



Model No. 66 Seed & Grain Laboratory Dryer

Instruction Manual^(*)



DISTRIBUTED BY:



2293 S MT PROSPECT RD
DES PLAINES, IL 60018
TOLL FREE: 800-284-5779
PHONE: 312-738-3700
FAX: 312-738-5329
E-MAIL: sales@seedburo.com
WEB: www.seedburo.com

Version 1.0

Date: Feb. 2007

**TABLE OF
CONTENTS**



TABLE OF CONTENTS..... 2

IMPORTANT NOTICE..... 3

INTRODUCTION 4

PRELIMINARY CONSIDERATIONS..... 5

CONVENTIONS..... 6

DESCRIPTION
Main Components..... 7-8
Setup & Equipment Operation..... 9-15
Additional Operations..... 16-17

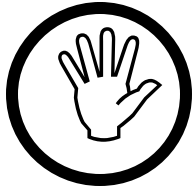
DRYING TIME..... 18

OTHER OPTIONAL ACCESSORIES..... 18

RECOMMENDED EQUIPMENT &
ACCESSORIES FOR YOUR LABORATORY.. 19

TECHNICAL SPECIFICATIONS 20

WARRANTY CERTIFICATE 21



(*) Important Notice:

Before operating this product read and understand all instructions on this manual, especially if you are a new or first time operator.

Observe and read all labels and warnings marked on this product. The Top Panel Control Box has several buttons and indicators that allow you to change settings, including but not limited to the Temperature Digital Controller. It is of outmost importance that you take the time to familiarize with these items prior performing a test.

Take the time in reading the next pages, and practice (if necessary) with the buttons and the key pad before dry or perform a test. Again, this is important when you are first time operator or have forgotten how to operate the machine.

Depending on the model you have purchased, the unit could operate in 110 Volts or 220 Volts. Make sure your electric power outlet complies with one of these requirements. Call your local electric company for additional assistant.

DO NOT attempt to open the control box without disconnecting the unit from the electric source first, otherwise you are subject to receive an electric shock hazard, causing you body injuries. In case of any problem, contact your nearest qualified, certified and insured electrician to help you to find the cause of the problem.

Also, keep in mind that this product is a dryer that has a heater element assembly that produce heat, thus DO NOT touch the heater elements until these parts are completely cool, otherwise you are subject to get body burns.

Always, use common sense when preparing to perform a drying test, like having a weighing scale, a moisture tester, ambient temperature & humidity readers, a watch, a calculator, a pen or pencil, paper, sample pans, sample bags, labels, etc. Use all traditional good practices needed in the laboratory room.

INTRODUCTION



Grain Machinery Mfg. Corp. introduces Model No. 66 Seed & Grain Laboratory Dryer.

This revolutionary dryer has been designed to provide drying evaluations and analysis for some seed and grains containing high % of humidity, and to take the samples to a level in which the user can perform other test with low % of humidity later.

The machine is very user friendly and promptly performs the setup, demanding little training.

The Model 66 Seed & Grain Laboratory Dryer is a basic machine, with most parts made in stainless steel, it is designed to perform drying tests.

A variety of Sample Sieves Trays combined with control flexibility allows, in a simple way, the drying of many types of seed and grains.

The selection of the Sample Sieves Tray Size will depend on the grain variety and the grain density.

Final results and drying time, are subject to a combination of the following variables:

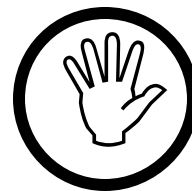
- 1) Target Temperature SV: temperature setting value to be targeted to dry grain or seed samples.
- 2) Size of the Sample Sieves Trays.
- 3) Number of Samples to dry at the same time.
- 4) Initial Moisture Content of the sample.
- 5) Ambient Relative Humidity (R.H.) of the room.
- 6) Ambient Temperature of the room.
- 7) Final Moisture Content of the sample.
- 8) Type of drying (static type or floating type).
- 9) Model of your Dryer: with 1450 Watts heater assembly or with 2175 Watts heater assembly.
- 10) Airflow used during the process (CFM). There are two adjustable air intake gates (smiles).
- 11) Grain layer thickness or grain sample deep (contained inside sieves trays).
- 12) Cleanness of the sample

Some of these variables are selected by the user according to his (her) needs, however others variable will depend on the ambient. Thus the user will find the best combination of them in order to minimize the drying time and to maximize the quality of the grain being dried.

