Efficient tire pressure management is vital for agricultural combines, impacting traction, fuel consumption, and equipment longevity. Current methods lack adaptability, leading to inefficiencies and downtime during harvests. To address this, a system comprising a two-stage air compressor, a 30-gallon air tank, and hydraulic motor-driven components has been developed. Controlled via a cabin-mounted interface, this system adjusts tire pressure on-the-fly, optimizing traction and reducing fuel consumption. Pressure sensors ensure precise inflation, preventing over or underinflation. Farmers, agricultural service providers, and the environment stand to benefit from improved harvest efficiency, reduced runoff, and sustainability gains. Testing validates system efficacy, showing a 34% increase in traction with reduced tire pressure. Future speed testing will further validate system performance. The full system would cost roughly $3500 to make.

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