Let $K$ be a Galois number field of prime degree $\ell$. Heilbronn has shown that for a given $\ell$ there are only finitely many such fields that are Euclidean with respect to the norm map. In the case of $\ell = 2$ all such norm-Euclidean fields have been classified, but for $\ell \neq 2$ not much else is known. We give, for the first time, upper bounds on the discriminants of such fields when $\ell > 2$. Our methods lead to a simple algorithm which allows one to generate a list of candidate norm-Euclidean fields up to a given discriminant. (Received August 27, 2009)