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Joao Silva Filho and **Ramesh Sharma*** (rsharma@newhaven.edu), Department of Mathematics, University of New Haven, West Haven, CT 06516. *Constant scalar curvature gradient Ricci soliton carrying a closed conformal vector field.*

We show, among other results, that a complete gradient Ricci soliton with constant scalar curvature and carrying a closed conformal vector field is isometric to the Euclidean space, or an Euclidean sphere, or the product $N^{n-k} \times \mathbb{R}^k$, or negatively Einstein warped product of the real line with a non-positively complete Einstein manifold. Moreover, we show that a Kähler gradient Ricci soliton of real dimension ≥ 4 , with a non-parallel closed conformal real vector field is Ricci-flat. Finally, we show that, if the 1-form associated with a Ricci soliton is harmonic, then the scalar curvature is constant and Ricci operator annihilates the associated vector field. (Received January 14, 2021)