reeds had significantly shorter and thinner stems than freshwater ones, pointing towards an ecological differentiation.

Key words: reed, genetic diversity, dispersion, population genetics

4.2.2 How can the population genetic diversity of common reed, *Phragmites australis*, change over 24 years?

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Common reed (*Phragmites australis*) is the most widespread swamp plant used in paludiculture. The establishment and maintenance of the vitality of any population depends to a large extent on its genetic diversity. In this study, we investigate the genetic composition of the 10-hectare reed population planted more than 20 years ago in the reed project in Biesenbrow (1996-1998) in northeastern Germany, where reeds with different genotypes and ecotypes were planted in different densities with three establishment methods (planting potted plants, planting stem cutting, sowing panicles) under changing water regimes. Despite the fact that the original samples of genotypes have not been preserved, we are trying to re-identify them using 8 microsatellite loci and describe the genetic diversity in the plots where reeds were planted in different densities (1, 4 and 10 plants m^{-2}). We also want to answer the question, which clones are better adapted and, therefore, can be found more often in unplanted areas and in the border regions between the plots. The results of our investigation may shed light on how population variability changes over time and whether it depends on planting density. This information could be used perspectively to maintain high or, if necessary, low genetic diversity in newly established reed populations.

Key words: reed, genetic diversity, population establishment

4.2.3 Commercialising vegetative propagation systems for perennial grasses for paludiculture production using CEEDS™ technology

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This project addresses the potential for two grass species to be considered as important paludiculture crops:

- *Phragmites australis* (common reed or Norfolk Reed)
- *Molinia caerulea* subsp. *arundinacea* (purple moor grass)

Phragmites australis can be established from vegetative plantlets or rhizome pieces, but both methods are time consuming and expensive. *Molinia caerulea* subsp. *arundinacea* can be established from seed, but seedling vigour is very low, making it difficult to establish due to competition from weeds. This project will assess the potential for an innovative vegetative propagation technology to facilitate the commercial establishment of these species.
This initiative will work with a UK plant technology business, New Energy Farms, which has developed a patented method of vegetative propagation, Crop Expansion Encapsulation and Drilling System (CEEDS™), originally intended to improve the establishment of *Miscanthus* crops. The proposal will explore the suitability of CEEDS™ technology for both *Phragmites* and *Molinia*. It is an innovative technology that will not only facilitate the establishment of paludiculture grasses, but may also have application for other species that are difficult to establish under habitat restoration initiatives. The project will investigate the physiological responses of plant tissues to a range of treatments to determine the potential to develop