

NucleoMag[®] Plant

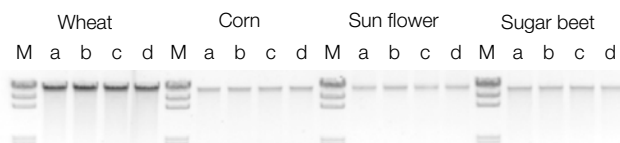
Automated purification of plant DNA on the MagnetaPure 32 automation platform



Introduction

The ability to specifically read or modify plant genome sequences enables the targeted selection, analysis or modification of desirable traits in plants as well as research into the impact of environmental factors such as plant pathogens. In modern plant research, agrigenomics or plant breeding laboratories, the efficient and rapid isolation of genomic DNA from a variety of plant species and organs is an essential part of the workflow. One challenge in reliable high-throughput nucleic acid extraction from plant samples is the inevitable release of polyphenolic compounds and complex polysaccharides during processing. By cross-linking with nucleic acids or interfering with DNA polymerase activity, these compounds have strong implications for subsequent biomolecular applications. To overcome these obstacles, MACHEREY-NAGEL has developed the NucleoMag[®] Plant Kit for the rapid and automated purification of genomic DNA from plant specimen. The DNA obtained is of high quality and can be used directly as a template for applications such as qPCR or NGS.

In this application note we demonstrate the automated nucleic acid extraction using the NucleoMag[®] Plant Kit and the MagnetaPure 32 extraction robot, an intuitive and easy-to-use device for your nucleic acid extraction. All scripts for the MACHEREY-NAGEL NucleoMag[®] kits are verified and ready-to-use, but can be flexibly adapted to your individual needs.



Integrity of genomic DNA purified from various plant species

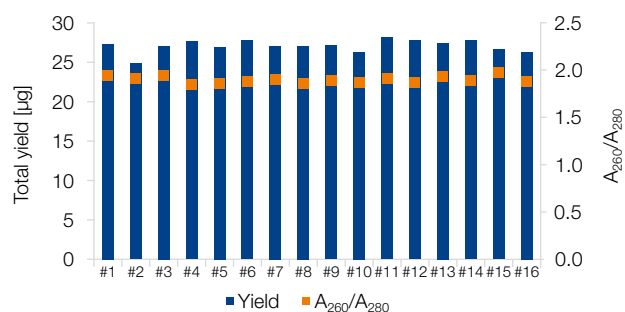
Genomic DNA of 40 mg of four different plant samples (wheat, maize, sun flower, sugar beet) was isolated using the NucleoMag[®] Plant kit on the MagnetaPure 32 automated extraction robot. The integrity of purified DNA was analyzed via agarose gel electrophoresis (6 µL per eluate; 1 % TAE gel.; M: Lambda DNA/Hind III – Thermo Scientific). All samples show a high molecular weight band of approx. 20 kb.

NucleoMag[®] Plant

Technology	Magnetic beads
Sample material	20–50 mg wet weight
Typical yield	10–20 µg (50 mg wet weight)
Elution volume	50–200 µL
Fragment size	300 bp–approx. 50 kbp
Preparation time	approx. 20 min

MagnetaPure 32

Description	Automated nucleic acid extraction instrument
Technology	Magnetic rods
Capacity	Up to 32 samples/run
Features	Compact Bench-top robot, ready-to-use NucleoMag [®] scripts, built-in UV lamp for decontamination, built-in heating block, open and flexible programming



Reproducible DNA extraction with consistently high yield and purity

DNA was isolated from 50 mg each of young leaves of wheat plants using the NucleoMag[®] Plant kit on the MagnetaPure 32 automated extraction robot. Samples were homogenized via grinding with pestle and mortar in the presence of liquid nitrogen. The total yield (dark blue bars) and purity (A_{260}/A_{280} ; orange squares) of purified DNA was determined by UV spectrometry. The data demonstrate the reproducible DNA extraction with consistently high yield and purity.

Product	Specifications	Pack of	REF
NucleoMag [®] Plant*	Kit based on magnetic bead technology for the isolation of genomic DNA from plant samples including magnetic beads, buffers and RNase A	96 preps	872171
		384 preps	872173
		2304 preps	872172

NucleoMag[®] is a registered trademark of MACHEREY-NAGEL; *for small scale purification (≤ 30 mg / prep) MACHEREY-NAGEL offers the NucleoMag 384 Plant kit (REF 744402/1./4) suitable for 384/1536 sample preparations.