The recommended sample size is 200 grams, which has been previously cleaned, however the final size would be more or less depending on the grain density. For sample cleaning, we recommend the use of our Model No. 63 Grain & Seed Aspirator (consult us for further information).

Important:

Before testing, make sure the equipment is clean, as well as all parts and optional accessories to be needed, i.e. sample pans, weighing scales, scoops, catcher, moisture tester, etc. to avoid sample contaminations. As a good laboratory practice, clean the equipment(s) after each test, so it(they) will be ready for the next test.

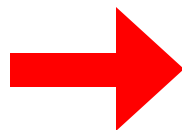


**PRELIMINARY
CONSIDERATIONS**





CONVENTIONS



STOP!

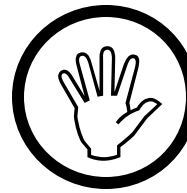
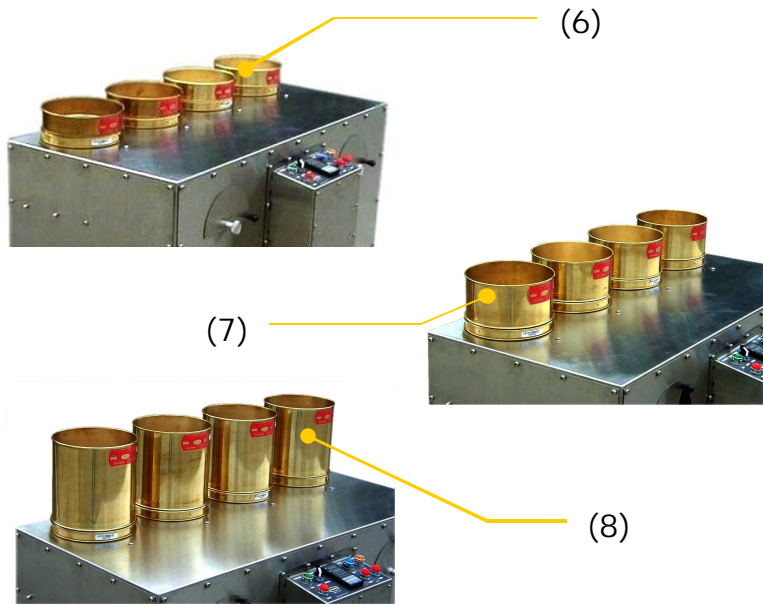
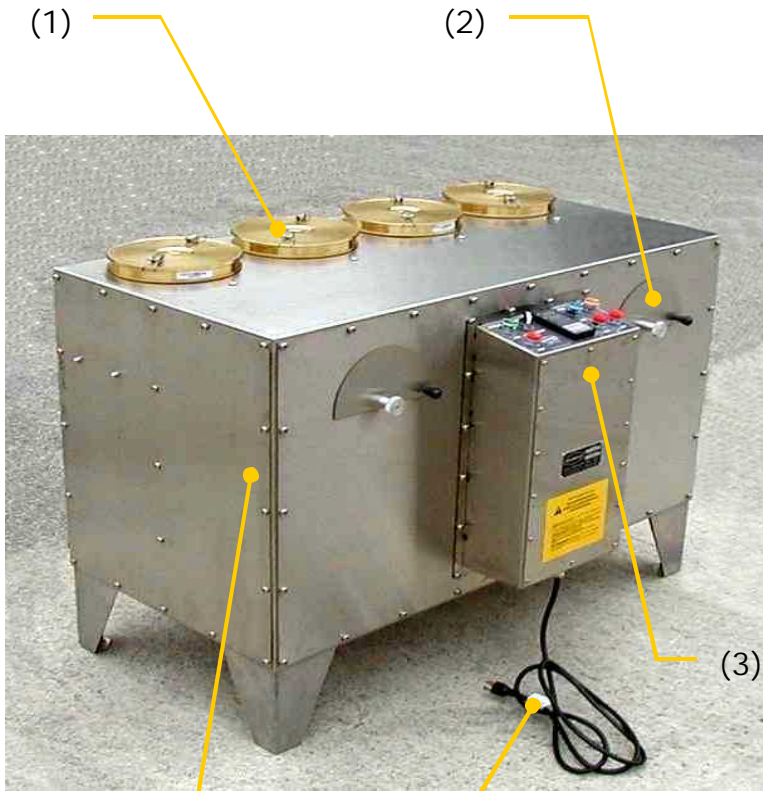
This icon signals an important message for the Model 66 Laboratory Grain & Seed Dryer operation; so stop and read it carefully.

