SERVICE GUIDE

Plant DNA Extraction Service

CustomerCare@agrf.org.au
1300 247 301
www.agrf.org.au

SVG2402PDE

Service Guide

Plant DNA Extraction Service

Service Guide

Plant DNA Extraction Service

1.0 Overview

Different plant species have varying levels of polysaccharides, polyphenols and other secondary metabolites which combine with nucleic acids during extraction and will affect the quality of the DNA.

Please note DNA quality and quantity vary depending on genome size, age of sample, sample collection, storage and shipping. Furthermore, DNA yields and average molecular weights are highly sample dependent. Recovery of a DNA yield and molecular weight suitable for intended downstream purposes are not guaranteed by AGRF.
We request that you retain a working aliquot of all samples to mitigate the unlikely risk of sample loss during transport or processing. In the event of accidental sample loss during processing, AGRF's liability will be limited to a full discount of the price of sample processing.

The quantity and quality of the DNA will depend how the samples have been collected, dried and stored. When requesting a quote this information should be discussed with your account manager, to make sure your samples are appropriate for extraction.

Immediately after harvest, plant samples should be stored correctly to prevent DNA degradation by cellular nucleases. This can be done by making sure the sample is sent for extraction within 24 hours of harvesting (Fresh Leaf Samples) or flash freezing with liquid nitrogen then freezing in a -80°C Freezer (Frozen Leaf Samples) or using a drying method of your choice as soon as possible after harvest (Dried Leaf Samples).

Successful genomic DNA extraction from plant material requires proper handling and storage before purification. Improper handling and storage of plant material samples is one of the most common reasons for extraction failure.

2.0 Sample Submission Requirements

You can supply your leaf samples in the amount required either 90mg for wet weight samples or 30mg for dry weight samples in a round-bottom 2ml tube, labelled on the side and top of lid.

If your submission contains fresh samples and dried samples, please indicate which samples are fresh and which ones are dried, as these two types of samples are prepared for extraction differently.

If you are submitting your plant samples for Genotyping by Sequencing (GBS), then you should try to send only fresh samples in 2ml round-bottom tubes and ask for the single column extraction. The fresh plant material and single column extraction increases your chances of having suitable DNA for GBS. Dried, herbarium or frozen plant material may not be suitable for GBS.

2.1 Fresh Leaf Samples

If supplying fresh leaf material (i.e. fresh material collected within the last 24 hours, kept cold and not dried) we require 60-90mg wet weight plant tissue per sample. For freshly collected samples only, you can provide a 1.5cm x 1.5cm square leaf disk cut in quarters, instead of the 60mg weight. Exceeding the recommended amount of starting material will reduce quality and quantity of DNA.

2.2 Dried Leaf Samples

If you are supplying dried leaf material (i.e. samples that have been dried with a freeze dryer, silica dried or oven/bench dried) we will require 20-30mg of dry weight plant tissue per sample. Exceeding the recommended amount of starting material will reduce quality and quantity of DNA.

Ambient bench drying, oven drying, and silica drying is a slow process and will allow enzymes to degrade the plant sample before it fully dries. These drying methods will cause the DNA to be degraded. The extent of degradation will depend on how fast the drying process is and the age of the sample(s). Aged samples will exhibit higher levels of degradation. Dried Leaf Samples may not be suitable for all downstream processes.

The best way to dry your samples is to use a commercial freeze dryer.

You should never take your samples out of the freezer to dry them with silica, if drying your samples with silica do not freeze them first and use a large amount of silica to quicken up the drying process.

2.3 Herbarium Samples

If your samples are herbarium samples, you will need to provide about 20-30mg in 2ml round-bottom tubes. You can provide less than 20mg, this will yield less DNA.
Herbarium DNA is typically highly degraded, low concentration and not suitable for all downstream processes. If your samples are herbarium samples, please let your Account Manager know, or if requesting a quote, please indicate this during the quote request process.

2.4 Frozen Leaf Samples

If your samples are frozen, please use the wet weight amounts noted above and do not let your samples thaw during weighing. Letting the samples thaw will increase degradation and influence the quantity and quality of the DNA. These samples will need to be transported on dry ice to keep them frozen during transport. Alternatively, you can dry your samples and provide the dried weight amounts. If samples have been frozen, then they must remain frozen until drying is done in a freeze dryer. You cannot take frozen material from the freezer and dry this with silica gel or oven dry the sample as this will degrade the sample. Frozen samples must be dried by a Freeze Dryer.

3.0 Turnaround Time

Turnaround time is sample number dependent and should be discussed with your account manager at the time of submission. Turnaround times for extraction services may be affected by service demand at the time of sample receipt.

4.0 Sample Storage

The DNA will not be stored at AGRF Adelaide. All DNA will be sent for downstream processing. If you require your samples to be returned to you post-processing, please let your Account Manager know at the time of quoting. Please note that a fee will be charged for return of samples.

Raw sample material will not be stored at AGRF Adelaide. All sample material will be extracted or discarded after Quantification.

5.0 Shipping You Samples for Extraction

If your samples are already dried, you can send your samples at ambient temperature.
If your samples have been freshly collected, then they should be sent cold, within 48 hours of collection. The samples should be collected and sent the same day for an overnight delivery as best practice. If your samples are already frozen, they should stay frozen and be shipped on dry ice.

Our AGRF Adelaide Node is a Biosecurity SA CA12 Accredited Laboratory.

If you are sending plant material into South Australia from interstate, a completed and signed CA12 Diagnostic Sample Declaration form must accompany your samples. Your account manager will provide you with the CA12 Declaration form upon quoting, which contains important information on how to label and package your samples.
If you are sending grapevine material into South Australia from interstate, please let your account manager know and they will provide you with information on additional import requirements.

AGRF can organise dry ice shipment for your samples as part of your quoted services or you can use our free shipping between nodes once a week service. For information on this service go to Free Shipping.

Physical address (Courier) and postal address (mail):
AGRF Ltd.
PLANT GENOMICS CENTRE
WAITE CAMPUS
HARTLEY GROVE
URRBRAE SA 5064

6.0 Online Sample Submission

Online Submission:

- Submit your sample details online
- Select: “Extraction and (ongoing service)” as the Service Type, if the DNA is going to be moved into another AGRF service
- Select: “Extraction” as the Service Type, if the DNA is not going to be moved to an ongoing service

Please complete and upload the “Template File” excel template

7.0 Quality Statement

Non-clinical works are performed following the strict requirements of ISO17025: 2005. AGRF Ltd is accredited in the field of Biological Testing (Scope: DNA Analysis) according to the ISO17025: 2005 standard by the National Association of Testing Authorities (NATA). Staff and analysis processes follow Standard Operating Procedures, which define responsibilities and quality checks to achieve reported standards. Compliance is monitored at regular reviews and during internal audits. All work is supervised by a person with relevant qualifications and is checked while in progress and upon completion to ensure that it meets the necessary ISO17025: 2005 standards.