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To Whom it May Concern

Plant Breeding is an exciting career that requires knowledge of many aspects of plant variety development. One has to understand disciplines from the molecular biology of biochemistry, molecular genetics to population development of quantitative genetics, plant physiology, optimizing selection decisions, field experimental design, rigourous statistical analysis, plant diseases, agronomy to large scale systems thinking of pilot scale testing, logistical management and consumer preference. Having an understanding of all these disciplines is essential when making plant breeding decisions and is what I find exciting and motivating to be a plant breeder. Furthermore, with the increasing complexity of plant breeding, one cannot make such decisions alone, and I am passionate and excited to work on a team of experts that I hope my skills will complement fellow collegues and contribute to developing excellent plant varities and addressing the needs of farmers, malsters and brewers. My experience with developing both a novel winter malting barley breeding program and starting an organic naked barley characterization project in collaboration with multiple research institutions has given me invaluable experience across many aspects of the plant breeding pipeline. I recently defended my dissertation in Plant Breeding and Genetics at Cornell University under the advisement of Dr. Mark Sorrells and will be graduating in May 2023.

For the past six years during my PhD studies, I have managed two barley variety development projects. The first was a collaborative research project characterizing and breeding organic naked multi use barley across the United States. I have organized and conducted projects involving genome wide association studies for disease resistance and threshability, evaluation of winter and spring variety trials for agronomic and quality traits, genetic by environment analysis of winter barley across the Northern United States and using aerial imaging to quantify barley growth rate as a potential component of weed competitive ability in an organic environment. The second project I have been involved in has been developing a winter malting barley breeding program. We have developed two populations consisting of double haploidization and traditional recombinant inbred lines. Agronomic traits we prioritize in our breeding program include yield, heading date, foliar and grain disease resistance, maturity and winter survival. Quality traits we examine include balancing between selection against pre-harvest sprouting but also selection against seed dormancy after a number of days and months after the physiological maturity of the grain. We have also conducted small scale malting quality analysis in collaboration with the USDA Cereal Crops and Research Unit. Selection for high performing malting barley varities in New York requires a balance of integrating the many agronomic and quality traits needed for the New York malting and brewing industry.

One of my main motivations as a plant breeder is to translate my passion for plants and scientific discovery into practical agricultural solutions for agricultural systems. My research with malting barley in New York gave me numerous opportunities to not only learn scientific skills, but to also learn and appreciate the importance of collaboration, and the essential communication needed between breeders, farmers, malsters and brewers. If accepted to this position, I would continue to grow my skills and experience I gained from my graduate studies and help KWS integrate the latest breeding technologies and methods while also continuing to develop relationship to produce varities that are benefical for all.

Sincerely,

Karl Hans Kunze, PhD