HINT

This icon indicates that the paragraph contains an operational recommendation; so read carefully, as this will save you time.

ARROW

This icon indicates "look at a picture for better understanding" when you are reading a paragraph. Some arrows are color keyed.



DESCRIPTION

Main Components:

- (1) Sieves Tray Ports (four) with individual covers.
- (2) Ambient air intake gates or "Smiles" (Left & Right) with individual adjusters.
- (3) Control Box, pre-wired. With Digital Temperature Controller, Separated On and Off buttons, 2-speed Fan Selector, internal parts.
- (4) Electric Cord for Models 6612, 6622 & 6623 (Model 6613 sold without electric cord plug - supplied by the customer)
- (5) Stainless Steel Body with bolted panels, energy efficient centrifugal fan, SS electric heater elements and four support legs. (Optional casters available).
- (6) Optional 2" tall Sample Sieves Tray, 86 Cu. In. (sold separately).
- (7) Optional 4" tall Sample Sieves Tray, 175 Cu. In. (sold separately).
- (8) Optional 8" tall Sample Sieves Tray, 352 Cu. In. (sold separately).



(9) Control Box Top Panel,
Includes:

- 9A) Digital Temperature Controller.
- 9B) Main Start Button (Green).
- 9C) Main Stop Button.
- 9D) Low/High Fan Speed Selector Switch.
- 9E) Fan Start Button (Blue).
- 9F) Fan Stop Button.
- 9G) Fan-Heat Start Button (Orange).
- 9H) Fan-Heat Stop Button.




Digital Temperature Controller - Main Keys:

PV: Present Temperature Value

SV: Set Temperature Value

 : Left Arrow Key

 : Up Arrow Key

 : Down Arrow key

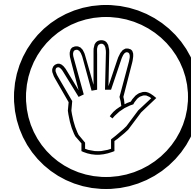
SET: to set values



Please notice that there are other keys and features without use for the machine application.

For further information about the parts and general dimensions, please read carefully other pages of this manual.

a)



DESCRIPTION

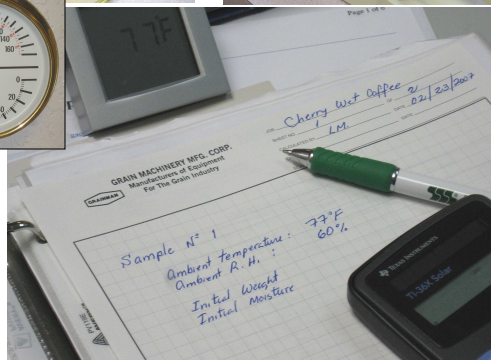
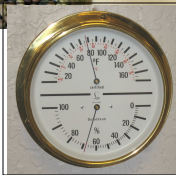
SETUP & OPERATION:

a) Selecting the Sample Sieve Tray: ¿What is the right size?Selection will depend on your needs. Grain conditions and some variables will affect the size of the tray(s), (read "Preliminary Considerations" Section - on Page 5 above)

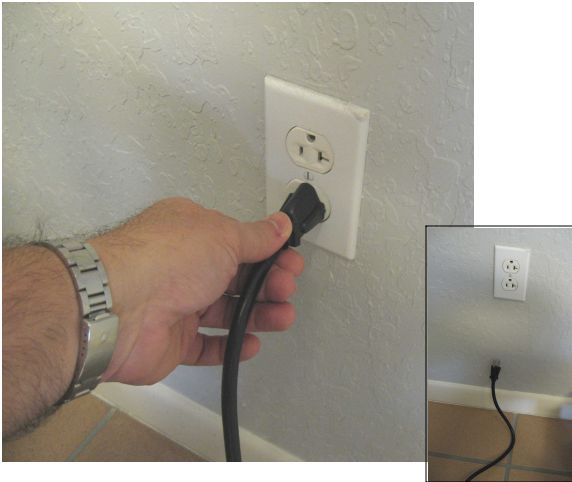
b) Weigh your samples; record its weight, as well as the initial moisture content. For convenience purposes, you may wish to weigh your grain sample, contained inside the tray(s), so you have to tare the tray first. To tare the tray, just weigh it empty as shown.


