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Kathryn L. Nyman and **Francis Edward Su*** (su@math.hmc.edu), Department of Mathematics, Harvey Mudd College, 301 Platt Blvd, Claremont, CA 91711. *A Borsuk-Ulam equivalent that directly implies Sperner's Lemma.*

We show that Fan's 1952 lemma on labelled triangulations of the n -sphere with $n + 1$ labels is equivalent to the Borsuk-Ulam theorem. Moreover, unlike other Borsuk-Ulam equivalents, this lemma directly implies Sperner's Lemma, so this proof may be regarded as a combinatorial version of the fact that the Borsuk-Ulam theorem implies the Brouwer fixed point theorem, or that the Lusternik- Schnirelmann-Borsuk theorem implies the KKM lemma. (Received September 25, 2012)