLES. TAKE SAMPLE TO THE PLOW DEPTH (USUALLY 8-12").



- EACH SAMPLE SHOULD REPRESENT A UNIFORM AREA. SIZE UP THE AREA AND OBSERVE THESE VARIATIONS.  
DIFFERENCES IN TEXTURE (SAND, SILT, CLAY), COLOR, SLOPE, DEGREE OF EROSION, DRAINAGE, PAST MANAGEMENT (FERTILIZATION, ROTATION, ETC.)
- TAKE 20 TO 30 SAMPLES FROM EACH UNIFORM AREA IN A SYSTEMATIC MANNER AS SHOWN FOR FIELD 3 ABOVE. MIX THOROUGHLY IN A PLASTIC CONTAINER AND FILL SOIL SAMPLE BAG AT LEAST TWO-THIRDS FULL. THIS IS THE COMPOSITE SAMPLE WHICH REPRESENTS THE FIELD OR AREA. LABEL EACH CONTAINER WITH YOUR NAME AND ADDRESS AND THE NUMBER OF SAMPLE CORRESPONDING TO THE NUMBER ON THE INFORMATION SHEET.
- AVOID (OR SAMPLE SEPARATELY IF OF INTEREST) SUCH AREAS AS DEAD OR BACK FURROWS, OLD STRAW PILES, WATERWAYS, TERRACES, FENCE ROWS, AND UNUSUAL SPOTS.
- REPEAT THE SAMPLING PROCEDURE OUTLINED ON EACH UNIFORM AREA YOU WANT TESTED.
- AIR DRY THE SAMPLE BEFORE MAILING. DO NOT USE HEAT FOR DRYING.

## IMPORTANT:

YOUR SAMPLE WILL BE TESTED FOR AVAILABLE ZINC AND IRON. RUSTY TOOLS WILL CONTAMINATE THE SAMPLE WITH IRON, AND GALVANIZED OR BRASS CONTAINERS WILL CONTAMINATE IT WITH ZINC. THE RESULTANT SOIL ANALYSIS COULD INDICATE A SUFFICIENCY OF THESE ELEMENTS WHEN ACTUALLY A DEFICIENCY EXISTS.

ALL EQUIPMENT MUST BE ABSOLUTELY CLEAN.

### SOIL TESTS AVAILABLE

TEST	COMMENTS
ROUTINE - pH, soluble salts, organic matter, nitrate - nitrogen, phosphorus, potassium, zinc, iron, lime (estimate), texture, copper and manganese.	Basic evaluation for characterizing the soil fertility status for growing crops. A fertilizer recommendation is given. Normally this test is sufficient unless a special problem is suspected.
SUBSOIL NITRATE	Evaluation of nitrate supply below soil surface. Fertilizer nitrogen recommendation based on routine soil test of surface soil is adjusted if subsoil nitrate is unusually high.
SUBSOIL SALINITY	It is important to determine the salt content of subsoil for crop management.
SODIUM EVALUATION - sodium adsorption ratio (ratio of sodium to calcium and magnesium), gypsum, and % lime.	Some Colorado soils contain excess sodium. This test determines whether or not chemical amendments such as gypsum or sulfur will be effective and the amounts of these materials needed.
ROUTINE plus SODIUM EVALUATION	See above explanations. A recommendation for fertilizer and/or amendments for sodium reclamation is given.
BORON, SULFATE and MOLYBDENUM	Colorado soils usually have sufficient quantities of these nutrients. However, in some soils near mine sites, boron or molybdenum may be found in toxic quantities.

Information on additional tests (soil, minesoil, mine spoil, water and plant) is available from your local CSU extension agent or the Soil Testing Laboratory.