Also, record both ambient temperature and ambient relative humidity (R.H.) of the room where the test will be conducted.

b)



c)



c) Connect the electric cord to an electric power outlet (grounded). Make sure the voltage source is according to the input voltage of your equipment. If not, contact your local electric company for assistant. 

For long period of time without machine operation or drying, we suggest to disconnect or unplug it from the power outlet

d)



d) Put the sample tray on any available port. Keep all empty or unused tray ports covered using the supplied 8" dia. tray cover(s).

e)



e) Turn On the unit by pressing the green button, which is illuminated when is ON

f)



f) Wait a few seconds for controller's self check.

g)



g) At the beginning, make sure the fan speed is set to "slow" position.

h)

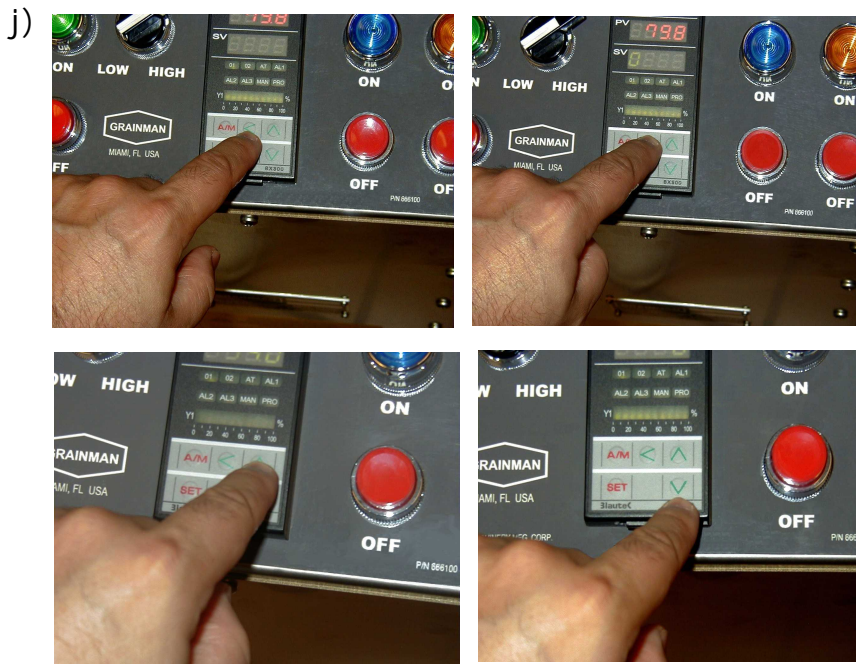






h) Open or Close the Smiles (air intake gates) to regulate the incoming airflow; secure each of them by releasing and tighten the spring holder knob. (➔). Regulation will depend on your needs.

i)



i) Observe the controller display. The "PV" value represents the present value of the temperature at any time. Ambient temperature will be shown if the machine has not been used for many hours or days. During the test, this value will increase to match the target temperature "SV" (set value). Target temperature represents the temperature in which the airflow has to be heated before pass through the grain sample layer contained into the sample tray(s).



j) To change the "SV" value; locate and hit the left arrow key  on the keypad. The far right digit will flash. To jump to the next left digit, hit the left arrow key  again. Hit the up arrow key  to increase the value of the digit. Hit the down arrow key  to decrease the value of the digit. Hit the left arrow key again to start all over. Once the SV value has been selected hit the **SET** key to accept the value.

