On a local property of infinite Galois extensions implying the Northcott property

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In 2001, Bombieri and Zannier studied the Northcott property (N) for infinite Galois extensions of the rationals. In particular they provided a local property of the extensions that imply property (N). Later, Checcoli and Fehm demonstrated the existence of infinite extensions satisfying this local property. In this talk, we present two main results. First, we have that this local property, unlike property (N), is not preserved under finite extensions. Second, we have that, for an infinite Galois extension of $\mathbb{Q}$, such local property cannot be read on the Galois group. More precisely, we exhibit several profinite groups that are realizable over $\mathbb{Q}$ by fields that do not satisfy the local property.