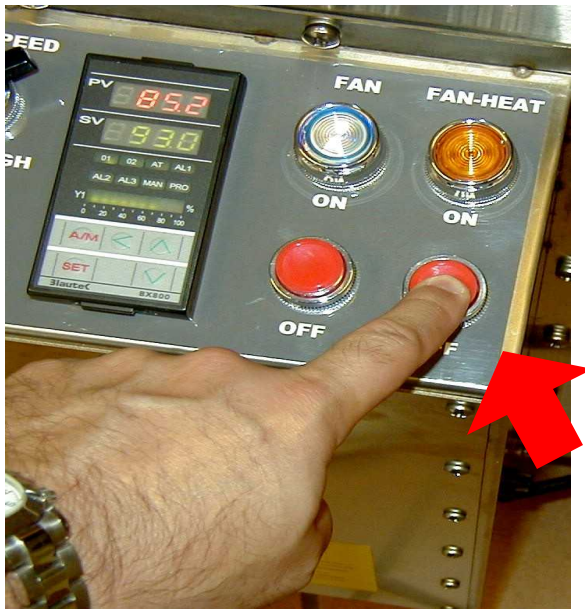



k) To turn on the fan, press and release the "blue" start push button. The button will illuminate as indication the fan is on. Also you will hear a normal low noise coming from the fan. If not, press the MAIN STOP button - ask for service.



l) To turn on the heater, press and release the "orange" start push button (fan-heat). The button will illuminate as indication the heater is on. Also you will notice that the PV value will rise few seconds later. If not, press the MAIN STOP button - ask for service.


m)




m) To turn off the heater assembly, press the RED button (as shown ). When this is off, it allows you to cool the sample at any time according to your needs. If you want to continue the test, skip this step if you are familiar with the equipment already. To continue the drying test, turn on the heater again if needed.

n)



n) To turn off the fan, press the RED button (as shown ).


Notice that when you turn off the fan and the heater is ON, the heater will turn off automatically (as shown ). This is a safety feature to prevent the heater assembly stay on only without airflow circulation, which will damage the equipment, and or may create a fire.



If you want to continue the test, skip this step if you are familiar with the equipment and understand the buttons functions already. Then, turn on the fan and the heater.

o)



o) To turn off the whole dryer, press the RED button (as shown ). Notice that this button will turn off the controller, the fan and the heater. If you think that the machine will be inoperative for a long period of time, proceed to unplug the electric cord from the power source outlet.

p)



p) As we explained before, choosing the right size of the sample tray will depend on many variables. You can select from three available sizes: 2" tall, 4" tall or 8" tall. Sample Trays are sold separately. You can dry up to four samples at time. Also you may wish to combine different size of trays during the process, or perhaps not to use all the drying ports, if so, please cover all non used ports with the supplied 8" diameter tray cover. Early versions of Model No. 66 Dryer had ports & covers made in brass; latest model have port & covers made in stainless steel.

q)

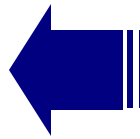


r)



q) Once you have put the tray(s) on the port(s), start drying the sample(s) by setting the target temperature SV, turning on the fan, turning on the heater, adjust the airflow per your needs, as of explained before.

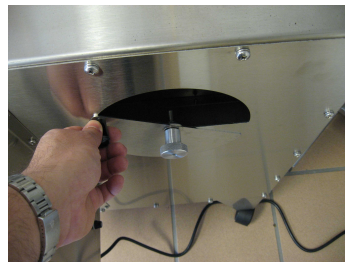
r) On the temperature controller, when the PV value match the SV value for the first time of any test, the heater turn off automatically, but you will notice that PV value will be increasing. Do not panic, this is normal. This happen because the heater has a "thermal inertia" causing the raise of the temperature. After few seconds, PV value will stop increasing and drop few points below SV, then the controller will activate the heater again but will turn off the heater before to match PV and SV, then the cycle will be repeated several times, but with better accuracy. This happen due to the controller has a "built-in learner", so after some narrowing cycles, the controller will match and maintain the PV value.



ADDITIONAL OPERATIONS:

During the drying test, find the time to measure either the moisture content or the weight of each sample or both if you want, every certain period of time (lets say 15 min, 20 min, 30 min,... or the best interval for you). Remember: the tray has to be tare on the scale first. For better performance, use a digital scale with % of weight function.

Record the results, and the time of these operations, thus you will be able to calculate and monitor the losses. You may wish to save them in your PC for better control of the batch(es).



During the test, you can change or modify the target temperature (SV) to a new value, either increasing or decreasing it, without turning off the fan or the heater. Also you can open or close the airflow inlets.



You can cool the sample at any time, by turning off the heater or by decreasing the target temperature (SV value). This allows you to have a better quality in the results.

Type of Drying Method:Static or Floating Type?



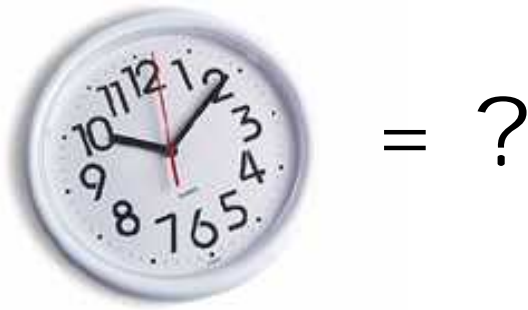
Static Type is when you dry the sample with enough airflow to avoid grains going out of the tray. This method may prolong the test and may give you certain type of results.



Floating Type is when you cover the sample with a 2" tall empty tray, opening the airflow inlets to maximum or less, so the grains beggong to "float" inside the sample tray without going out. This method, may shorten the test and may give you certain type of results. A better homogenization of the grain will be maximized by this method



All changes done during the drying process would vary the time of the test and / or the final results.



DRYING TIME:

Many customers ask us how many hours are needed to dry a sample to the required level, or how often are the intervals to measure and record the moisture content, weight and time. Since there are many variables involved, as we explained before, it is the operator who will have to find these answers, customizing the whole process to his (her) needs.

OTHER OPTIONAL

ACCESSORIES:

(available at the moment of this publication - sold separately)



Set of 4 Swivel Casters

This set of casters allows you to move the dryer inside the room without scratching or damaging the floor. Consult us for pricing.



1)



2)



3)



4)



5)



RECOMMENDED EQUIPMENTS & ACCESSORIES FOR YOUR LABORATORY ROOM. (sold separately)

- 1) Model No. 63 Laboratory Seed & Grain Aspirator.
- 2) Mechanical or Digital Scale.
- 3) Sample Pans (plastic oval & triangular, metal spouted).
- 4) Model No. 56 Laboratory Weight per Bushel.
- 5) Moisture Tester. There are several trusted brands and models in the market. Please contact us for more information



Visit us at www.grainman.com for the latest information of equipments and accessories for your laboratory.

Technical Specifications



Materials:	body, heater assembly and most fasteners made in stainless steel. Fan made in carbon steel, paint finished. Covers and tray ports made in stainless steel (early versions were made in brass - until S/N 06 LAB 3940 / 6864)..
Optional Parts:	2" Tall Sample Tray. 4" Tall Sample Tray. 8" Tall Sample Tray . Set of 4 Swivel Casters.
Controller	PV: 4 digit display, red color. SV: 4 digit display, green color with SET key, Shift key, Down key and Up key.
Heater Assembly	Stainless Steel, 1450 Watts or 2175 Watts, nominal (depending on the model).
Power	110 Volts single phase 60 Hz (available 220/230 Volts single phase, 60/50 Hz)
Net Weight:	190 Lbs. approx. (without sample trays)
Shipping Weight:	290 Lbs. approx.
Shipping Dimensions:	30" W x 46" L x 44" H (outside dimensions - wooden box).

Notes: Material, parts, operation and specifications above are subject to change any moment without previous notice. Some pictures above are for illustration purposes, and may or may not represent your exact model. Some brands, models, trade marks and logos shown in this manual are for illustration purposes solely (no other intend), and belong to their respective manufacturers.

WARRANTY CERTIFICATE

Grain Machinery Mfg. Corp. warrants the equipment specified in this certificate for a one-year period against workmanship and material failure as of the selling date stated in this certificate, which shall be filled in and signed by the factory or authorized dealer in order to become valid.

The repairs under this warranty shall be solely made by Grain Machinery Mfg. Corp. at its facility or repair shop, which upon analyzing the complaint will perform the service under warranty, in case they are not excluded by the following terms:

The finishing of metal sheets or parts, paintings, and other finish of the machine parts and components are not covered by this warranty.

Grain Machinery Mfg. Corp. shall regard the warranty as null and void if the equipment suffers damages resulting from accidents, abusive use, or shows signs of being tampered with, calibrated or repaired by a person not authorized by the company.

The costs and risks for shipping the machine (or any part) under warranty to our repair shop will be under the owner full responsibility.

EQUIPMENT MODEL: No. 66- _____

SERIAL NUMBER: _____

OWNER: _____

DATE: _____ LOCATION: _____



2293 S. Mount Prospect Rd., Des Plaines IL 60018

Toll Free: 800-284-5779

sales@seedburo.com / www.seedburo.com